One of the most important, yet perhaps still under-appreciated lessons of the global financial crisis of 2007-09 concerns the role that academic economics plays in today’s society and politics. Along with the revelations about the skewed incentive structure in the financial industry, short-termism in national economic policies, dogmatic thinking at the levels of international economics institutions and controversial processes of financial innovation, the crisis has exposed mainstream academic economics as a closed-minded enterprise, worryingly narrow in its scope and mission, and increasingly detached from the analysis of economic realities. As part of this transformation in academic economics, studying economic history and learning from the rich history of the profession, has been crowded out to the margins of economics.

Keynes, Minsky and Financial Crises in Emerging Markets represents a long-needed attempt by economists to depart from this sad trend. Radonjić and Kokotović focus on the evolution of financial structures and the way this process has been analysed by, on the one hand, economic orthodoxy, and heterodox scholars such as John Maynard Keynes and Hyman Minsky, on the other. At the very centre of the book’s critique is the relationship between privately created credit instruments and public, or official monetary support to the economy. Focusing in depth of the anatomy of financial instability and crises, the authors chart the evolution of key conceptual approaches to financial crisis, and examine in depth the key cases of fragility, crises and crashes of the past three decades. Their rigorous, reflexive and well-documented empirical analysis illustrates the effects of key processes of endogenous credit at work in different political-economic contexts: emerging economies in Latin America, East Asia and Eastern Europe, and the advanced economies of Anglo-Saxon capitalism. Carefully tracing the development of academic thought on finance over the past few decades the authors present a dynamic, critical and well-informed portrayal of the financial system driven by private financial innovation yet dependant on public liquidity provision in times of crises. Their analysis of this controversy makes this text a must-read for all students of financial capitalism post-2008, and a valuable resource to those who aim to lessen the economic burden of financial crises in the future.
Keynes, Minsky and Financial Crises in Emerging Markets

Ognjen Radonjić
Srdjan Kokotović
Acknowledgements

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The analysis, findings, and conclusions expressed in this book are entirely those of the authors and do not represent the views of either the University of Belgrade or the National Bank of Serbia. Any error remains an exclusive responsibility of the authors.
To my friend and mentor,
professor Miodrag Zec
Ognjen Radonjić

To Milica, Dunja and Nadja,
my beloved three princesses
Srdjan Kokotović
Even if you are a minority of one, the truth is the truth.
Mahatma Gandhi

Measure, value, that which endures in the transient world—
all disappear. They are replaced by nihilism, the cult of worthlessness.
Truth is reduced to an empirical or mathematical reality and is no
longer the ideal to which reality should aspire. ...The truth sets us free
because it has power over us; it gives us instructions,
not the other way around.
Rob Riemen,
Nobility of Spirit. A Forgotten Ideal
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The global financial crisis that started in August 2007 has shown, if such a demonstration was still needed after the Asian crisis of 1997, that financial markets need to be tamed. The great British economist, John Maynard Keynes, who was a strong proponent of capital controls and who did not believe in the self-equilibrating forces of unfettered markets, certainly understood this. This mistrust in the self-regulating forces of capitalism, despite its dynamic and entrepreneurial features, was also clearly expressed by the American economist Hyman P. Minsky. This university professor and bank advisor devoted his academic career to explaining why banks and other financial institutions were prone to euphoria and how this excessive optimism was likely to generate ever more fragile balance sheets. This financial fragility, despite the apparent robustness of the economy, would lead to a financial crisis which would require the intervention of the government and of the monetary authorities, failing which a debt-deflation would occur, with falling asset prices and rising unemployment. This is what I called in 1983 the paradox of tranquility.

Until 2008, the works of Minsky were known only to a small group of post-Keynesian economists, bankers and portfolio managers, some of which would meet every year at the Minsky conference held at the Levy Economics Institute, located in a small town, two hours north of New York City. Since 2008 however, all readers of the Wall Street Journal or of the Financial Times know about the ‘Minsky moment’, when uncertainty and the lack of trust and confidence make liquidity evaporate and interest rates rise, leading to forced asset sales. Minsky’s books have been re-issued, and the annual Minsky conference is now being held in New York City, at the Ford Foundation, with hundreds of participants, including many presidents of the US Federal Reserve Banks.
Ognjen Radonjić and Srdjan Kokotović do a marvelous job of recalling the standard view of financial markets – the efficient market hypothesis – as well as the rival views held by Keynes and Minsky, notably the importance of liquidity, the flimsy foundations of market expectations, the relevance of fundamental uncertainty, the difficulties encountered by central banks and regulators, the possibly destabilizing behaviour of speculators, and the endogenous transformation of a robust financial system into a fragile one. Their personal contribution is their extension of Minsky’s financial fragility hypothesis, developed within the context of the American economy, to an open economy setting, where unrestricted international capital flows tend to fragilize the financial systems that at first sight seem to benefit from these inflows. Radonjić and Kokotović provide their readers with a unique contribution, by explaining (sometimes in painstaking details) the evolution of the European emerging countries before and after the global financial crisis in light of this Minskyan framework that they have developed. Unfortunately, the problems inside of the eurozone, which also arose as a consequence of unfettered financial flows as well as the austerity policies pursued in Germany, are far from being over, and the lessons that Radonjić and Kokotović draw from what happened during the global financial crisis are likely to be useful sooner than later.

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May 2013
Introduction

We live in an ever-changing world of scientific and technological progress, intensive international trade and large-scale capital flows. One of the main features of the modern global economy in the last thirty years or so is that, contrary to conventional wisdom, periods of tranquility are transitory. Boom-bust episodes occur regularly in both developed countries and emerging markets; crises are erupting more frequently, lasting longer and becoming more severe.

What can be seen at first glance is that the functioning of the financial sector which, according to the textbooks provides effective diversification of risk and the efficient allocation of scarce resources to optimal productive use, has become completely de-coupled from the real sector, which financial markets are supposed to serve in the first place. In a word, financial markets have become a purpose unto themselves. To illustrate this point it is enough to point out that the volume of annual world financial transactions is a multiple of productive real capital investments and the value of global financial assets is well above the annual value of the world’s GDP.\(^1\) The same is true when we compare daily turnover in the global foreign exchange markets (prompt, forward and swap) and over-the-counter derivative markets with the annual value of world trade or average annual salary of those employed in the financial and the real sector.\(^2\) These im-

---

1 The ratio of value of global financial assets to annual world output equaled 109% in 1980 and 313% in 2010. The value of global financial assets in 2010 was 198 trillion US$, whereas the value of annual world output (in current prices) was 63.2 trillion US$. The ratio of the value of global financial assets to the value of world investments in 2010 was equal to 1385%. (IMF, WEO database; Lim Mah-Hui 2008; The Economic Times).

2 In 2010, the turnover in traditional foreign exchange markets (spot, forward, and swaps) was equal to nearly 4 trillion US$ a day and the value of annual world exports
balances are of obvious significance in explaining the financial fragility of the world economy.

Perhaps the worst feature of financial crises is that they cause long-lasting suffering to common people and result in the redistribution of global wealth to the benefit of a small number of the wealthiest people in the world. Thus, it seems that Marx's prophesy of increasing concentration and centralization of power is coming true in our time. What we want to explore in this study is why we are living in globally unstable economic conditions and how economic theory explains this phenomena. How and why do crises emerge, and is there anything we can do about it?

As we see it, the aim of any science, including economic theory, should be to help humans to be humans, i.e. to create economically efficient but at the same time just and balanced societies consisting of ordinary people enjoying individual liberty and a decent and dignified life in harmony with the natural environment. In order to accomplish this demanding task, economic theory should be capable of approximating as precisely as possible the characteristics of the real-world economic system in which we live. Again, in order to do that, it is of crucial importance that the theorist who studies the social phenomena be aware of the simple truth that the motives and behavior of individuals are to a large extent, both spatially and temporally, determined by the social context in which they exist. If this important fact is overlooked, the danger of creating abstract and general theoretical principles arises. These principles are supposedly applicable to all occasions and all times and are independent of the social environment. However, in real life, the applicability of these general and abstract theoretical principles is essentially limited to a very small number of cases. So, as we see it, theories that are the result of normative and ideologically colored theorizing – what we would like something to be and not as it really is – theories created independently of a spatially and temporally specified social context – are irrelevant.

One such theory is certainly the modern theory of efficient financial markets, firmly grounded in grossly unrealistic assumptions that the future will resemble the past and that rational decision-makers are capable, on average, of forming correct expectations. No less important, to this theory, humans, like automata, are assumed to form homogenous expectations and make decisions independently of decisions made by other market participants. As the proponents of omnipotent free markets see it, the future path of the economic system is predetermined and is not dependent on the past or future choices of economic agents. If it was, and

of goods and services equaled 18.9 trillion US$. (IMF, WEO database; International Business Times).
if the future were known, then every agent would have to be aware of the real process by which expectations are formed and adjusted, as well as the present and the future decisions of every agent in the system. Ironically, it is precisely the impossibility of gaining such vast knowledge that led neoclassical economics to reject centrally planned systems (Crotty 1994). The direct implication of the efficient market hypothesis is that free decentralized markets, if let alone, inherently, i.e. endogenously generate equilibrium. In this view, ups and downs (boom-bust episodes) are the consequence of an exogenous shock (external to market processes), most frequently inappropriate and clumsy public policy interventions. In the open-economy model, financial crises can emerge due to a number of factors; inconsistency between the internal and external objectives of monetary authorities, a lack of credibility of the central bank’s and the government’s commitment to fully defend the foreign exchange rate, massive withdrawals from the host country due to irrational behavior on the part of lenders, corruption and cronyism etc. A superior recipe for avoiding financial crises is to implement and conduct consistently prescribed market-led policies. On the other hand, if these rules are not obeyed and consequently crisis erupts, the only way to regain the confidence of investors, domestic and foreign, is to implement measures of economic austerity. All in all, proponents of the efficient markets theory preach that self-regulated markets led by Adam Smith’s “invisible hand” are the optimal mechanism for rational and productive allocation of scant resources to the most productive uses. If unanticipated exogenous shock disrupts the normal functioning of markets, corrective forces that, at least in the long run, restore market clearing conditions, will be activated.

On the other hand John Maynard Keynes and his most prominent follower Hyman Minsky rejected the axioms of mainstream economics that submit the general public to “market-place idols”. (Keynes 1937, p. 215). They rejected economics as a science of abstract and general theoretical principles for all ages, applicable to all occasions independently of the social context. In their view, the future is fundamentally uncertain and the longer the time horizon the less we are capable of predicting the future path of the economic system. In other words, the future is not predetermined, waiting to be discovered by the mighty rational men, but it is created by the expectations-based actions undertaken by humans. Humans are specific and mutually different, psychologically complex beings who form heterogeneous expectations. How then, in a situation when he knows that he does not know, i.e. when human decisions make the future and not a deus ex machina, faced with very scant information, does a rational man make decisions? Keynes argued that in turbulent and dynamic economic environments, the decisions of agents are conventionally based. Decision-
making based on conventions does not produce optimal decisions, but it is rational because it is the best that agents can do for themselves in conditions of fundamental uncertainty.

Therefore, humans are not isolated, as orthodox theory assumes, but are social beings whose preferences can be changed under social influence and the choices of other agents. Also, they make decisions in accordance with an institutionally established system of values. To stress a point, the behavior of humans must be observed and analyzed within the framework of the social milieu in which they exist, not outside of it, in some imaginary perfect and simplified world. “In an era when performance failures demonstrate the need for economic reform, any successful program of change must be rooted in an understanding of how economic processes function within the existing institutions. That understanding is what economic theory is supposed to provide. ... Thus, economic policy must be concerned with the design of institutions as well as operations within a set of institutions. Institutions are both legislated and the result of evolutionary processes. Once legislated, institutions take on a life of their own and evolve in response to market processes. We cannot, in a dynamic world, expect to resolve the problems of institutional organization for all time.” (Minsky 1986, pp. 3, 7).

The essence of Keynes’ and Minsky’s disequilibrium economics is that the invalid assumptions of orthodox theory lead to invalid understanding of the capitalistic economic system and accordingly to wrong policy prescriptions. As Keynes put it: “The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.” (Keynes 1936, p. 404). Therefore, it is of quintessential importance to fully understand how the modern capitalistic economic system works, since the diseases it catches from time to time, along its evolutionary way forward, cannot be cured without an accurate diagnosis.

In his effort to make a correct diagnosis, Minsky stood upon the shoulders of a giant (Keynes), “to see far and deep into the essential character of advanced capitalist economies.” (Minsky 1986, p. x). What he saw is that in “...a world with capitalist finance it is simply not true that the

3 Changes in human practices stimulate and promote changes in institutions and vice versa, thus propelled changes in institutions stimulate further changes in human practices. Thus, the economic and social environment is in constant flux, in transition from one to the other state and general and abstract principles for all times and situations are not applicable in the real world of modern capitalistic systems.
pursuit by each unit of its own self-interest will lead an economy to equi-
librium. The self-interest of bankers, levered investors, and investment
producers can lead the economy to inflationary expansions and unem-
ployment-creating contractions. Supply and demand analysis – in which
market processes lead to an equilibrium – does not explain the behavior
of a capitalist economy, for capitalist financial processes mean that the
economy has endogenous destabilizing forces. ...The major flaw of our
type of economy is that it is unstable. This instability is not due to external
shocks or to the incompetence or ignorance of policy makers. Instability
is due to the internal processes of our type of economy. The dynamics
of a capitalist economy which has complex, sophisticated, and evolving
financial structures leads to the development of conditions conducive to
incoherence – to runaway inflations or deep depressions.” (Ibid, pp. 11,
280). In his Financial Instability Hypothesis, a work widely neglected by
mainstream economists, Minsky argues that financial markets are the
heart of modern capitalist economies, which are prone to fragility, thanks
to the non-neutrality of money, division of ownership and management
in big corporations and financial institutions, the ever-growing and mas-
sume debt financing of uncertain investment projects over the business
cycle, continual financial innovation and fundamental uncertainty. In a
word, dynamic financial systems are in a constant flux, whereas periods
of calm are only transitional. Unstable optimistic and pessimistic expec-
tations of debt financed economic units endogenously lead the financial
system from the state of robustness towards financial fragility, in which
a sudden, unexpected appearance of endogenously and/or exogenously
created shock has the power to push the system into financial instability.
The fact that the focus of Minsky’s attention is a closed advanced capi-
talistic economy, certainly does not mean that his theoretical insights are
not applicable to an open-economy case. What is more, they are of crucial
importance in understanding why a global economy of unfettered capital
flows is so fragile and liable to disruption. Namely, in addition to the flaws
of a closed advanced market economy, there are several more in the case
of open developing economies which make them even more susceptible to
financial crises.

This does not mean that everything is gloom and doom, however,
only that there is an inherent need for an intense activist policy. Thus,
it is possible to constrain the inherent instability of modern economies
through active management of the economic system and regular updating
of regulatory practices by policymakers. As Minsky says: “Although the
full force of Keynes’s insights into the workings of a capitalist economy has
not been absorbed into the ruling economic theory and policy analysis,
enough of his message – that our economic destiny is controllable – has come through to make conscious management of the economy...” (Ibid, p. 8). If, on the other hand, regulators do not accomplish their task properly, instability is to be expected. In the event of financial crisis, Minsky in genuine Keynesian tradition condemns austerity measures and calls for Big Bank and Big Government policy interventions in order to prevent debt-deflation and widespread devastating depressions.

The structure of this work is as follows: In the first chapter we analyze in detail the assumptions of the modern mainstream theory of efficient markets and its theoretical and policy implications. We conclude that invalid assumptions lead to invalid theory and therefore policy implications which are not up to the task of solving a vast array of problems and growing difficulties in the normal functioning of the global economy. In the next chapter we cover the economic thought of the great John Maynard Keynes, one of the most influential and certainly the most controversial social thinkers of all times. He was the first one who, in the aftermath of the Great Depression, rejected the postulates of neoclassical economics and offered his insights into the ways contemporary economies and especially financial markets function. He offered a disequilibrium oriented theory of free markets which, if not constrained, lead to over or under investment, overly optimistic or pessimistic expectations, and consequently booms and depressions, myopic investment strategies and speculative financial markets. He also laid the ground for the future development of the theory of business cycles, i.e. the shoulders upon which Minsky stood in the process of making his Financial Instability Hypothesis. In the third chapter we examine Minsky’s theoretical explanations as to why and how neoclassical synthesis reduced Keynes to banality; why the capitalistic mode of functioning of advanced economies in periods of stability as well as instability sows the seeds of its own destruction; and why tight and regularly updated regulation of the financial sector and active policy management are needed in order to prevent and ameliorate outbursts of runaway inflation and unemployment-creating contractions. We further draw on the insights of Arestis and Glickman (2002), Kregel (1998) and Pettis (2001a) to expand Minsky’s theoretical framework to the developing open-economy case in which most debt is foreign short-term debt set on a roll-over basis and denominated in hard currency. In such a way, as Pettis (2001a) argues, displacement or the key event that will trigger massive capital movements towards developing countries is a Minskyan liquidity expansion in rich countries. In other words, movements of capital towards developing countries are exogenous, i.e. the actions of developing countries do not influence movements of international capital, which are, rather, the result of liquidity changes in the developed world. On the other
hand, a liquidity expansion in the developed world and the following capital flows into the shallow financial markets of developing countries produce positive effects only in the short run. In the medium run, unless the external borrowing of local market participants is adequately constrained and controlled, a disastrous debt deflation episode may take place. In the fourth chapter we conduct Minskyan analysis of the Mexican (1994) and Asian crisis (1997). We conclude that in both cases, massive movements of capital towards these markets were exogenously generated and that a robust period in the host countries led to over-leveraged units which could not fulfill overly optimistic profit expectations. In the end, the simultaneous effect of endogenous and exogenous shocks within an already fragile environment pushed those systems into financial instability. It is also important to note that, in contrast to the Keynes-Minsky approach, in both cases international financial institutions transferred the onus of austerity-led adjustments to the crisis-hit countries with devastating consequences. In the fifth section we conduct a rigorous factual analysis of the cross-country pre-crisis and post-crisis developments in fundamental economic indicators in Eastern Europe in order to prove that the current crisis conforms to the Minskyan liquidity model of crisis generation. As our study shows, by deployment of Asian current account surpluses, conducting an overly expansive monetary policy and massive securitization of illiquid assets, the U.S. economy set in motion a global liquidity cycle at the beginning of the 2000s. In line with the liquidity model, liquidity expansion in the most developed economy in the world led in no time to massive capital flows towards developing countries. As Keynes and Minsky would expect, simultaneously with dynamic economic growth and progressiveness in enforcing internationally desired market-led policies, developing Eastern European economies (EEE) built up massive vulnerabilities to sudden capital reversion. Unfortunately, seemingly unexpectedly, the U.S. financial markets contracted sharply in 2007 and the crisis instantaneously spilled-over to a large number of developed and developing countries. However, in this case, massive fall out was avoided thanks to the expansion-oriented policy coordinated actions of the governments of developed nations and international financial institutions. In the sixth section we explore the impact of the crisis on different economies in emerging Europe in order to gain an insight into which variables mattered the

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4 Even though countries in this region used to be socialist economies under the communist rule until 1990, they embarked on a transition to market-based economy with significantly different approaches. These differences resulted in different outcomes. Some of them reached by the end of the 2000s the status of advanced economies (The Czech Republic, Slovakia, Hungary, Poland) while others remained developing economies. In that context, the term emerging Europe is more precise for denoting the beginning of the decade, when they shared similar imbalances.
most. Notably, we analyze why there is a large variability in output decline between the countries of the region, which macroeconomic variables and vulnerabilities have played important roles, and to what extent different countries have been susceptible to the main channels of crisis impact. In the seventh section we compare the pre-crisis and post-crisis developments in fundamental economic indicators, the accumulation of vulnerabilities and the impact of the current crisis with the previous cases. We conclude that developing countries in Eastern Europe, though much more vulnerable by previous standards, exhibited a milder crisis compared to other developing countries which had experienced a sudden termination of capital inflows in the past. Credit for the soft landing goes to large-scale and unprecedented financial assistance provided by the developed world and international financial institutions. We finish with a conclusion and policy recommendations.
I Exegesis of the
Conventional Wisdom:
Efficient Markets,
Rational Expectations and
Exogenously Generated
Financial Crises

The Efficient Markets Hypothesis is certainly one of theories that
John Kenneth Galbraith would define as conventional wisdom or John
Maynard Keynes as one of the “pretty, polite techniques, made for a well-
panelled Board Room...” (Keynes 1937, 215). As Keynes further explains,
difficulties in understanding reality for the most part lie “...not in the new
ideas, but in escaping from the old ones, which ramify, for those brought
up as most of us have been, into every corner of our minds.” (Keynes 1936,
p. 53). The theory of efficient financial markets delivers an illusion of or-
der in chaos, which is all around us but only at the expense of qualitatively
grasping reality. It is grounded in an assumption derived not on the basis
of contemplating reality but on the assumptions constructed to force real-
ity to accommodate to them (Reinert 2006).
1. Vanguards to the Efficient Markets Hypothesis

There are several important financial market models, the theoretical outcomes of which were important to the process of deriving the Efficient Markets Hypothesis. In his theory of portfolio selection Markowitz (1952) formulated a restrictive, elegant and mathematically exact theory of maximizing the utility of individual investors when faced with different investment possibilities. He suggested that any investment or security could be fully described by the expected rate of return, expected variance and bell curve. Modigliani and Miller (1958) assumed homogeneity of investors expectations and the inexorable activity of profit hungry rational arbitrageurs to prove that the issue of whether investments are financed by issuing shares or debt is not relevant. What is relevant is the earning power of the undertaken investment. Also, in his Capital Asset Pricing Model (CAPM), a theory of optimal relative price determination, Sharpe (1964) found a way to exemplify Markowitz’s process of portfolio selection and to fairly price any security in equilibrium on the basis of the assumption of completely and perfectly informed agents. (Crotty 2011). However, those theories did not explain the dynamics of financial markets: why and how the expectations of agents and thus the prices of financial instruments change and in what way the dynamics of financial markets inevitably lead towards equilibrium in the short and long run.

Namely, until the 1960s, economists did not explore the dynamics of financial markets and did not attempt to frame theoretically continuous, seemingly irrational and unexplainable price changes. The first analysts to be attracted to financial market dynamics were statisticians. Maurice Kendall (1953) and Harry Roberts (1959) conducted two seminal explorations (Bernstein 1992). Kendall analyzed price changes of the shares of nineteen different groups (financial companies, industrial enterprises, railway companies, breweries...) between 1928 and 1938. What Kendall discovered was that future movements of prices could not be predicted on the basis of past price changes. Prices literally wondered and the path of future price movements was similar to the pattern exhibited when random numbers are drawn from a symmetric population with fixed dispersion (Ibid). This result was confirmed by Harry Roberts, several years later. Thus, the conclusion of their research was that changes of share prices are, on average, independent and do not demonstrate a visible trend or pattern open to exploitation by rational investors (Bernstein 1992, 1998). Every day there is an equal probability that share prices are going to increase or decline. Lacking an adequate economic interpretation Roberts named this phenomena Random Walk Hypothesis (Ball 1995). The discovery of
Random Walk Hypothesis was important since, if this were not the case, every movement of prices that was not independent of past and current price changes would be valuable information that would enable investors to earn extra profits.5

2. The Efficient Financial Markets Theory: Birth and Implications

In the mid 1960s, the first economist to offer a theory of efficient financial markets was Eugen Fama. According to Fama’s Efficient Markets Hypothesis (the EMH), the price of a security always and fully reflects all available information. On the basis of the EMH, Fama concluded that contemporary developed financial markets are efficient. In other words, in Fama’s mind, efficiency does not relate to great speed in the realization of financial transactions or low transaction costs. Fama’s efficient market is defined as a “market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants.” (Fama 1965, p. 76).

Therefore, in line with the neoclassical theory of competitive markets, the EMH holds that, on the average, thanks to intensive competition among profit-maximizing rational investors, new relevant information would be instantaneously (or in the very short run) fully and accurately reflected in current price.6 In a word, after new relevant information has

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5 Extra profit is profit or rate of return not justified by systematic (market) risk, i.e. by Sharpe’s $\beta$ coefficient. Systematic (market) risk cannot be eliminated through diversification and varies from one security to another. $\beta$ coefficient measures the sensitivity of the return of a particular security in relation to the return of a market as a whole. If the return on a particular security tends to be more volatile than the return on market portfolio ($\beta > 1$) then it should have a higher expected return in comparison to the expected return of the market portfolio and vice versa.

6 In it is important to note that asset prices respond only to the unexpected part of news in new relevant information. The expected part of the news is already reflected in asset prices. For example, a company announcement of an increase in earnings of 30% in relation to the same period last year, would be good news only if the market expected an increase of, for example, 25%. The element of new information is not the increase of 30% but only the difference between 30% and 25% (5% increase). If a company announced an increase in earnings of 25% in relation to the same period last year, this information would not have an effect on the company’s share price. If, on the other hand the company announced an increase in earnings of 20% and the market expected an increase of 25%, this, generally favorable news would have a negative impact on the company’s share price.
been announced, no price trend or price reversal would take place. Consequently, at any moment, the current price of a security is the best possible approximation of its intrinsic value. Only the arrival of new relevant information on the market has the potential to change the price of a security. Since past and current price movements do not contain information relevant for forecasting future price movements and since the arrival of new relevant information cannot be predicted in any systematic manner, the prices of securities follow a random walk.

In line with the zero-profit neoclassical theory of competitive equilibrium in the conventional theory of firm, this assertion directly implies that an average investor, whether it be an individual investor, pension or investment fund, cannot outperform the market consistently. Therefore, instead of active trading, aiming at detecting unexploited profit opportunities, adherents of the EMH recommend a passive buy-and-hold strategy. An active strategy only entails increased costs since the search for unexploited profit opportunities in efficient financial markets is futile.

7 Fundamental (intrinsic or true) value is equal to net present value of expected cash flow. Discount factor is determined by systematic (market) risk, i.e. by Sharpe's \( \beta \) coefficient.

8 By using “stale” information it is not possible to consistently outwit the market and earn abnormal profits. Fama distinguishes three types of stale information which could be used to test market efficiency. Weak-form efficiency is identical to the Random Walk Hypothesis, i.e. future movements of prices or rate of returns of assets could not be predicted on the basis of past movements of prices or rate of returns. In other words, tomorrow’s price change reflects only tomorrow’s information and is independent of today’s price changes. Since the arrival of new information cannot be predicted in any systematic manner, it is also unpredictable and the resultant price change is random. According to semi-strong-form efficiency, the current price of a security embodies all publicly available information. In a word it is not possible to consistently beat the market on the basis of past history of security prices or rates of return and company reports (annual financial statements), company announcements (earnings and dividends announcement), the financial position of competitors, sector reports, macroeconomic expectations etc. Strong-form efficiency means that all public and private (insider) information is accurately reflected in current price of assets. In our text, the EMH is analyzed within a semi-strong-form efficiency framework.

9 To be clear, this assertion of the EMH does not mean that investors are not capable of beating the market. It is possible that there is, within the equilibrium a small number of investors that earned a limited amount of extra profits. The EMH only claims that it is not possible to earn extra profits consistently, whereas, on the average, there is high probability that incomes earned on the basis of analysis of past and current publicly available information would not outstrip incurred costs.

10 The EMH is fully consistent with the neoclassical model of a perfectly competitive market for goods. Namely, neoclassical economics assumes that all information is available to all market participants practically free of charge. Thus, any
The logic of the EMH is best described in Burton G. Malkiel’s story about a professor of finance and his students: “The finance professor...was convinced that markets were always perfectly efficient. When he and his students spotted a $10 bill lying on the street, he told them to ignore it. If it was really a $10 bill, he reasoned out loud, someone would have already picked it up.” (Malkiel 1985, p. 348).

At first glance it seems that Fama’s recommendation to exercise a buy-and-hold strategy implies that the existence of chartists, technical analysts and security analysts whose job it is to analyze publicly available fundamental information (such as company reports, economic forecasts...) is superfluous. However, this line of reasoning could not be farther from the truth since, as Fama (1965) claims, the existence and intense competition among profit-maximizing financial analysts is, above all, what generates efficient functioning of financial markets, i.e. instantaneous elimination or elimination in the very short run of possible discrepancies between the actual and intrinsic value of securities. In a word, guided by Smith’s “invisible hand”, individual agents aiming at maximizing their own gain, unintentionally simultaneously maximize the benefits to the society. If, on the other hand, if no one but you does any research in order to find a way to beat the crowd you will find yourself with a return that is well above that earned by passive investors. Paradoxically, if all agents accepted Fama’s advice and consistently applied buy-and-hold strategy, opportunities to earn extra profit would emerge.

Informational efficiency is strongly correlated with allocative efficiency since it implies that scant capital would be directed towards the most productive investment projects. Firms with strong profit potential will see the price of their shares rising, which enables them to raise new capital at lower cost and vice versa. Those firms with poor prospects for profit will experience a decline in the price of their shares and an increase in the costs of raising new capital, which makes them attractive takeover targets. If this happens it usually ends in the appointment of a new management team aiming at finding ways to use capital recourses more productively in the future.

kind of company document, statement or report which are usually costly to produce, at the moment they are published, are available to all market participants free of any cost. Since, in the neoclassical world, firm maximizes profits when marginal income and marginal cost are equalized, and since according to the EMH marginal cost of acquiring new publicly available information is zero then marginal income earned on the basis of publicly available information is also equal to zero.
3. Exogenously Generated Speculative Bubbles and Financial Crises

Between the lines, the theory of efficient markets is based on the assumption that economic agents are perfectly rational, perfectly informed and capable of forming rational and on average true expectations. In this view, self-regulated financial markets led by Smith’s “invisible hand” are an optimal mechanism for rational and productive allocation of scant resources to the most productive uses. Market-clearing equilibrium is an aggregate outcome of choices made by myriad rational decision makers. (Davidson 2002; Fama 1965, 1970; Radonjić 2009a; Shleifer 2000). On the other hand, in this view, financial crises emerge as a consequence of a sudden effect of some unanticipated exogenous shock. This is, in most cases, the interference of government in the free functioning of omniscient markets or the implementation of an inadequate policy regime (for example, dissonance between fiscal and exchange rate policy). Should an unanticipated exogenous shock disrupt the normal functioning of markets, corrective forces that at least in the long run restore market clearing conditions, would be activated. In a word, the problem is not rooted in systematic flaws in the functioning of free markets, but in the lack of freedom for market forces. Thus, according to the neo-liberal view, the prescription for stable and rapid growth of the economy and living standards is a simple one: balanced fiscal policy, anti-inflationary monetary policy, privatization of state owned enterprises, deregulation and liberalization of financial flows and world trade and stable foreign exchange rates. Thus, favorable economic results are assured in the case of minimized government control and market regulation.

A representative example of orthodox analysis of the causes of financial crisis in developed economies is Friedman’s (1982) account of the great stock market crash of 1929. In his account of the Great Crash, Friedman does not pay attention to and does not explore the causes of excessive indebtedness and the optimism of market participants, speculation, rogue financial vehicles and mechanisms that significantly contributed to and even propelled excessive speculation and the consequent unsustainable boom. As we see it, the focus of his analysis is on consequences or, more precisely, not on discovering the causes of the crisis and the stock market crash but on what made the Great Depression so devastating and

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11 James Crotty and Gary Dymski argue that “...the hallmark of neoliberalism is the existence of unregulated markets almost everywhere for almost everything.” (Crotty and Dymski 2000, p. 3).
long lasting. His main thesis is that “the Great Depression, like most other periods of severe unemployment, was produced by government mismanagement rather than by any inherent instability of the private economy. The Great Depression in the United States, far from being a sign of the inherent instability of the private enterprise system, is a testament to how much harm can be done by mistakes on the part of a few men when they wield vast power over the monetary system of the country.” (Friedman 1982, pp. 72, 90). In his opinion, the stock market crash of October 1929 was not the cause or the event that launched the Great Depression. In his thinking, it is possible that the stock market crash only indirectly negatively influenced the expectations of market participants and their willingness to spend, but “...by themselves, these effects could not have produced a collapse in economy activity. At most, they would have made the contraction somewhat longer and more severe than the usual mild recessions that have punctuated American economic growth throughout our history; they would not have made it the catastrophe it was.” (Ibid, pp. 83, 84). The only consequence of the stock market crash would have been mild recession if the Federal Reserve System (Fed) had not already been conducting a restrictive monetary policy since the second half of 1928. Furthermore, after the stock market had collapsed, if the central bankers, as the lenders of last resort, had provided the necessary liquidity to distressed banks and thus taken the policy steps required to avoid panic, bank runs and massive bankruptcies in the banking sector, the drastic reduction in money supply that emerged between 1930 and 1933 could have been avoided. We should make it clear that we do not dispute role of the central bank as the lender of last resort in times of widespread financial distress. The role of the lender of last resort is to sustain the prices of financial assets and thus financing of investment projects in times of diminished business confidence and in that way to ameliorate economic decline. However, we do take issue with the remark that the stock market crash and following depression were the consequence of overly restrictive monetary policy, since in periods of booming economy, tight monetary policy is impotent in constraining the volume of speculation and reigning in excessive market rise. Friedman actually put forward a straw man argument. Instead of uncovering the motives and sources of aberrant indebtedness and speculation, excessively optimistic market expectations and flaws in the market mechanism (Galbraith 1954), he was oriented towards identifying the omissions of the monetary authorities in the period that followed the stock market crash. What is more, as Keynes (1936) pointed out, even if the monetary authorities had applied adequate policy measures, the di-
minimized animal spirits\textsuperscript{12} that emerge after a financial breakdown could have kept the stumbling economy deeply depressed for a very long time.

Other similar examples of the orthodox account of financial crisis are the Wall Street crash of October 1987 and the dot-com crash in 2000. In line with Friedman, Burton G. Malkiel (2003) again does not see the causes of the Wall Street Crash in 1987 in excessive indebtedness and the aberrant market optimism of market participants and various speculative schemes such as hostile takeovers financed by issuing junk bonds, real and commercial estate speculations etc. The cause of the crash lies, as in the previous case, in poor government decisions poorly timed and in conjunction with a badly conducted fiscal and foreign exchange rate policy. Malkiel agrees with Merton Miller (1991) who wrote that the crash came as a consequence of “...some weeks of external events, minor in themselves...” which “...cumulatively signaled a possible change...” where “...many investors simultaneously came to believe they were holding too large a share of their wealth in risky equities.” (Malkiel 2003, pp. 25, 26). As Malkiel holds, a factor that, in collaboration with other events, might have led to sharp stock market decline was the threat that Congress would impose a “merger tax” that would make merger activities more costly, ending in collapse of merger boom. It appears that this measure emerged as response to the flourishing market in junk bonds where in most cases the aim of takeovers was not to improve the profitability and efficiency of the targeted enterprise but to resell it in the near future for profit. However, in line with the EMH, Malkiel believed that the imposed tax leading towards the end of merger boom would further weaken the discipline of corporate managers. The second factor was the announcement, early in October 1987 by then Secretary of the Treasury James Baker, that the U.S. authorities would not defend the value of the dollar. In response to the threat of a further fall in the value of the dollar, frightened for the value of their investments, foreign and domestic investors launched a massive sell-off of dollar denominated assets. Also, the higher than expected trade deficit, announced publicly in mid October, and the troublesome amount of the U.S. fiscal deficit, additionally upset already restless investors. Ergo, the Wall Street crash of 1987 could easily be attributed to exogenous factors.

The dot-com crash of 2000 could be explained easily in similar vein. In 1996, then chairman of the Fed, Alan Greenspan had warned of the possibility that, due to irrational exuberance, the market was significantly overrated (Greenspan 1996). The very next year however, in July 1997, he

\textsuperscript{12} In Keynes’ terminology, animal spirits are a metaphor for entrepreneurs confidence that the current stability and robustness of the system will last indefinitely into the future (Keynes 1936; Radonjić 2009a)
attributed the dynamic rise in share prices to moderate long-term interest rates and the consequent expectations of investors that, in an environment of stable and low inflation, profit margins and profits would remain steady or even increase further (Greenspan 1997). In 1999, Greenspan again claimed that “...history suggests that, owing to the growing optimism that may develop with extended periods of economic expansion, asset price values can climb to unsustainable levels” (Greenspan 1999, p. 3). Later in the same text, though, he adheres to the EMH by arguing that accepting and implementing a monetary policy of preventative pricking of the bubble would require “…a judgment that hundreds of thousands of informed investors have it all wrong. Betting against markets is usually precarious at best.” (Ibid, p. 3). Finally, the bubble collapsed in early 2000. In December 2000 Greenspan was still asserting that a dynamic rise in stock prices was rational since the long-term corporate earnings forecasts of thousands of security analysts were based on “…their insights from corporate managers, who are most intimately aware of potential gains from technological synergies and networking economies.” (Greenspan 2000, pp. 2, 3). The phenomena of not giving up the idea of efficient financial markets, even in a situation in which it is clear that the functioning of free markets leads to inefficient outcomes is not incomprehensible since “markets in our culture are totem; to them can be ascribed no inherent aberrant tendency or fault.” (Galbraith 1990, p. 24). In the end, in July 2002, Greenspan finally admitted the domination of speculation over efficient market outcomes during the dot-com takeoff by assertion that “...an infectious greed seemed to grip much of our business community... Too many corporative executives sought to ‘harvest’ some of those stock market gains.” (Greenspan 2005, p. 5).

4. Orthodox Views on International Financial Crises

In parallel, at the international level, mainstream orthodox (efficient markets) crisis models have been created in order to explain recurrent financial boom-bust episodes in mainly developing countries. So-called “first generation” crisis models depart from conflicting internal policies and a fixed exchange rate regime. This model was first developed by Paul Krugman (1979). It assumes the perfect foresight of traders, who speculate against the fundamental inconsistency between the internal and external objectives of monetary authorities arising from a central bank’s commitment to defend a particular exchange rate of domestic currency against some foreign currency or a basket of currencies (“peg”), while at the same
time continuing to expand its monetary base because of the monetization of fiscal deficits. In order to defend the peg, the central bank is forced to intervene in the foreign exchange market and eventually runs out of foreign currency reserves. Since the model assumes that speculators perfectly anticipate the timing of the crisis, they start accumulating foreign currency by purchasing the central bank’s reserves as soon as they become aware of the existence of the inconsistency. This puts additional pressure on the domestic currency, even though the volume of the central bank’s reserves could be sufficient to finance balance of payments deficits for years. Finally, the domestic currency is devalued, often due to a faster than justified depletion of foreign exchange reserves. In general, these models are one-dimensional and assume a simple inconsistency between monetary and exchange rate policy and a central bank ameliorating the pressures on the exchange rate by selling foreign reserves regardless of general developments in the economy.

However, it has become clear that some countries that ran fixed exchange rates, did not engage in conflicting fiscal and monetary policies, and, nevertheless, experienced financial crisis. This type of crisis was clearly different from the first generation and these crises were classified as the “second generation” or self-fulfilling crises. Such a model was first developed by Maurice Obstfeld (1986). Models of the second generation assume inadequate credibility of the central bank’s and government’s commitment to fully defend the peg. Even though the commitment seems credible in the short run, the volume of foreign exchange reserves that the central bank has at its disposal is fairly large and only a few minor vulnerabilities can be observed (Caves et al. 2001). This lack of credibility of the policy makers stems from the opposing incentives they face. On one hand, they have incentives favoring devaluation, such as a high debt burden denominated in domestic currency that can be reduced by inflation or a trade deficit that can be ameliorated by devaluation. On the other, they might have the incentive not to devalue the currency, which is the case when foreign or domestic debts are denominated in foreign currency, or when authorities need to preserve a stable economic environment in order to attract foreign investments and facilitate foreign trade. Consequently, in case of growing external pressures, the authorities’ decision to maintain the fixed exchange rate results in excessive volatility of output. Under the currency peg, rising foreign interest rates force domestic interest rates to rise. Such a rise of domestic interest rates could increase the interest expenditure on government debt, implying that the stock of domestic debt may be one of the leading currency crisis indicators. On the other hand, holding on tightly to the announced currency peg pro-
vides additional credibility to the policy makers in their efforts to curb inflation. Since the abovementioned variables might increase the cost of defending the parity, speculators begin anticipating a potential unwillingness of the authorities to pay such a high price to defend the currency peg. This causes depreciation expectation to emerge, requiring higher interest rates to compensate for this perceived risk. It reinforces the vicious circle, and once the interest rates exceed a certain level, the cost of maintaining the parity becomes unbearable for the authorities and they become more likely to abandon the parity. After a short period of intense pressures this turns into a large-scale speculative attack and the self-fulfilling prophecy comes true despite the fact that the fundamentals may still remain fairly sound. Since the attack happens because it is expected to succeed and not because the monetary policy was inconsistent with the peg, this type of crisis is therefore said to be self-fulfilling.

Although second generation crisis models are more relevant for developed countries they are also applicable to developing countries.\textsuperscript{13} For example, in Mexico, after neo-liberal reforms that resulted in a dynamic surge of capital inflows had been successfully implemented (lifting of trade and financial barriers), it was evident that economic growth was failing to materialize. In the view of the seminal economist Rudiger Dornbusch and his coauthor Alejandro Werner (1994), the reason for this was the high price of Mexican goods due to the stable foreign exchange rate, coupled with inflation of roughly 10%. In order to expand exports, the advice was a 30% devaluation of the peso. However, in fear of a massive capital escape, the Mexican political elite decisively rejected devaluation as a possible option, assuring investors that the peso would stay stable. Unfortunately, several exogenously generated shocks in 1994 provoked a sudden change in investor sentiment. As an initial spark, political instability called investors’ attention to a problem which had been pushed into the background for several years – that of the high Mexican current account deficit. As soon as anxious and upset investors lost confidence in the sustainability of the current account deficit they launched massive capital withdrawals. Market was flushed with the supply of pesos and peso-denominated assets. Speculators, aware that foreign exchange reserves were limited, started with aggressive speculative attacks in March. In December, after a rapid depletion of foreign exchange reserves, the Mexican Government decided not to put up interest rates sharply (because of excessive amount of debts in the system) but to devalue the peso by 15% (Krugman 2000). Still, a 15% devalu-

\textsuperscript{13} The main reason is that developing countries face many constraints and features that limit the benefits from currency devaluation, while at the same time, such constraints increase the costs of the devaluation.
ation was only half of what Dornbusch, Werner and other economists had suggested. In expectation of further devaluations, speculators intensified speculative attacks, and finally, on 22 December, after three days of exponential foreign exchange reserves depletion, the peso was allowed to float. Consequently, markets entered a vicious cycle of self-fulfilling prophecy: further selling of the peso and peso-denominated assets in expectation of further sharp devaluations. In December, the peso devaluated 40%. By March 1995, in relation to its January 1994 value, the peso had fallen 82.9% with respect to the dollar.

The main issue with this type of self-fulfilling crisis is that it is very hard to predict. This is due to their elusive nature stemming from the fact that it is hard to find a stable relation between the fundamentals and occurrence of crises. These crises can happen without a major change in economic fundamentals prior to the onset of the crisis. The fact that a crisis may occur even in case of a prudent monetary policy and sound macroeconomic fundamentals is what distinguishes this type of crisis from the first generation crisis models. As, for example, the Asian collapse showed. In the years that preceded the outbreak of the crisis, all five countries (Thailand, Malaysia, the Philippines, South Korea and Indonesia) experienced a dynamic increase in economic growth, savings and investments, justifying the epithet they had among economists, the “Asian miracle”. Nevertheless, in July 1997, seemingly out of the blue, crisis erupted. The political and economic public around the globe was left asking how it was possible that yesterday’s leaders of world economic growth and development had, seemingly suddenly, experienced such heavy financial blow. One of the explanations was the “panic view” of Radelet and Sachs (1998).

The panic view is closely linked to second generation crisis models focused on self-fulfilling speculation. According to this explanation, crisis erupted after lenders had launched a massive withdrawal of funds from the region. Since the fundamentals of the Asian economies were sound in general, and since there were no warning signals of deteriorating fundamentals making the crisis unexpected, the massive escape from the region was attributed to irrational behavior on the part of the lenders. As Arestis and Glickman (2002) argue, this view implies that most of the time investors are rational, that fundamentals determine the value of assets, that investors are capable of accurate pricing of fundamentals and that their decisions do not affect future outcomes. But no explanation is offered as to why irrationality, from time to time, possesses a large number of investors.

Other types of exogenously oriented explanations of the Great Asian Crisis are also interesting. Thus, free-marketers have asserted that the cul-
prit was not the free market but moral hazard, poor supervision of financial institutions and corrupt government and financial systems. Since the majority of capital was allocated via government (lack of free market functioning), most of it was not directed towards most productive projects, but totally the opposite, towards the most speculative and risky ones. Namely, they claim, governmentally coordinated allocation of capital (South Korea) led to price distortions and misallocation and in general was from the very beginning doomed. After nearly two decades of success, all of a sudden, the model of economic development of East Asia was pejoratively named crony capitalism. In their opinion, the economic systems of East Asia were ripe for a general overhaul, i.e. transformation into market led economies. Interestingly, the question of how, in spite of the dominant role of government in credit allocation, those countries succeeded in becoming an economic miracle in the first place, was completely ignored.

5. Assumptions of the EMH: Ab Absurdo

As we mentioned before, we believe that the aim of any theory should be to describe reality as accurately as possible. Consistently we reject Milton Friedman's instrumentalism, the proposition that the validity of theory should not be judged by its assumptions, but only by the accuracy of its predictions (Friedman 1953a). In other words, it claims that the aim of a theory is not to describe reality as accurately as possible, but to predict the future. So, before analyzing theory validity one should, in the first place, examine the applicability of its assumptions since in the absence of any logical error, the assumptions determine the conclusions of the theory. If the assumptions are not applicable to the real world, this means that the conclusions of the theory are not valid either (Davidson 1991, 2002, 2009; Keen 2004; Musgrave 1981). Therefore, crucial assumptions used as the building blocks of the efficient markets model are:

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14 It is interesting to note that the IMF accused the economies of the region of being nonfunctional immediately after the first sign (depreciation of the Thai baht) of the coming crisis appeared. Joseph Stiglitz (2002) concluded that this move of the IMF was comparable to someone panicking in a crowded theatre and shouting fire!

15 For example, then chairman of the Fed Alan Greenspan stated that although governments of the region "relied on markets in most respects, they also used elements of central planning in the form of credit allocation" which in his view "turned out to be their Achilles heel." (Crotty and Lee 2005, p. 11).

16 According to instrumentalist hypothesis is valid if it provides accurate predictions and enables calculating the value of a new equilibrium (Lavoie 2006).
• The future is risky and immutable. Agents form their expectations in accordance with the Rational Expectations Hypothesis (the REH).
• The degree of risk-aversion and expectations of rational agents are exogenous.
• The expectations of rational agents are homogeneous.
• Trades of irrational investors are random and uncorrelated, their trades will cancel each other out so that the price of the security does not deviate from its fundamental value.
• If trades of irrational investors happen to be correlated it will create profit opportunities which would be exploited by rational, sleepless and profit hungry arbitrageurs. The process of arbitrage brings security prices in line with their fundamental value.
• Any security has an always-available perfect or almost perfect substitute, and agents have unrestricted, ready available access to credit.
• Money is neutral, i.e. the real and monetary sector are dichotomized.

5.1. Risky and immutable future

The REH asserts that the future is risky and that it can be measured in terms of probability distribution function. The core assumption of the REH is that on the basis of their knowledge and available information agents are capable of forming a list of all actions at their disposal and all possible future states of the world associated with a list of probabilities (probabilities sum to unity). Future states of the world are supposed to be mutually exclusive (occurrence of one state of the world excludes occurrence of the other states) and the list of future states is complete (there is no future state of the world that the agent may have overlooked). Furthermore, not only are agents capable of assigning numerical probabilities to all possible future states, which puts them in a position to associate subjective probability distribution of expected returns to all actions at their disposal, but also they are sure that these subjective probability distributions are knowledge (truth).

The knowledge of an agent takes the form of subjective probability distribution, whereas underlying external material reality is completely defined by objective (true) probability distribution of a systematic stochastic process (joint probability distribution). More precisely, objective (true) probabilities represent observed frequencies of events (states), i.e.
events that actually take place (Lawson 1988). Time averages of past time series (monthly, quarterly or yearly observations) and statistical averages of cross-sectional market data represent the sample that agents use to estimate the parameters of systematic process that generate events (random economic variable). (Davidson 1982, 1991, 2002). By observing realized values, agents form a frequency distribution, which they use to estimate the probability distribution of an event. Thus, events have probabilities about which agents learn and hence can be known or unknown. On the basis of estimated parameters of stochastic processes and the probability distribution of events, agents form their expectations. Thus, as Muth (1961), the founding father of the REH claims, agents attain rational expectations by estimating the stochastic process that generates the variable under observation. Without any sensible explanation of how, in the first place, rational decision-makers form their expectations, Muth argues “that expectations since they are informed predictions of future events, are essentially the same as the predictions of the relevant economic theory”, that is “expectations of firms (or more generally, the subjective probability distribution of outcomes) tend to be distributed, for the same information set, about the prediction of the theory (or the ‘objective’ probability distribution of outcomes).” (Muth 1961, p. 316). Or, in other words, the hypothesis of coinciding subjective and objective probability distributions Muth (1961) named rational expectations. In plain words, the predictions of individuals and firms are as correct as those of the relevant economic model. Thus, the REH actually demands that the predictions of individuals and firms of, for example, a share price, have a central tendency which is equal to the predicted price of the model (Colander and Guthrie 1980–1981). What seems to be missing here is an explanation of the mechanism that enables coalescence of the predictions of the firms and the relevant economic model on the one hand, and of the predictions of the relevant model and materialized values of a random economic variable in reality, on the other. Gomes (1982) concludes that converging of subjective and objective probabilities is possible only if entrepreneurs somehow know the predictions of the relevant theory and form their expectation by accepting on average predictions of the economic model. If the predictions of

17 It is logical to ask then how agents know all properties of complex stochastic equations where any equation in the system could be affected by exogenously generated shock.

18 When the REH assumes that agents accept predictions of the relevant theory on average it does not mean that all agents accept the predictions of the theory as true. Namely, it is possible that some agents subjectively think that the theoretically predicted value of an observed random variable is underestimated or overestimated. The REH claims that on average subjective predictions deviate randomly around the true
firms and the relevant theory are generated independently, then the existence of a *deus ex machina*, i.e. a mechanism that prevents subjective and objective expectations from being systematically different, must be assumed (Gomes 1982). Furthermore, equalizing the predictions of the relevant theory with materialized values of a random economic variable in reality is based on the assumption that economists know the parameters of the systematic stochastic process.

Systematic stochastic process functions independently of the agent’s will: “‘public prediction’... will have no substantial effect on the operation of the economic system.” (Muth 1961, p. 316). Since the systematic stochastic process is independent of human decisions, that is since it is immutable, rational agents are in a position to learn and discover the process by analyzing time series data (time statistics) and cross sectional data at a fixed point of calendar time (space statistics). (Davidson 1982, 2002). Market participants have a powerful motive to use forecasting rules that proved to work well because this enables them to earn higher profits. With calendar flow of time, people learn from experience and try to improve their forecasting rules aiming at eliminating avoidable errors. Past outcomes continually generate information, which agents use to adjust their predictions and to form current expectations. Rational forecasts do not have to be perfect. It is sufficient to form best possible predictions on the basis of all available information, that is to be correct on average. Therefore, a forecast is rational if the anticipated prices of financial instruments are normally distributed around true value, implying that the gains and losses of each market participant are random. It is not possible to beat the market consistently.

Nevertheless, if prediction of future outcomes on the basis of past and current data is on average correct, the REH must assume that the structure of the observed market will remain the same in the future, i.e. that discontinuity will not take place. Therefore, the REH does not exclude changes, but only supposes that those changes will be slow and predictable. Or as Sargent put it, in situations with “…continual feedback from past outcomes to current expectations... the way the future unfolds from the past tends to be stable, and people adjust their forecasts to conform to this stable pattern.” 19 Davidson (2002) defines a stable and slowly changing stochas-

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19 A situation of feedback information means that by forming expectations, agents try to forecast what will happen tomorrow. Again, tomorrow, on the basis of realized values of random economic variables agents detect their forecast errors and adjust their forecasting rules in order to minimize future mistakes and in that way maximize future benefits. Thus, from one phase to another, the realized values of an observed
tic process that, as the REH assumes, governs external material reality as ergodic.” This ergodic axiom asserts, as a universal truth, that drawing a sample using past time-series and/or current cross-sectional market data is equivalent to drawing a sample from the universe of future market data. In an ergodic environment, the stochastic process generates immutable objective probabilities that govern all past, present and future data. Invoking the ergodic axiom means that the outcome at any future date is merely the statistical shadow of events that have already occurred; the future is written in today’s historical ‘evidence.” (Davidson 2002, p. 50).

Paradoxically, on the one hand, adherents of the EMH claim that the prices of securities follow random walk and hence their future movements cannot be predicted, whereas on the other hand they accept the ergodic axiom. However, this paradox is illusory. Namely, if observations are to be symmetrically distributed around a central tendency, a large number of observations are needed and it is necessary that those observations be mutually independent. As we know, the EMH assumes that future stock prices cannot be predicted by using past and current available information, i.e. the prices of stocks, like a roulette wheel or a pair of dice, have no memory. Each observation is independent of the one preceding it. Future price movements of stocks are independent of price movements one second, minute or a month ago – they follow a random walk. Therefore, the probability distribution of the systematic stochastic process that governs the movements of security prices is normal. (Bernstein 1998). Since the REH incorporated Markowitz’s (1952) theory of portfolio selection that every market, portfolio or individual security, can be defined with expected return (central tendency) and variance (measure of risk), the bell curve becomes a powerful weapon for reducing uncertainty down to risk. Thus, it may be impossible to predict what the exact price of a security will be tomorrow or next week, whether it will increase, decrease or remain steady, but past and current data, in combination with the bell curve, enables analysts to determine an average range of future price movements.20

Normal probability distribution describes processes which are stable, predictable and tamable. Most of the observations gravitate towards mean

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20 For example, if the future resembles the past, and the systematic stochastic process that generates stock prices can be described with a bell curve, analysis of 840 monthly observations of the Standard & Poor Index 500 from 1926 to 1995 indicates a 68% probability that, in any one month, stock prices will change by no less than -5.2% and no more than 6.4%. Also, there is a probability of 45% that prices will decline and 3.5% that prices will decline by more than 10% (Bernstein 1998).
value and as we move away from the average, the probability of an event falls exponentially. At extreme points on the bell curve, the probability of an event is so small that it can be ignored (tail events).\textsuperscript{21} To be precise, normal probability distribution does not assert that tail events do not occur. Outliers are possible, but are so rare and so unusual that they can easily be neglected and there is an upper and lower limit to this deviation. Again, since outliers cannot reach a value which is too far from the mean value, their inclusion in the sample does not change the results of the statistical analysis and as the number of observations increases their significance becomes smaller.\textsuperscript{22}

Consistently, if it is assumed that a stochastic systematic process is described by a normal probability distribution, then it follows that, based on the analysis of the sample, reliable conclusions can be derived regarding the important properties of a population. As the number of observations increases, knowledge about the population rises progressively. Gaussian probability distribution excludes events that could potentially change the arithmetic mean, or more precisely ignores the occurrence of wild jumps and discontinuity. Normal probability distribution describes a stochastic process with properties of mild randomness, where the average and the routine dominate, and where the future unfolds in a predictable manner (Taleb 2008). History creeps forward and unfolds in a stable manner, big surprises which could significantly affect the mean value are excluded. Change of mean value is possible, but at the same time, this change is slow and foreseeable. Therefore “...averages calculated from past observations cannot be persistently different from the time average of future outcomes.” (Davidson 1991, p. 132).

\textbf{5.2. The degree of risk-aversion and expectations of rational agents are exogenous}

This means that the degree of risk-aversion and expectations of agents do not change with economic conditions. In other words, agents do not become more risk-averse and pessimistic when bust comes or vice versa.

\textsuperscript{21} For example, the odds of a 4 sigma event are two times greater than a 4.15 sigma event, and the probability of a 20 sigma event is a trillion times higher than of a 21 sigma event (Taleb 2008).

\textsuperscript{22} Normal probability distribution is usual in nature, for example climate, human weight, height, chest measurements, strength, intelligence etc. In a word, it is not possible for an individual to be infinitely heavier or infinitely taller than the average human being; an upper limit exists. In extreme cases a human being can weigh 300 kilograms or to be 2.2. meters tall but such cases are so rare that even their inclusion in a sample does not change the conclusion of the statistical analysis. So, the average rules the day.
do not become less risk-averse and optimistic in times of financial markets boom.

5.3. **Expectations of rational agents are homogenous**

An assumption directly derived from the ergodic world of financial markets is that the expectations of agents are homogenous. As we mentioned, in the ergodic world of the EMH, economic relations are timeless and immutable, i.e. the fundamental value of securities is predetermined. Also, by making decisions and taking actions agents cannot change the fundamental value of securities.\(^{23}\) Since they are anchored in a predetermined equilibrium which unfolds in a stable manner and since agents possess all the available information and in any one moment know the true equation which determines the prices of securities, their expectations are stable and homogenous. Homogeneity of expectations in the model is derived from the assumption that all participants possess all the available information and that in order to maximize their benefits all use the same equation for the rational evaluation of securities.\(^{24}^{25}\) Consequently, there is no point in looking into what your competitors are doing, because their actions cannot influence the fundamental value of securities.\(^{26}\) The different choices of market participants only reflect their different risk and return preferences.

On the contrary, if human decisions shape the future, then in order to make rational decisions in the REH sense, i.e. to reliably forecast the future, each agent must know the present and future choices of all agents in the system, as well as the ways in which they are adjusting their current expectations in the light of realized market outcomes. Thus, when

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\(^{23}\) Seminal economist Robert Solow defines the ergodic axiom in similar way: “There is a single universally model of the world. It only needs to be applied. You could drop a modern economist from a time machine - a helicopter, maybe, like the one that drops the money- at any time, in any place, along with her personal computer; he or she could set up in business without even bothering to ask what time and which place. ...We are socialized to the belief that there is one true model and that it can be discovered or imposed if only you will make the proper assumptions and impute validity to econometric results that are transparently lacking power.” (Solow 1985, p. 330).

\(^{24}\) In the EMH model, given information is true and always ready to be used. True information is an important input in widely known and universally accepted securities evaluation equitation. Agents do not interpret events, information exists objectively and has uniform meaning for all participants (Glickman 1994).

\(^{25}\) Homogeneity of expectations was previously assumed in Modigliani-Miller irrelevance theory and in Sharpe’s CAPM.

\(^{26}\) Short-term discrepancies between market prices and fundamental value are possible, but in the long run such discrepancies will be eliminated.
the future path of the economy is not pregiven or independent of agents decisions, i.e. when the future path of the economy changes in the light of human decisions and expectations, agent's learning about the observed process endogenously leads to change in their expectations, which through their influence on future outcomes, changes the structure of the process. Processes are not stationary or stochastically stable but change continually. These changes are dynamic, implying that the future motion of the system is not predetermined. Therefore, if they are not anchored in an assumed future path of equilibrium, the expectations of agents cease to be stable (exogenous) which makes investment consumption and the future path of the development of the economic system unstable as well.

Put differently, if the future path of the development of an economic system is non-ergodic and transmutable, even if we assume that a certain agent knows the future equilibrium path of the economic system, his forecasts and expectations may not be in line with the objectively pregiven equilibrium path, if he thinks that other agents in the system have formed expectations under the influence of an incorrectly assumed future equilibrium path. In that case, if agents form “incorrect” expectations and take actions in the light of those expectations, instead of gravitating towards equilibrium, the system will stray even farther away from the pre-given equilibrium path (Gomes 1982). As Steve Keen put it, if we “...allow that investors can disagree, then this economic notion of ‘efficient expectations’ also collapses. If investors disagree about the future prospects of companies, then inevitably the future is not going to turn out as most – or perhaps even any – investors expects. This divergence between expectations and outcomes will set up disequilibrium dynamics in the stock markets... If investors influence each other’s expectations, this is likely to lead to periods when the market is dominated by pessimistic and optimistic sentiment, and there will be cycles in the market as its shifts from one dominant sentiment to the other.” (Keen 2004, p. 235).

5.4. Uncorrelated trades of irrational investors

The EMH assumes that the transactions of irrational investors, i.e. investors who more or less consistently trade on the basis of incorrect information do not jeopardize market efficiency. If there are a large number of irrational traders who mutually exchange securities and if their trades are random, i.e. uncorrelated, they will cancel each other out and prices that reflect fundamentals will remain intact.27

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27 Similarly, in CAPM, unsystematic risks in an efficient portfolio cancel each other out, so that only systemic risk remains, i.e. risk that cannot be diversified. Mutual neutral-
5.5. Correlated trades of irrational investors and stabilizing actions of rational arbitrageurs

In the end, even if the trades of a large number of irrational investors are correlated, the market can still be efficient. The market participants that protect market efficiency are the rational arbitrageurs. To put it in another way, the EMH assumes that destabilizing speculative trades do not take place in financial markets. According to Fama “...in an uncertain world the intrinsic value of a security can never be determined exactly. Thus there is always room for disagreement among market participants concerning just what the intrinsic value of an individual security is, and such disagreement will give rise to discrepancies between actual prices and intrinsic values. In an efficient market, however, the actions of the many competing participants should cause the actual price of a security to wander randomly about its intrinsic value. If the discrepancies between actual prices and intrinsic values are systematic rather than random in nature, then knowledge of this should help intelligent market participants to better predict the path by which actual prices will move towards intrinsic values. When the many intelligent traders attempt to take advantage of this knowledge, however, they will tend to neutralize such systematic behavior in price series. Although uncertainty concerning intrinsic values will remain, actual prices of securities will wander randomly about their intrinsic values.” (Fama 1965, p. 76).

Therefore, if a security becomes overpriced (price not justified by risk-adjusted returns) as consequence of the correlated trades of irrational investors, the opportunity to make superior risk-adjusted profits has been created. An overpriced security is a bad buying opportunity and smart money investors know that. In order to make abnormal profits, rational arbitrageurs will sell or sell short overpriced securities and in order to hedge risks, simultaneously buy other perfect or almost perfect substitutes, i.e. an essentially similar security or portfolio of securities. In other words, arbitrageurs’ elasticity of demand for perfect or almost perfect substitutes with respect to price is perfect. When they sell an overpriced security and simultaneously buy an essentially similar security or portfolio of securities arbitrageurs make extra profits. At the same time, by increasing the supply of overpriced securities arbitrageurs at first narrow and in the end eliminate price disparity between essentially the same financial products. In time, as the actions of rational arbitrageurs subside, price disparities between essentially the same financial products and gained extra profits
decrease. At the moment of complete elimination of price disparities, i.e. when the price of a security fully reflects its fundamental value, profit opportunities for arbitrageurs cease to exist. Consistently, in the case of an undervalued security arbitrageurs will buy such securities and sell or sell short the same or almost the same security or portfolio of securities (Shleifer 2000). Naturally, it is evident that risk-free arbitrage must assume the perfect liquidity of financial markets – securities can always be sold at their intrinsic value. Thus, guided by the invisible hand, rational arbitrageurs compete with each other in order to make profits and in parallel, unintentionally, protect market efficiency. Since substitute securities are always available and arbitrage is quick and effective, prices cannot deviate from their intrinsic value substantially and cannot deviate in the long run. Therefore, arbitrageurs are in position to earn only modest extra profits.

5.6. Any security has an always-available perfect or almost perfect substitute and agents have unrestricted, readily available access to credit

The assumption that any security has an always-available perfect or almost perfect substitute implies that arbitrage is risk-free. Another bold assumption of Modigliani and Miller (1958) that makes arbitrage not only risk-free but also unlimited is that arbitrageurs have unrestricted, readily available access to credit. As Friedman (1953b) points out, an important implication of risk-free and unlimited arbitrage is that market efficiency will be preserved in the long run. Namely, as in time, due to their unsound transactions they accumulate losses, irrational investors would, in concurrence with the principles of Darwinian selection, eventually be eliminated from markets. The gravitational force of equilibrium is dominant and ubiquitous.

5.7. Neutrality of money

The neutrality of money is an assumption that tracks back to 19th-century classical economics. In classical and neoclassical economic thought, the primary function of money is as a medium of exchange. Money facilitates transactions between market participants, by lowering transaction costs because it makes double coincidence of the wants of the buyer and the seller (a condition for barter) unnecessary. Money, therefore, only facilitates a process that would take place anyway – exchange of producible goods and services. Only purchase and consumption of producible goods and services provides utility to humans. Since humans do not consume money, money per se does not contribute to an increase in utility to consumers.
The role of money as a lubricant, that is as a veil that facilitates exchange is the essential ingredient in deriving Say’s Law, which states that producers ask for money because they want to buy another product. In other words, by selling goods and services producers receive income, which they use to buy other merchandise. Since supply creates its own demand, there can never be a deficiency in effective demand for all products that an economy produces at the level of full employment. Money is only a technical vehicle that makes exchange of producible goods and services easier. The real sector, i.e. real production determines the future developmental path of an economy.

As we pointed out above, the ergodic axiom assumes that a market participant can predict the future relatively reliably by using past and current market data. Thus, if an agent wants to buy, for example a computer one year from now, by using past and current data he is able to predict its future price. We may also assume that, on the basis of his current monthly income, he predicts that he will not have enough money to buy it one year hence. Therefore, he decides that over the next 12 months he will spend part of his monthly income on current production and the other, smaller part, he will save in order to raise enough money to buy the computer in one year. Since money is barren, the agent lends his savings to a credit market for interest income in return. This decline in aggregate demand and consummation of current production will not result in deficient aggregate demand, since the producer of computers who, with certainty predicts additional demand for his products generated by our agent, will borrow via the loan or the primary bond market agent’s savings and use these funds to increase his production capacities in order to meet precisely this newly generated demand. After one year, the agent withdraws the principal and interest earned as a reward for postponed consumption and buys the computer. The computer that has been sold increases the sales and income of the producer which effectively enables him to earn profits and to meet his debt obligations (principle and interest cost). Thus increases in savings or a decline in current consumption automatically increases investment spending or as classical and neoclassical economists would put it, not only does supply create its own demand but savings also create their own investment.

On the other hand, if savings are greater than investments, an excess in savings over investments undertaken will cause a decline in interest rates which will further stimulate investment spending and decrease savings. That is another automatic market mechanism that eliminates excess savings. Furthermore, an excess in savings results in a fall in aggregate demand, which further negatively influences prices. A fall in prices stimu-
lates spending and consumption, and simultaneously lowers income thereby decreasing the portion of income that is saved (Galbraith 1975). What Say’s Law actually asserts is that the role of money as a store of value, that is transferring of consumer’s purchasing power into an indefinite future, is superfluous. There is no point in hoarding money since mattress money is barren (it does not earn interest, dividend, rent of profit) and since we do not consume it, it does not contribute to a rise in our utility.

In the economic world of Jean Baptist Say, crises of hyper-production are excluded due to the impossibility of overall deficiency in aggregate demand. However, Say’s Law does not claim that even in the case of flexible prices and wages, involuntarily unemployment is impossible in the short run. It is possible, for example, that there is excess supply in the labor market. At the same time, this also means that there is excess demand in the commodity market. At the aggregate level notional excess demand is equal to zero (Keen 2004). In this case, corrective mechanisms that automatically and inevitably lead to full employment and simultaneous clearing of all markets in the long run will be activated – prices on the commodity market will rise and wages will fall. Since the prices of the producible sector have increased, demand for producible goods and services will fall and excess demand will thus be eliminated. On the other hand, a fall in nominal wages and a rise in commodity prices leads to a fall in real wages, which stimulates labor demand and eliminates excess supply or deficient demand in the labor market. In the long run involuntarily unemployment is possible only in the case of obstruction of free markets, i.e. if prices and wages are rigid. As we can see, the neutrality of money and the assumption of an essentially barter economy imply that markets are an omnipotent and perfectly self-regulatory mechanism, and that government interference in free market flows is harmful.

Irving Fisher’s quantitative theory of money also assumes money neutrality. According to Fisher, nominal output, i.e. total real output of goods and services, multiplied by general price level, is equal to the product of money supply and the income velocity of money. Since money is only a veil that makes market transactions more efficient and the economic system is in equilibrium at full employment, total real output of goods and services is taken as given. In other words, there is a dichotomy between the real and monetary sector – the monetary sector variables do not influence real sector variables. Growth of the total real output is an outcome of changes in production function. Namely, in time, the labor force becomes more productive as a consequence of improvement in their education and skills on the one hand, and provision of workers with continually more technologically advanced equipment. Furthermore, Fisher assumed that
the income velocity of money is determined by the institutional arrangements of an economy, and since changes of financial structure are very slow, the income velocity of money can also be taken as a given. Since Fisher also assumed that the general price level is a passive and not an active variable, he concluded that an increase in the money supply leads to a proportionate increase in the general price level. Changes in money supply do not affect any of the real sector determinants of income velocity of money and total real output.

In his restatement of Fisher’s quantity theory of money, Milton Friedman allowed that money supply could influence employment and total real output only in the short run. In the long run agents become aware of the money illusion and level of output and employment again conform to the gravitational force of the (immutable) natural rate of unemployment.29

In modern corporate finance theory, the assumption of money neutrality (the dichotomy between real and monetary sector variables) can be found in the Modigliani-Miller (1958) theorem of capital structure irrelevance. In their theorem of capital structure irrelevance Modigliani and Miller came to the conclusion that the issue of whether investments are financed by issuing shares or debt is not relevant, what is relevant is the earning power of the undertaken investment. The goal of corporate management is to maximize the market value of a corporation, i.e. to maximize market value of issued securities (shares and bonds) since the higher the price of issued securities, the lower the costs of financing investment activity. Thus, a corporation will undertake any investment activity with positive net present value. The direct costs of a particular investment are not used in calculating the net present value, but the average costs of the corporation as a whole. Namely, as Modigliani and Miller point out, it would be logical to conclude that the aim of shareholders would be to maximize the share of debt in financing business activity since, if it is assumed that the interest rate is fixed and equal for all participants, whatever their capital structure (debt to equity ratio), fewer shareholders will participate in sharing business profits. Consistently, corporations with higher shares of debt in financing business activity would earn a higher rate of return for their shareholders and thus would have a higher market value in relation to less indebted corporations.

However, as Modigliani and Miller argue, this is far from the truth since “...under perfect markets, a dairy farmer cannot in general earn

29 The natural rate of unemployment is determined by the production possibility frontier, degree of power of trade unions, laws on minimal wages, level of education of the work force etc.
more for the milk he produces by skimming some of the butter fat and selling it separately, even though butter fat per unit weight, sells for more than whole milk. The advantage from skimming the milk rather than selling whole milk would be purely illusory; for what would be gained from selling the high-priced butter fat would be lost in selling the low-priced residue of thinned milk.” (Modigliani and Miller 1958, p. 279). Thus, assets of corporations with equal earning power and business risks, never mind the share of debt in financing investment activity, must be equally valuable. Namely, shareholders of a corporation with an increasing share of debt in total liabilities will, due to increased business risks (creditors have a prior claim on the company’s earnings), demand a higher rate of return. In other words, as the portion of debt in capital structure increases (where the cost of debt is fixed), the cost of shares rises (required rate of return by shareholders) in a proportion that provides Weighted Average Cost of Capital to remain unchanged. Also, since Weighted Average Cost of Capital remains unchanged even in the case of an increase in the company’s indebtedness, the market value of the company remains intact too.

In this way, the dichotomy between the monetary and real sector is preserved. The earning potential of a company limited by real factors (technology, productivity and the preferences of consumers) and business risks determine the cost of capital. Any project that has the potential to increase the market value of a company will be undertaken, since, as Modigliani and Miller (1958) assume, financial factors cannot constrain investment activity. Financial markets are a neutral conductor of financial flows from agents with surplus funds towards agents in deficit who are willing and able to conduct potentially profitable investment projects. Furthermore, the financial market enables agents to efficiently diversify risks. Since investment activity depends on the expectations of agents regarding changes in production technology and the tastes of consumers, and since changes in these variables are slow, stable and predictable, investment spending is a stable and predictable variable as well.

The agents who protect market efficiency and preserve the dichotomy between the real and the monetary sector are, as mentioned above, the rational arbitrageurs. Their insatiable hunger for profit protects the law of one price. The emergence of price discrepancies in the share prices of companies with equal earning power signals the creation of an opportunity to consume a free lunch. By consuming the free lunch, arbitrageurs at the same time unintentionally eliminate market imperfections.30

30 One of the building block assumptions of unlimited and risk-free arbitrage is that there are no taxes, transaction and bankruptcy costs or principal-agent problem.
It is important to note that, although not aware of it at that moment, Modigliani and Miller (1958) assumed Fama's efficient markets, because if securities are fairly valued (price fully reflects true value) then the type of security issued in order to finance investment projects (debt or ownership instruments) will not influence the value of the company. More precisely, if the security is valued fairly, then its net present value is equal to zero. Net present value is equal to the present value of the future cash flows minus the costs of purchasing the security, i.e. the price of the security. In efficient markets, the price is exactly equal to the present value of future cash flows (the discount factor is equal to the required rate of return). Thus, if net present value is not equal to zero, automatically activated rational arbitrage lasts until the present value of future cash flows again equals the price of the security (Haugen 1999). Therefore, in the same way as undertaken investments with zero net present value do not change the value of the company, but only support it, the issuance of zero net present value bonds in order to finance investment activity does not affect the value of the company.
II Keynes’ U-turn: Endogenous Expectations, Speculative Financial Markets and Instability of Investment Demand

John Maynard Keynes, one of the most brilliant economic and social thinkers the world has ever seen, was an anti-instrumentalist. In his preface to *The General Theory of Employment Interest and Money* (GT 1936), Keynes emphasized that the realism of assumptions does matter. The main goal of his book “...is to deal with difficult questions of theory. ...For if orthodox economics is at fault, the error is to be found not in the superstructure, which has been erected with great care for logical consistency, but in a lack of clearness and of generality in the premisses.” (Keynes 1936, p. 51). For Keynes it was of the utmost importance to persuade economists “... to re-examine critically certain of their basic assumptions...” (Ibid, p. 51). In the final part of the book he concluded that his “...criticism of the accepted classical theory of economics has consisted not so much in finding logical flaws in its analysis as in pointing out that its tacit assumptions are seldom or never satisfied, with the result that it cannot solve the economic problems of the actual world.” (Ibid, p. 399).
Aware of the fact that assumptions determine the conclusions of any theory, Keynes is certainly the most important economist to oppose Say’s theory of omnipotent, self-regulated markets converging towards full employment equilibrium in the long run. Discontented with the theoretical implications of classical and neoclassical economics he accused “…the classical economic theory of being itself one of these pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future…” (Keynes 1937, p. 215). This leads “… to a wrong interpretation of the principles of behavior which the need for action compels us to adopt, and to an underestimation of the concealed factors of utter doubt, precariousness, hope and fear.” (Ibid, p. 222). The point is that if we accept Keynes’ assumption that the future is not ergodic, but fundamentally uncertain and transmutable, the theoretical implications of real-world economic models change drastically. In case of non-ergodic systems, money ceases to be neutral, which widely opens the doors to depressions as a permanent condition of the capitalistic mode of reproduction, since the market mechanism does not contain automatic stabilizers aiming at restoring equilibrium in the event of exogenously generated shock. Thus, not only it is possible that aggregate demand and supply become balanced below the level of full employment, it is also possible that they may equalize at the level of massive unemployment. The second important conclusion of his economic model is that economic growth crucially depends on volatile investment spending which fluctuates “…for reasons quite distinct (a) from those which determine the propensity of the individual to save out of a given income and (b) from those physical conditions of technical capacity to aid production which have usually been supposed hitherto to be the chief influence governing the marginal efficiency of capital.” (Ibid, p. 218). Therefore, in the case of an abrupt decline in investments, a spiral of contractions will be activated that drags the system down towards the bottom. Consequently, in the name of the survival of the capitalistic system, if economic slumps are to be avoided, state intervention is required. Keynes argued that in order to make the world a more humane place for living, we must first understand it, and therefore it is fundamental that “…the theory we devise in the study of how we behave in the market place should not itself submit to market-place idols.” (Ibid, p. 215).

1. Probability, the Weight of Argument and Fundamental Uncertainty

Keynes was, apart from Franck Knight, the first economist to reject the hypothesis of a calculable and immutable future: ”But these more
recent writers like their predecessors were still dealing with a system in which the amount of the factors employed was given and the other relevant facts were known more or less for certain. This does not mean that they were dealing with a system in which change was ruled out, or even one in which the disappointment of expectation was ruled out. But at any given time facts and expectations were assumed to be given in a definite and calculable form; and risks, of which, tho admitted, not much notice was taken, were supposed to be capable of an exact actuarial computation. The calculus of probability, tho mention of it was kept in the background, was supposed to be capable of reducing uncertainty to the same calculable status as that of certainty itself; ... By ‘uncertain’ knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth-owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know.” (Ibid, pp. 212–214).

For Keynes, probability is the logical relation between any pair of propositions. Knowledge obtained through logical probability relation about proposition (conclusion) \( a \) on the basis of set of premises or propositions \( h \) expresses the degree of rational believe in \( a \) given \( h \). This logical relation is probability or indirect knowledge and relates to cases when conclusion \( a \) is only partially supported with some set of evidential propositions \( h \). Uncertainty arises when we do not possess knowledge about the logical relation between \( h \) and \( a \), i.e. when probability is unknown (O’Donnell 1991; Runde 1991). Moreover, uncertainty exists in cases when we are not able to construct a logical relation on the basis of very small and slight evidential propositions (\( h \)).\(^{31}\)

Keynes introduces his readers to the problem of incomplete and slight information, by including a second important determinant of any decision: the weight of argument. According to Keynes the weight of argument represents our own estimation of the degree of incompleteness of our knowledge (\( h \)) on the basis of which we construct a logical relation, i.e. the probability of proposition \( a \) given \( h \). Thus, with the addition

\(^{31}\) Sufficient premises are premises that meet some minimal standard of completeness. It is rational to believe in conclusions which are logically derived from sufficient premises (Cardim de Carvalho 1988).
of new evidence \( h_i \) to the set of premises \( h \), probability may or may not change (increase or decrease). On the other side, the weight of argument will increase if relevant knowledge increases more than relevant ignorance and vice versa.\(^{32}\) In GT 1936 Keynes renamed the weight of argument as the state of confidence: “The state of long-term expectation, upon which our decisions are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the confidence with which we make this forecast on how highly we rate the likelihood of our best forecast turning out quite wrong. If we expect large changes but are very uncertain as to what precise form these changes will take, then our confidence will be weak. The state of confidence, as they term it, is a matter to which practical men always pay the closest and most anxious attention. But economists have not analyzed it carefully and have been content, as a rule, to discuss it in general terms.” (Keynes 1936, p. 188).

According to O’Donnell (1990), in GT 1936 uncertainty exists in situations in which the agent is capable of discovering a logical relation, but this probability relies on slight and extremely incomplete relevant evidence (the state of long-term expectation depends on the confidence with which we make forecasts). This kind of uncertainty is low weight uncertainty. However, after publishing GT 1936 as Keynes became even more aware of the extent to which rational decision makers possess vague knowledge, he came to the conclusion that uncertainty cannot be reduced. Irreducible uncertainty refers to situations in which, on the basis of extremely incomplete relevant evidence\(^{33}\) even highly intelligent humans are not capable of discerning logical relations, even in the event that such a relation objectively exists (we simply do not know).\(^{34}\) If we combine these two definitions of uncertainty we may conclude that as we move from situations with a low to a high weight of argument, uncertainty decreases (Runde 1991).

2. Non-neutrality of Money, Liquidity Preference and Keynes’ Rejection of Say’s Law

For sure, the most important implication of Keynes’ assumption that the future is incalculable and that human decisions create it, is that money

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32 Runde defined relevant ignorance as our subjective measure “...of the extent of our ignorance about evidence which we know to be relevant to some conclusion.” (Runde 1991, p. 132).

33 At the moment of forming long-term expectations much relevant information still does not exist. It will be born in the near or distant future.

34 This does not refer only to numerical probabilities, but also to logical relations in general.
is not neutral, i.e. that changes and movements in the monetary sector do affect the behavior of the real sector and that money shapes the motives and decisions of market participants. Consequently, due to the peculiarity of money, modern capitalistic economies do not converge towards equilibrium at the level of full employment, but are prone to booms and busts. This is, in our opinion, the chief reason why Keynes in the preface to GT 1936 warns that “...money enters into the economic scheme in an essential and peculiar manner” and that a “monetary economy, we shall find, is essentially one in which changing views about the future are capable of influencing the quantity of employment and not merely its direction.” (Keynes 1936, p. 52). In other words, an uncertain future and the nature of money explain why Say’s Law is not valid in real life.

According to Say’s Law an agent is capable of predicting and thus planning his future consumption. He can reliably foresee future prices, his future current income, and his needs. If he anticipates that the value of some future need will be above the nominal value of his future current income, the agent will increase his savings today. Via the loan market his savings will be further directed towards productive investment projects so that at the aggregate level, demand does not decrease. New investments will positively affect productivity, profitability and economic growth. In a word, we could imagine the agent’s savings not in the form of money but in the form of machines, tools, trucks, airplanes, inventories etc. This implies that, with the rise in savings, aggregate demand remains constant since the savings are used by borrowers to buy producible goods and services. The primary function of money is to facilitate exchange of real goods and services: “Money, it is well known, serves two principal purposes. By acting as a money of account it facilitates exchanges without its being necessary that it should ever itself come into the picture as a substantive object. In this respect it is a convenience which is devoid of significance or real influence.” (Keynes 1937, p. 215). On the other hand, only in “...the second place, it is a store of wealth. So we are told, without a smile on the face. But in the world of the classical economy, what an insane use to which to put it! For it is a recognized characteristic of money as a store of wealth that it is barren; whereas practically every other form of storing wealth yields some interest or profit. Why should anyone outside a lunatic asylum wish to use money as a store of wealth?” (Ibid, pp. 215, 216). Keynes answers that “... partly on reasonable and partly on instinctive grounds, our desire to hold Money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future. ... The possession of actual money lulls our disquietude.” (Ibid, p. 216). In essence, what Keynes wants to say is that in a dynamic and un-
predictable business environment unforeseen events are always possible and may negatively affect our ability to meet current debts or debts that will fall due in the near or distant future. In such situations either current income is lower than expected or costs are higher. Thus, the issue of liquidity is one of the most important issues for any agent. Illiquidity may result in a dramatic decrease in consumer spending or production where the marginal case is bankruptcy. Money is legal tender (the medium of contractual settlement) and possession of money instills a feeling of safety to agents who even in the event of unforeseen changes will be able to meet their contractual obligations. It is convenient to “hold assets in the same standard as that in which future liabilities may fall due.” (Keynes 1936, p. 268).

Therefore, since agents are not capable of predicting reliably even the near future, money is a kind of insurance against an uncertain future. The option to delay making risky and irreversible decisions lulls our fears, stabilizes our expectations and prevents us from slipping into panic. Thus, the decision to save does not automatically result in an increase in investments, since only one portion of the saved income is directed by agents to the loan or the primary bond market and from the loan or the primary bond market further to capital goods. The other portion they keep in the form of money (perfect liquidity) or liquid securities (quasi money). A portion of saved income allocated to money and already issued liquid securities traded in the secondary market reveals the liquidity preference of the agent. The central point here is that savings thus allocated do not contribute to an increase in investments and therefore an increase in employment and output (Davidson 2009). More precisely, money is not only legal tender used to meet current and future contractual obligations but is also a vehicle that enables agents to delay consumption of goods they are entitled to into an indefinite future. Furthermore, as we shall see infra, thus created excess savings might not cause a decline in interest rates and a following boost in investments and fall in prices of goods and services may, contrary to Say’s Law, lead to a vicious circle of debt deflation.

A portion of the agent’s general purchasing power, not used today for investment or consumption, can be transferred into an indefinite future via several different kinds of vehicle or time machines as Davidson (2009) calls them. If something is to be a desirable time machine it must exist a considerable length of time without deterioration, have low carrying costs and highly liquid and orderly secondary markets (low transaction costs). Keynes points out “...three attributes which different types of asset possess in different degrees:

35 Ruled out by the EMH.
“(i) Some assets produce a yield or output $q$...

(ii) Most assets, except money, suffer some wastage or involve some cost through the mere passage of time... i.e. they involve a carrying cost $c$...

(iii) Finally, the power of disposal over an asset during a period may offer a potential convenience or security... The amount (measured in terms of itself) which they are willing to pay for the potential convenience or security given by this power of disposal (exclusive of yield or carrying cost attaching to the asset), we shall call its liquidity-premium $l$.” (Ibid, p. 258).

In other words, expected return of any durable asset is equal to $q - c + l$. Capital goods have high $q$ and $c$ and negligible $l$ which makes them an inconvenient saving vehicle. Depending on risk and liquidity, securities have higher or lower $q$ (due to the possibility of capital loss), negligible $c$ and higher or lower $l$. On the other hand, since money does not bear the risk of capital losses, it does not earn $q$, has zero carrying costs and maximal liquidity premium: “But it is an essential difference between money and all (or most) other assets that in the case of money its liquidity-premium much exceeds its carrying cost, whereas in the case of other assets their carrying cost much exceeds their liquidity-premium.” (Ibid, p. 259). Liquidity premium is the price (implicit yield) agents are willing to pay for possessing the ultimate means of payment, i.e. for insurance against undesirable events.

There are two properties of money that make it peculiar, i.e. that give the monetary sector power to affect the behavior of real sector. First, it “has, both in the long and in the short period, a zero, or at any rate a very small, elasticity of production, so far as the power of private enterprise is concerned”. Second, it “has an elasticity of substitution equal, or nearly equal, to zero which means that as the exchange value of money rises there is no tendency to substitute some other factor for it.” (Ibid, pp. 262, 263). Thus, in parallel with the increase in the liquidity preference of market participants, the value of money and other liquid securities increases in relation to producible goods and services. Because the elasticity of production of money is equal or is nearly equal to zero, the increase in the portion of savings allocated to money and other liquid securities will not result in an increase in employment. Also since money and other liquid securities are, in relation to other durables, superior vehicles for storing value, they have elasticity of substitution equal or nearly equal to zero. This means that increase in demand for superior durable time machines will lead to an increase in the price of money and other liquid securities and since their elasticity of substitution with other durable producible goods and services is equal or nearly equal to zero, employment will not
rise. Consistently, in times which agents perceive as highly uncertain, their liquidity preference rises sharply which means that an increasing portion of savings is allocated to money and other liquid securities meaning that savings augmented in this way will not create new investments.

Meanwhile, in order to preserve money neutrality and the validity of Say’s Law, neoclassical economists assumed that capital goods have deep and orderly resale markets which makes the decision to buy illiquid and risky capital assets risk-free and reversible at low cost. Therefore, it is advantageous for agents to invest in capital assets that earns $q$ and can be, at the same time, readily resold at stable and known prices in the event of the shortage of legal tender. (Crotty 1994). In this way, not only does the notion of liquidity preference become redundant, but also, even if it is assumed that the future is fundamentally uncertain, this would not affect the conclusions of the orthodox economic model, since mistakes made in the process of investment spending are easily reversible and costless.

Therefore, money and securities and not only producible goods and services increase the utility of agents, because they instill in them a feeling of security emanating from the option of being liquid in case of adverse events. The decision to save does not simultaneously imply a decision to consume some day in the future or ever (Davidson 2009). Savings are not a simple exchange of present for higher future consumption. The decision to save in the form of money or other liquid assets implies the transfer of general purchasing power into an indefinite future without clearly defined choice. In this way, savings cause a decline in current demand whereas simultaneously there is no rise in investments, which enables producers to meet “correctly” anticipated increases in future demand. A direct consequence of hoarding is decline in effective demand which directly strikes at the validity of Say’s Law. Thus, there is a possibility of market equilibrium at the level below full employment (involuntary unemployment) even in the case of perfectly flexible prices and wages.

Especially, in periods perceived as highly uncertain (for example after a stock exchange crash), agents will hoard, which may lead to persistently weak aggregate demand and the impossibility of producers to sell all the goods they are capable of producing at a profit. Consequently, if a spiral of declining employment and production is set in motion, the activation of an expansive monetary and fiscal policy will be required if depression is to be avoided.

In order to detect the causes of the persistent threat of involuntary unemployment and deep depressions it is, in the first place, necessary to fully understand the inner nature of aggregate demand. In that sense Keynes attacked classical and neoclassical economists and warned that “...
the theory of effective demand, that is the demand for output as a whole”, has been “...entirely neglected for more than a hundred years.” (Keynes 1937, p. 219).

In Keynes’ theory, aggregate demand is equal to the sum of household consumption and investment consumption (government spending and exports are ignored). Household consumption is stable and depends on aggregate income, that is the sum of investment and consumption demand. It is not to say that consumption demand is unchangeable, but only that changes in consumption are slow and predictable and that on balance the “...main background of subjective and social incentives changes slowly, whilst the short-period influence of changes in the rate of interest and the other objective factors is often of secondary importance.” (Keynes 1936, p. 155). Therefore, the theory “...can be summed up by saying that, given the psychology of the public, the level of output and employment as a whole depends on the amount of investment. I put it in this way, not because this is the only factor on which aggregate output depends, but because it is usual in a complex system to regard as the causa causans that factor which is most prone to sudden and wide fluctuation. More comprehensively, aggregate output depends on the propensity to hoard, on the policy of the monetary authority as it affects the quantity of money, on the state of confidence concerning the prospective yield of capital-assets, on the propensity to spend and on the social factors which influence the level of the money-wage. But of these several factors it is those which determine the rate of investment which are most unreliable, since it is they which are influenced by our views of the future about which we know so little. This that I offer is, therefore, a theory of why output and employment are so liable to fluctuation.” (Keynes 1937, p. 221). Frequent changes in investment demand cause changes in income and thus in consumption demand. The two closely linked key factors that cause instability of investments and therefore of output and employment are the long term expectations of yield on capital assets and propensity to hoard. Consistently, the first step in our analysis of volatile investment demand is to define how entrepreneurs and ignorant agents in financial markets form expectations and how this reflects on market stability and rate of investment.

3. The Nonergodic Economic System and the Short and Long-Term Expectations of Entrepreneurs

Depending on whether the predictions of entrepreneurs apply to the near or distant future, Keynes made a distinction between decision-making in an environment of low and high uncertainty. Thus, decisions of entre-
preneurs grounded in short term expectations are characterized by lower uncertainty in relation to those made on the basis of long term expectations, since in the former case the weight of argument is higher.36 Namely, actions grounded in short term expectations determine the pricing and output decisions of firms. More precisely, the short term expectations of entrepreneurs are focused on “the amount of the proceeds which the entrepreneurs expect to receive from the corresponding output.” (Keynes 1936, p. 76). Expectations of production costs and sales revenues are formed in a situation of fixed production capacities, and forecasting goes into the future up to the point when production of the goods is finished. A rational entrepreneur will certainly expect more than one outcome for each level of production (quantity of total revenue). Even in this case, Keynes allows that in the short run the entrepreneur faces an indefinite probability distribution, i.e. the possibility that the entrepreneur is not capable of attaching a definite probability to some outcome or outcomes.37 However, in the short run, the business environment is stable, the dynamics of change are slow and there is not enough time for technological and financial innovations to ramify and thus change significantly the decision-making environment. In the short run, entrepreneurs make repetitive, routine decisions, they are well informed and are able to gradually and continually confirm or revise their decisions in the light of realized results. In a word, decisions made on the basis of short term expectations receive feedback information regarding their justification quickly, and most importantly they can be revised frequently at minor cost.

On the other hand, decisions based on long-term expectations are not repetitive and routine in nature, but are unique one-off events. These are investment decisions: “Actually, however, we have, as a rule, only the vaguest idea of any but the most direct consequences of our acts. ... Now of all human activities which are affected by this remoter preoccupation, it happens that one of the most important is economic in character, namely Wealth. The whole object of the accumulation of Wealth is to produce results, or potential results, at a comparatively distant, and sometimes at an indefinitely distant, date. Thus the fact that our knowledge of the future is fluctuating, vague and uncertain, renders Wealth a peculiarly unsuitable subject for the methods of the classical economic theory.” (Keynes 1937, p. 213).

In chapter 11 of the GT 1936 Keynes analyzes the investment decisions of entrepreneurs. In order to reach an investment decision entrepreneurs grounded in short term expectations are characterized by lower uncertainty in relation to those made on the basis of long term expectations, since in the former case the weight of argument is higher.36 Namely, actions grounded in short term expectations determine the pricing and output decisions of firms. More precisely, the short term expectations of entrepreneurs are focused on “the amount of the proceeds which the entrepreneurs expect to receive from the corresponding output.” (Keynes 1936, p. 76). Expectations of production costs and sales revenues are formed in a situation of fixed production capacities, and forecasting goes into the future up to the point when production of the goods is finished. A rational entrepreneur will certainly expect more than one outcome for each level of production (quantity of total revenue). Even in this case, Keynes allows that in the short run the entrepreneur faces an indefinite probability distribution, i.e. the possibility that the entrepreneur is not capable of attaching a definite probability to some outcome or outcomes.37 However, in the short run, the business environment is stable, the dynamics of change are slow and there is not enough time for technological and financial innovations to ramify and thus change significantly the decision-making environment. In the short run, entrepreneurs make repetitive, routine decisions, they are well informed and are able to gradually and continually confirm or revise their decisions in the light of realized results. In a word, decisions made on the basis of short term expectations receive feedback information regarding their justification quickly, and most importantly they can be revised frequently at minor cost.

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36 In that sense it can be said that a certain situation bears a lower uncertainty in relation to some other (Runde 1991).
37 Not only in the form of numerical probabilities but in a general sense that logical relation is not known (Gerrard 1994).
neurs compare the marginal efficiency of capital with the current interest rate, which is assumed to be fixed and thus not changeable even in the distant future. The marginal efficiency of capital is equal “...to that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price.” (Keynes 1936, p. 177). Supply price of capital is “...the price which would just induce a manufacturer newly to produce an additional unit of such assets, i.e. what is sometimes called its replacement cost.” Investments will increase up to the point where the series of prospective returns discounted by the current interest rate to present value equals the supply price of investment. It appears that here Keynes inclines towards equilibrium oriented neoclassical investment theory: “If there is an increased investment in any given type of capital during any period of time, the marginal efficiency of that type of capital will diminish as the investment in it is increased, partly because the prospective yield will fall as the supply of that type of capital is increased, and partly because, as a rule, pressure on the facilities for producing that type of capital will cause its supply price to increase; the second of these factors being usually the more important in producing equilibrium in the short run, but the longer the period in view the more does the first factor take its place.” (Ibid, p. 178). Nevertheless, as we see in the following chapter 12, Keynes gives up the idea of the dominance of entrepreneurs decisions in determining the pace of investments.

As Shackle (1980) pointed out, investment decisions are crucial decisions, i.e. decisions which bring about permanent change in the business environment so that the environment in which previous decisions have been made is changed for good. The principle of the crucial decision is closely linked to Schumpeter’s theory of creative destruction, according to which, entrepreneurs generate innovations which, in a creative manner, destroy existent and at the same time create new economic environments: “Capitalism, then, is by nature a form or method of economic change and not only never is but never can be stationary. ...The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers’ goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates.” (Schumpeter 1952, pp. 82, 83). This continual flow of in-

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38 In chapters 11 and 12 of GT 1936, Keynes assumed that interest rates are fixed.
39 Supply price covers costs of production and earns normal profits (Keynes 1936).
40 Environment is not stochastically stationary and there is no controlled environment, which enables infinite repetitiveness of, for example, experiments in identical conditions.
II Keynes’ U-turn

Industrial innovations “...incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. ...In other words, the problem that is usually being visualized is how capitalism administers existing structures, whereas the relevant problem is how it creates and destroys them. As long as this is not recognized, the investigator does a meaningless job.” (Ibid, pp. 83, 84).

The future is nonergodic and human decisions create it. The future does not wait to be discovered, it is open and waits to be connected with the decisions made in the past. Because decisions are made on the basis of human expectations, what we imagined, must in some portion, determine the future. Since humans are mutually different and form in principle heterogeneous expectations, the future never turns out to be like any agent individually imagined. Since people continually face phenomena they could not even imagine, the potential for surprise is omnipresent and confidence in our long-term predictions is, at any given moment, fragile.

An additional aggravating circumstance, when comes to the uncertainty of decisions based on long term expectations is the fact that the revision or withdrawal of an investment decision is very expensive. Not only are the odds that an agent will more or less accurately anticipate future outcomes slim, due to continual and dynamic changes in the business environment,, but the price to be paid for possible mistakes is also very high. Investment in illiquid capital goods is “...permanent and indissoluble, like marriage...” (Keynes 1936, p. 199) – it is difficult and very expensive to liquidate a position in illiquid real capital. On the other hand, this kind of inflexibility is not present when decisions based on short term expectations are made, since, if necessary, the need for instant reaction is obvious, and implementation of a corrective decision is considerably cheaper than would be the case a corrective investment decision is required.


Capital goods are expensive and illiquid, so investments in such assets are inherently risky. In addition, external owners of companies usually lack the necessary training to manage directly how such assets will be put to work in the process of production. As a result, modern man

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41 In contrast to the neoclassical assumption of liquid and orderly secondary markets for capital goods.
has created financial markets, efficient institutional vehicles that enable separation between the ownership and management of capital assets. Financial markets make investments in capital assets, which are fixed for a community, appear to be liquid for individual agents.\(^{42}\) Thus, in orderly and deep markets, individual agents exchange money, which has perfect liquidity, for financial assets (less than perfect liquidity) in exchange for a certain amount of return. Individual agents are willing to accept this swap because they believe that, even in the case of adverse events, they will be able, smoothly and without any problems, to liquidate their position on the financial markets in the short run for money, the ultimate means of payment. Consequently, it is advantageous for all agents to distribute risk over the profits that physical capital will generate in the future by distributing ownership of securities among themselves. If this distribution of risk had not been put in place, investment in capital goods would have been at a far lower level. However, the distribution of risk is only one good edge of the financial market sword. The other edge, the tricky one, is that exit from financial markets is only seemingly always open because, if investors tried simultaneously to leave it, the market would collapse (Davidson 2002).

Therefore, ironically, the deciding vote in determining the future pace of investments does not go to entrepreneurs, as agents with the long-term forecasting horizon capable of managing capital assets. What proves decisive are the future cash flow expectations of individual agents and the managers of big financial institutions, agents who have a short-term forecasting horizon precisely due to the fact that they do not know how to manage the capital goods they own. “But the daily revaluations of the Stock Exchange, though they are primarily made to facilitate transfers of old investments between one individual and another, inevitably exert a decisive influence on the rate of current investment. For there is no sense in building up a new enterprise at a cost greater than that at which a similar existing enterprise can be purchased; whilst there is an inducement to spend on a new project what may seem an extravagant sum, if it can be floated off on the Stock Exchange at an immediate profit. Thus certain classes of investment are governed by the average expectation of those who deal on the Stock Exchange as revealed in the price of shares, rather than by the genuine expectations of the professional entrepreneur.” (Keynes 1936, pp. 190, 191).\(^{43}\) Thus if the ratio between the market value of shares and the

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\(^{42}\) It appears being liquid because “...there is no such thing as liquidity of investment for the community as a whole.” (Keynes 1936, p. 194).

\(^{43}\) In chapter 22 Keynes once more points out the precedence of the opinion of ignorant agents over the opinion of competent managers in directing the pace of investment:
supply price of an investment good is below one, that is if the market is depressed and private investors are pessimistic (bears), the advantageous strategy for managers is to take over an existing company through mergers and acquisitions. Conversely, if the market gains momentum, (ratio of market value of shares and supply price of investment good is above one), that is if agents are optimistic (bulls), it is advantageous for managers to order production of new capital goods. If share prices are high, managers will not miss the opportunity to issue shares and obtain easily significant amounts of money, quickly and cheaply.44

“I have shown above (Chapter 12) that although the private (financial) investor is seldom himself directly responsible for new investment, nevertheless the entrepreneurs, who are directly responsible, will find it financially advantageous, and often unavoidable to fall in with the ideas of the market, even though they themselves are better instructed.” (Keynes 1936, p. 344).

44 The seminal economist James Tobin later used Keynes’ dual price theory in developing his $q$ theory of investment. Tobin's $q$ ratio equals the ratio of market value of company assets (market value of equity + book value of the company's debts) and the replacement cost of the installed (tangible) capital. If $q>1$, this means that the company's market value (equal to the product of share price and the total number of issued shares) is greater than the replacement cost. This case is possible because shareholders can evaluate assets that are not tangible, such as know-how, the retail distribution network, reputation and tradition of the corporation and so on. Also, a $q$ ratio above one may signal that the company's shares are overvalued. In any case, when $q>1$, for the company is benefiting to issue shares and invest in new production capacity, because, in this way, the market value of firm increases. However, due to diminishing returns, growth in the volume of investment is limited. The more a company increases its capacity, the more the marginal productivity of capital declines, and consequently the stock price also declines (in other words, Tobin assumes that prices of securities tend to intrinsic value). The balance will be established when $q$ is again equal to one. The opposite is the case when $q<1$. In this case, replacement costs are above the company's market value, and the company benefits from selling the equipment at a price that corresponds to replacement cost. Consequently, investment is negative. However, the more the capacities of the company shrink, the more the marginal productivity of capital increases, and consequently the market value of the company increases. Also, a $q$ ratio below one may signal that the company's shares are undervalued. The company will stop selling capital equipment when $q$ equals at one. The Tobin hypothesis is that in the long run, the market tends to balance and that the combined market value of listed companies should be approximately equal to the combined replacement cost of the installed capital (Tobin 1969; Tobin and Brainard 1977). In contrast to Keynes’ "casino" view, Tobin sees financial markets as stable, well organized and efficient (Crotty 1990). However in the mid 1980s, during takeover mania in the U.S., Tobin gave up the efficient and embraced the casino view: “I confess to an uneasy Physiocratic suspicion…that we are throwing more and more of our resources…into financial activities remote from the production of goods and services, into activities that generate high private rewards disproportionate to their social productivity. I suspect that the immense power of the computer is being harnessed to this ‘paper economy,’ not to do the same transactions more economically but to balloon the quantity and variety of financial exchanges. For this reason
Then, Keynes asks how incompetent agents in financial markets, faced with an uncertain future, where past experience and statistical analysis of past data are not a reliable guide to the future, make decisions “...in a manner which saves our faces as rational economic men?” (Keynes 1937, p. 214). He argued that humans as social, in contrast to neoclassical lonely and isolated beings, in an environment of fundamental uncertainty, make decisions on the basis of custom, habit, tradition, instinct and other socially based conventions. Preferences are not exogenous and independently established. Our preferences can be changed under social influence meaning that the choice of other agents matters. In a dynamic financial markets environment, conventionally “...We assume that the present is a much more serviceable guide to the future than a candid examination of the past would show to be hitherto. ...We assume that the existing state of opinion as expressed in prices and the character of existing output is based on a correct summing up of future prospects, so that we can accept it as such unless and until something new and relevant comes into picture. ...Knowing that our individual judgment is worthless, we endeavor to fall back on the judgment of the rest of the world which is perhaps better informed.” (Ibid, p. 214).

The first and second convention tell us that, because agents do not have any or enough information to make reliable forecasts, it is rational, although not optimal, to extrapolate the present situation into an indefinite future: “It would be foolish, in forming our expectations, to attach great weight to matters which are very uncertain. It is reasonable, therefore, to be guided to a considerable degree by the facts about which we feel somewhat confident, even though they may be less decisively relevant to the issue than other facts about which our knowledge is vague and scanty. For this reason the facts of the existing situation enter, in a sense disproportionately, into the formation of our long-term expectations; our usual practice being to take the existing situation and to project it into the future, modified only to the extent that we have more or less definite reasons for expecting a change.” (Keynes 1936, p. 188).

The third convention reveals a high degree of inter-subjectivity among market participants’ expectations, i.e. that agents, aware of uncertainty and their ignorance, rely on the average opinion of the market which they

perhaps, high technology has so far yielded disappointing results in economy-wide productivity. I fear that, as Keynes saw even in his day, the advantages of the liquidity and negotiability of financial instruments come at the cost of facilitating n°-degree speculation which is short-sighted and inefficient....I suspect that Keynes was right to suggest that we should provide greater deterrents to transient holdings of financial instruments and larger rewards for long-term investors.” (Tobin 1984, pp. 14, 15).
assume is better informed. Since, agents know that there is no predestined future, they also know that they create the future by forming expectations and taking actions in the light of these expectations. In other words, financial markets are momentum driven and led by a self-fulfilling process. Namely, if an agent thinks that the average agent thinks that the market will rise, he will, in anticipation of increase in securities prices, buy securities at that very moment when they are cheap in order to make profits. If other agents also form the same or similar expectations, they will all, in attempt to be one step ahead, try to buy securities on a simultaneous basis, thereby pushing prices up. Financial markets are reflexive and it is crucially important to try to figure out what your competitors think because, in the end, expectations and expectations-based actions create the future course of market developments. The reflexivity of financial markets makes it rational for the individual agent to believe in the validity of conventional decision-making.

In a moment of brilliance, Keynes compared the process of decision-making in financial markets with beauty contests: “...professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one’s judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest.” (Ibid, p. 195).45

In this game, aiming at outwitting your fellow agent, owners do not need and are not motivated to form long-term expectations since, they believe, they can always, depending on their liquidity preference, cheaply enter or exit the market in the short run. In such a way “...in the absence of security markets, there is no object in frequently attempting to revalue an investment to which we are committed. But the Stock Exchange revalues many investments every day and the revaluations give a frequent opportunity to the individual (though not to the community as a whole) to revise

45 Andrew Crockett, former general manager of Bank for International Settlements and former chairman of the Financial Stability Forum, in a speech given at Fourth HKMA Distinguished Lecture echoed Keynes: “Fundamental value, the basis on which decisions to buy and sell, to lend and borrow are made, is extremely hard to assess. We can of course decompose value into expected stream of returns, a discount rate and a risk premium. But this does not take us very far. To an important extent value, like beauty, is in the eyes of the beholder.” (Crockett 2001, p. 5).
his commitments.” (Ibid, p. 190). Since ignorant agents believe that the opportunity to leave the market is always open, it is, from their perspective, more rational for them to form expectations in the environment of minimized uncertainty. Therefore, rational agent not married with capital goods would, in the first place, be interested in maximizing capital gains: “For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a value of 30, if you also believe that the market will value it at 20 three months hence.” (Ibid, p. 194). In other words, “...actual, private object of the most skilled investment to-day is ‘to beat the gun,’ as the Americans so well express it, to outwit the crowd, and to pass the bad, or depreciating, half-crown to the other fellow.” (Ibid, p. 194).

Keynes warns that we should not believe that this game of anticipating “the basis of conventional valuation a few months hence, rather than the prospective yield of an investment over a long term of years” (Ibid, p. 194), has any long-term validity. It is “...a game of Snap, of Old Maid, of Musical Chairs — a pastime in which he is victor who says Snap neither too soon nor too late, who passes the Old Maid to his neighbor before the game is over, who secures a chair for himself when the music stops. These games can be played with zest and enjoyment, though all the players know that it is the Old Maid which is circulating, or that when the music stops some of the players will find themselves unseated.” (Ibid, p. 195).46 This is, of course, Keynes’ answer to the question of why financial market players prone to highly speculative activities.

In the end, this is “...the inevitable result of investment markets organized with a view to so-called ‘liquidity’. Of the maxims of orthodox finance none, surely, is more anti-social than the fetish of liquidity, the doctrine that it is a positive virtue on the part of investment institutions to concentrate their resources upon the holding of ‘liquid’ securities. It forgets that there is no such thing as liquidity of investment for the community as a whole.” (Ibid, p. 194). If on the other hand “...capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall

46 Disregarding the fact that, by late 2005, problems in the subprime mortgage market were already visible, big investment banks continued massively to buy subprime mortgage loans in order to proliferate very profitable risky exotic debt instruments (Collateralized Debt Obligations). In order to explain this hazardous practice by big investment banks, Chuck Prince, CEO of Citigroup said in July 2007: ”When the music stops, in terms of liquidity, things will get complicated. But as long as the music is playing, you’ve got to get up and dance.” (Gapper 2007).

47 In Keynes’ theory, speculation is “the activity of forecasting the psychology of the market” and enterprise “the activity of forecasting the prospective yield of assets over their whole life...” (Keynes 1936, p. 197).
Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism – which is not surprising, if I am right in thinking that the best brains of Wall Street have been in fact directed towards a different object.” (Ibid, p. 198).

5. Flimsy Expectations, Propensity to Hoard and Instability of Investments

As we said, private ignorant investors are not trained to command capital goods. Also, since they know that the future is nonergodic and transmutable, the confidence of ignorant investors in their forecasts is very low. The fundamental logic of the weight of argument or alternatively the state of confidence is that the more an agent knows about observed phenomena, the less likely they are to change their opinion in the light of the new information. Conversely, the greater an agent’s ignorance regarding observed phenomena, the more likely they are to change their opinion in light of the new information (Runde 1991). The more insecure agents are and the more aware they are of their ignorance, the more new information is likely to modify their opinion excessively. Consistently, because in the environment of an incalculable future we “simply do not know” our expectations and consequently financial asset prices are “based on so flimsy a foundation” (Keynes 1937, p. 214) and hence are “subject to sudden and violent changes.” (Ibid, pp. 214, 215). Due to the fact that financial markets are dominated by ignorant private investors with the short-term time horizons “…Day-to-day fluctuations in the profits of existing investments, which are obviously of an ephemeral and non-significant character, tend to have an altogether excessive, and even an absurd, influence on the market. …A conventional valuation which is established as the outcome of the mass psychology of a large number of ignorant individuals is liable to change violently as the result of a sudden fluctuation of opinion due to factors which do not really make much difference to the prospective yield; since there will be no strong roots of conviction to hold it steady.” (Keynes 1936, p. 193).48

48 Nevertheless, although expectations are liable to abrupt changes, Keynes never claimed that doing business in an environment of high uncertainty is always based on volatile and wildly fluctuating expectations. Expectations are stable during calm transitory periods.
Consistently, because expectations, and the demand (market) price of capital are “subject to sudden and violent changes” it implies that investment consumption is equally subject to sudden and unexpected disruptions. However, unstable and volatile expectations of future yield are not the only cause of the instability of investment demand. A factor that adds to investment instability is the instability of interest rates, i.e. the liquidity premium.

Keynes asserts that the interest rate is “...the premium which we require to make us part with money” and “... the measure of the degree of our disquietude.” (Keynes 1937, p. 216). Therefore “...when, as happens in a crisis, liquidity-preferences are sharply raised, this shows itself not so much in increased hoards — for there is little, if any, more cash which is hoardable than there was before — as in a sharp rise in the rate of interest, i.e. securities fall in price until those, who would now like to get liquid if they could do so at the previous price, are persuaded to give up the idea as being no longer practicable on reasonable terms.” (Ibid, p. 217). A problem emerges when the market value of capital declines below the supply price of capital. Since the interest rate is the price that has to be paid in order to induce agents not to hoard, i.e. since it is a measure of our confidence in our most probable forecasts of an uncertain future, the interest rate is also an unstable economic variable. Consequently, “...it is not surprising that the volume of investment, thus determined, should fluctuate widely from time to time. For it depends on two sets of judgments about the future, neither of which rests on an adequate or secure foundation — on the propensity to hoard and on opinions of the future yield of capital-assets.” (Ibid, p. 218). Not less important, both factors which essentially determine the future pace of investments have the power to destabilize each other. In that way, when agents are pessimistic about future yields, propensity to hoard increases.

In the end, Keynes gave up the marginal efficiency of capital as a key factor that directs investment spending. Keynes concludes that the marginal efficiency of capital is indeterminate since it depends on the volatile market value of capital assets. Consequently, there will be a different marginal efficiency of capital for every different level of market asset prices.

6. Speculative Bubbles, Busts and Business Cycles

In calm periods of relative price stability there is seeming unanimity in expectations of market participants that ruling prices are in harmony with available information. Nevertheless, this conditional stability does not reflect unanimous, uniform opinion, but is the product of balance between divergent expectations of pessimists (bears) and optimists.
II Keynes' U-turn

(bulls): “It is interesting that the stability of the system and its sensitivity...should be so dependent on the existence of a variety of opinion about what is uncertain. Best of all that we should know the future. But if not, then, if we are to control the activity of the economic system... it is important that opinions should differ. (Keynes 1936, pp. 209, 210). The owners of a security continuously wonder whether to keep it or to sell it. At a certain point, where bulls become dominant or vice versa, a tendency of price changes emerges. As long as agents are capable of reliably predicting these changes by modification of extrapolation, ruling conventions are valid and expectations are more or less anchored. If stability is to prevail in the future it is necessary that among new participants bears and bulls are distributed equally and that, with the calendar flow of time there is balance between those market participants who transform from bulls to bears and vice versa (Davidson 2002).49

Instability emerges at the point when seeming unanimity becomes real unanimity. Accruing unanimity results in increasing deviations of extrapolated prices from materialized ones. In the case of consensus, the tendency of price changes signals the emergence of a general trend (Runde 1991). As Keynes writes, these are abnormal and highly uncertain times “...when the hypothesis of an indefinite continuance of the existing state of affairs is less plausible than usual even though there are no express grounds to anticipate a definite change...” (Keynes 1936, p. 193). Under these circumstances “...the market will be subject to waves of optimistic and pessimistic sentiment, which are unreasoning and yet in a sense legitimate where no solid basis exists for a reasonable calculation.” (Ibid, p. 193). Collapse of the convention means that “the practice of calmness and immobility, of certainty and security, suddenly breaks down. New fears and hopes will, without warning, take charge of human conduct. The forces of disillusion may suddenly impose a new conventional basis of valuation. All these pretty, polite techniques, made for a well-panelled Board Room and a nicely regulated market, are liable to collapse. At all times the vague panic fears and equally vague and unreasoned hopes are not really lulled, and lie but a little way below the surface.” (Keynes 1937, p. 215).

In case of increasing prices, speculators will be stimulated to buy at or slightly above the ruling prices and to sell at the peak of the market. Since agents assume other agents also expect a further rise in prices and vice versa, expectations are self-fulfilling (inter-subjectivity of expectations). In expectation of rising prices, agents buy on a massive scale and thus make the expected price increases come true. The formerly anticipated and now actual increase in prices lends support to bullish expectations which additionally contribute to a further rise of the market. Thus, as we can see,

49 In other words, there is balance between “converts” among bulls and bears.
expectations, the state of confidence and risk-preference are not exogenous, but endogenous and pro-cyclical. They change with the economic conditions. During a boom, agents become more optimistic and confident as well as less risk-averse.

Therefore, when modified extrapolation results in increasingly erroneous forecasts (a dynamic changes in prices), the convention that future will look like the present collapses and the system enters a booming phase, i.e. discontinuity where, as time passes, the direct relation between price movements and the assumed fundamental (intrinsic) value of securities becomes weaker and weaker. In this way, when the consensus opinion that prices will continue to rise prevails, the market becomes flooded and dominated by speculators chasing short-term capital gains by taking advantage of augmentation in divergence between the market prices of securities and their assume-to-exist intrinsic value. In a boom, liquidity rises endogenously as well – virtually all market participants are able to sell securities at a higher price.

What we can safely conclude is that Keynes explicitly rejects normal probability distribution as a convenient reliable tool for predicting the future, since nonergodic systems are characterized not by mild but by wild randomness. Contrary to normal probability distribution, the sample used to estimate the characteristics of population does not have to be representative since conclusions, to a great extent depend on one observation. In contrast to natural phenomena and ergodic stochastic processes, there are no limits to the deviation of an observation from the mean value when a system is nonergodic. As the number of observations increases, knowledge about the population changes slowly and unpredictably. Namely, as we saw, in his probability theory, Keynes concluded that with new relevant information relevant knowledge increases, but a more important issue is whether, in the light of new information, relevant ignorance increases more than relevant knowledge. If relevant ignorance increases more than relevant knowledge, confidence in logical relation declines, and thus the significance of logical relation in the decision-making process deteriorates.

Nevertheless, it is noteworthy that in the case of nonergodic stochastic processes, long periods of stable development are not excluded. On the contrary, they dominate. But the problem lies in the fact that nonergodic processes are unstable – the extreme observation that will, due to the omnipresent uncertainty, inevitably occur sooner or later, is powerful enough to dramatically destabilize the process. At the same time “we simply do not know” when an extreme event that leads towards discontinuity will take place.
The collapse of the first and second convention, i.e. the convention that future will resemble past, and the convention that makes the expectations of agents anchored and stable, lies at the root of Keynes’ business cycles theory. Collapse of the conventions takes place in booming phases, when aberrant optimism weakens the expectation that the present state of affairs will continue into the near future. Aberrant optimism takes place when, on the basis of investments undertaken, agents unjustifiably project very attractive (profitable) outcomes into the future. In a word: “By a cyclical movement we mean that as the system progresses in, e.g. the upward direction, the forces propelling it upwards at first gather force and have a cumulative effect on one another but gradually lose their strength until at a certain point they tend to be replaced by forces operating in the opposite direction.” (Keynes 1936, p. 342). Precisely at this point it becomes evident that capital goods are unable to generate the yields needed to sustain euphoria-inflated security prices. As a consequence of disappointed expectations, crisis emerges. Keynes further notices “...the fact that the substitution of a downward for an upward tendency often takes place suddenly and violently.” (Ibid, p. 342). On the other hand “...there is, as a rule, no such sharp turning-point when an upward is substituted for a downward tendency.” (Ibid, p. 342).

The cause of a sudden and violent substitution of an downward for an upward phase “...comes because doubts suddenly arise concerning the reliability of the prospective yield.” (Ibid, p. 345). A significant factor that may propel a crisis is an increase in interest rates as a result of “...the influence of the increased demand for money both for trade and speculative purposes.” (Ibid, p. 343). As Keynes further states, increases in the rate of interest are a significant element in his “...theory of why booms carry within them the seeds of their own destruction.” (Keynes 1937, p. 210). However, Keynes concludes “...that a more typical, and often the predominant, explanation of the crisis is, not primarily a rise in the rate of interest, but a sudden collapse in the marginal efficiency of capital.” (Keynes 1936, p. 343).50 Collapse takes place due to the endogenously generated euphoric expectations of ignorant private investors: “The later stages of the boom are characterized by optimistic expectations as to the future yield of capital goods sufficiently strong to offset their growing abundance and their rising costs of production and, probably, a rise in the rate of interest also. It is of the nature of organized investment markets, under the influence of purchasers largely ignorant of what they are buying and of speculators who are more concerned with forecasting the next shift of market senti-

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50 Marginal efficiency of capital is expectation of the future yield of capital goods (Keynes 1936).
ment than with a reasonable estimate of the future yield of capital-assets, that, when disillusion falls upon an over-optimistic and over-bought market, it should fall with sudden and even catastrophic force. Moreover, the dismay and uncertainty as to the future which accompanies a collapse in the marginal efficiency of capital naturally precipitates a sharp increase in liquidity-preference, and hence a rise in the rate of interest.” (Ibid, pp. 343, 344). Therefore, the investment community, enthralled by over-optimistic expectations undertakes investments “...in conditions which are unstable and cannot endure, because it is prompted by expectations which are destined to disappointment.” (Ibid, p. 348). When disappointment falls upon euphoric agents, forces operating in the downward direction take command over the market. Agents become more risk-averse, expectations pessimistic and the state of confidence ebbs. The liquidity of financial markets evaporates, making the crisis more painful. And interest rates skyrocket.

On the other hand, recovery from crisis is slow and of long duration. The reason for this lies in the exponential increase in agent’s liquidity preference, or more precisely, in the collapse of confidence. Once confidence breaks down, i.e. when animal spirits diminish, it is very hard to resurrect. Consequently, even a decline in the rate of interest in conditions of over-pessimism does not deliver the desired effects because “...it is not so easy to revive the marginal efficiency of capital, determined, as it is, by the uncontrollable and disobedient psychology of the business world. It is the return of confidence, to speak in ordinary language, which is so insusceptible to control in an economy of individualistic capitalism. This is the aspect of the slump which bankers and businessmen have been right in emphasizing, and which the economists who have put their faith in a ‘purely monetary’ remedy have underestimated.” (Ibid, p. 344). Additionally, a breakdown in the marginal efficiency of capital adversely affects not only prices of securities but also the propensity to consume. “Now, on the class who take an active interest in their stock exchange investments, especially if they are employing borrowed funds, this naturally exerts a very depressing influence. These people are, perhaps, even more influenced in their readiness to spend by rises and falls in the value of their investments than by the state of their incomes.” (Ibid, p. 346).

7. Destabilizing Arbitrage and Speculative Gains of Rational Arbitrageurs

According to orthodox economists, speculative gains for arbitrageurs emerge when the trades of ill-informed or as they call them, irrational
investors lead towards deviation of market price of a security from its supposed intrinsic value. Smart money investors notice the failures of their ill-informed fellow agents and exploit their mistakes. In that way they earn extra-profits and in parallel, align the market price of securities with their assumed-to-exist fundamental value. Nevertheless, as Keynes argues, even though “...the social object of skilled investment should be to defeat the dark forces of time and ignorance which envelop our future” (Ibid, p. 194), a winning strategy in earning speculative gains does not lie in rational arbitrage which results in convergence of market prices and the fundamental value of securities but in exactly the opposite trading strategy; a strategy that results in ever increasing divergence between market prices and their assumed true value.

In the first place, this is the case because it is much easier and more reliable to form a short-term expectation of average market opinion than it is to forecast the returns that capital goods will yield in the long run: “It needs more intelligence to defeat the forces of time and our ignorance of the future than to beat the gun.” (Ibid, p. 196). In the second place, since the future is nonergodic and transmutable, a strategy of guessing average market opinion in the near future, i.e. guessing market opinion better than competitors in an attempt to remain one step ahead by buying securities before others when anticipating bullish sentiment, or selling them when anticipating a bear market (destabilizing arbitrage)\(^{51}\) is potentially more lucrative than a trading strategy of stabilizing arbitrage. In a word, if they earn income by implementing a strategy of stabilizing arbitrage their profits are limited by the extent of departure of market prices from assumed fundamental value (fundamental value is the limit). If on the other hand, arbitrageurs are one step ahead, profits are virtually unlimited, since the upper boundary of deviation cannot be known in advance.\(^{52}\) Under such conditions, the most advantageous strategy for them is to try to guess as precisely as possible the future market opinion: “It might have been supposed that competition between expert professionals, possessing judgment and knowledge beyond that of the average private investor, would correct the vagaries of the ignorant individual left to himself. It happens, however, that the energies and skill of the professional investor and speculator are mainly occupied otherwise. For most of these persons are, in fact, largely

\(^{51}\) Or, in other words, ‘to beat the gun.’  
\(^{52}\) For example, over the course of some eight years before The Great Crash, The Dow Jones Industrial Average increased by nearly 500% from a low 69.9 in August 1921 to a peak of 381.2 in September 1929. Similarly, in period that preceded bursting of dot-com bubble, from June 1995 to March 2000 NASDAQ Composite increased from 902 to 5,132.52, i.e. 470% increase.
concerned, not with making superior long-term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is really worth to a man who buys it ‘for keeps’, but with what the market will value it at, under the influence of mass psychology, three months or a year hence.” ([Ibid], pp. 193, 194). “...There is no clear evidence from experience that the investment policy which is socially advantageous coincides with that which is most profitable.” ([Ibid], p. 196).

Also, in contrast to adherents of the EMH, Keynes states that if this game of outwitting the competitors in anticipation of the new conventional valuation is to survive “gulls amongst the public to feed the maws of the professional” are not required since “it can be played by professionals amongst themselves.” ([Ibid], p. 194).

It is obvious that when the market is dominated by short-term oriented speculators, it is difficult for long-term oriented investors to make right choices, and pick up the most productive investment: “Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation.” ([Ibid], p. 198). Here, Keynes does not claim that fundamentally oriented investors who try to project the yields of capital goods in the long run and are indifferent to the daily fluctuations in profits “of ephemeral and non-significant character” ([Ibid], p. 193), are absent from the market. He only claims that when a majority of investors chase short-run capital gains, it is practically mission impossible to remain calm and indifferent to short-run fluctuations for several reasons. Firstly, life is short; humans want everything and they want it now. Secondly, due to higher business risks, the long run oriented investor “...needs greater resources for safety and must not operate on so large a scale, if at all, with borrowed money a further reason for the higher return from the pastime to a given stock of intelligence and resources.” ([Ibid], p. 196). For example, suppose that an arbitrageur sells short an overpriced security and is long in a perfect risk-return security or portfolio of securities substitute.53 The arbitrageur knows that at some future point when the market price of the overpriced security is brought back to its supposed fundamental value, he will earn extra profits. Nevertheless, since he cannot foresee market behavior with

53 Let us note that we assumed the availability of perfect or nearly perfect substitutes for all securities. However, in reality, this assumption rarely holds, which is one more factor that contributes to the risks and limits of arbitrage. Even if we allow the availability of not perfect but only near substitutes, arbitrageurs cannot avoid fundamental risk, risk that securities in a short position will perform better than expected and securities in a long position will perform worse than anticipated (Shleifer 2000).
certainty, and thus does not know when he will earn extra profits, he fac-

ces the risk that, contrary to his expectations, investors will become even

more bullish, and expensive securities will become even more expensive.\textsuperscript{54}

\textsuperscript{55} The more a price increases, the higher are the short-term losses of the

arbitrageur. If an arbitrageur is able to maintain his position he will event-

tually, at some point, exploit the ignorance of ill-informed investors.

Even worse, arbitrage is even riskier and more limited if, as Keynes

arbages, an arbitrageur operates with somebody else's money: “Finally it

is the long-term investor, he who most promotes the public interest, who

will in practice come in for most criticism, wherever investment funds

are managed by committees or boards or banks. For it is in the essence

of his behavior that he should be eccentric, unconventional and rash in

the eyes of average opinion. If he is successful, that will only confirm the

general belief in his rashness; and if in the short run he is unsuccessful,

which is very likely, he will not receive much mercy. Worldly wisdom

teaches that it is better for reputation to fail conventionally than to suc-

cceed unconventionally.”\textsuperscript{56} (Ibid, p. 196). In other words, time horizon or

rational arbitrageurs is limited since owners of the money evaluate their

performance at regular, relatively short interval. Therefore, if the duration

of mis-pricing is longer than the evaluation period, the performance of

the arbitrageur at the moment of evaluation might appear unsatisfactory,

even though, in the long run their strategy is valid and lucrative. Since the

salaries of managers depend on their performance, arbitrageurs will not

hold corrective positions if they suspect that mis-pricing might last for

a long period of time. Also, arbitrageurs do not only manage the funds

of shareholders, but mostly they borrow money from banks (via their

brokers) or borrow securities from their brokers or other intermediaries.

In both cases, the bought or borrowed securities serve as collateral. If, in

the short run, due to psychological factors, the prices of collateral move

against his bet, the arbitrageur may be forced, precisely at the moment

when the prospect of making money in the long run is the most favorable

(mis-pricing has reached its apex) to liquidate his positions. In this case,

not only is arbitrage limited, but it also adds fuel to the flames, especially

in periods of liquidity hunger.

\textsuperscript{54} In the behavioral theory of inefficient markets, the risk that mispricing will get worse

before it disappears is called noise trader risk. For more details see Shleifer (2000); Shleifer and Summers (1990).

\textsuperscript{55} Also, objective obstacle to arbitrage is that in many markets short selling is either

prohibited or restricted and even if we assume away institutional obstacles it is very
difficult for arbitrageur to find security which he wants to borrow from broker or

other intermediary in order to sell it.

\textsuperscript{56} Similarly, as Reinert (2006) writes, to proponents of mainstream economics form is

more important than relevance of the theory, or put it differently, they prefer to make

precise mistakes than to be approximately right.
Now let us return to Friedman’s (1953b) conclusion that due to their unsound transactions irrational investors accumulate losses, and will, in time, through process of Darwinian selection, eventually be eliminated from the market. As we just saw, arbitrageurs are often objectively rendered incapable of eliminating ignorant investors. Also, when they anticipate a rise in the market, arbitrageurs transactions are destabilizing, leading to further divergence of prices from the assumed true value. Therefore, it is more likely that profit hungry arbitrageurs will start to act as ignorant investors than vice versa. As real world experience has shown, big institutional investors aiming at earning as much profit as they can, often apply a strategy of chasing trends. Furthermore, even if we accept Friedman’s principle of Darwinian selection in financial markets as valid, the elimination from the markets of vast, over-borrowed institutional investors is capable, not only of interrupting the normal smooth functioning of markets but also, as we know from past experience, of causing full-blown financial panic and crisis.

To conclude, the instability of security prices, and therefore of investment demand is a product of the combined effect of epistemic and institutional factors. Epistemic factors refer to incomplete and scant knowledge of agents regarding the future yields of investments. Incomplete and scant knowledge results in low confidence of agents in their forecasts of what is most probable, and in turn leads to the formation of beliefs which are liable to wild fluctuations. This epistemic weakness, or instability of beliefs, may be reinforced and even magnified by institutional features of financial markets and particularly by the convention of agents relying on the unstable average opinion of the market which, they assume, is better informed than them (Crotty 1994; Runde 1991). Meanwhile, as long as agents believe in the convention that the future will resemble past, capitalist systems are in a transitory state of stable and continual development. However, in parallel, they are unstable since they are liable to abrupt changes. Potential for collapse is omnipresent.

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57 To note, when assumption that future is nonergodic is accepted distinction between rational and irrational investors is meaningless.
58 For example, failure of Finance One in Thailand in 1997 or Lehman Brothers in 2008, or the near-collapse of Long Term Capital Management in 1998.
59 We must note that the tendency towards continual and stable dynamic movement of capitalist economies is not in conflict with the fundamental principles of uncertainty, since agents do not know in advance when a new phase of the business cycle will start, its duration and amplitude, moment of trend reversal etc.
III Hyman Minsky: Endogenous Instability, Debt and Fragile Finance

Hyman Minsky was among the most seminal followers of Keynes’ disequilibrium oriented economic thought. In his words, Keynes in GT 1936 “...pointed to essential flaws in the capitalist modes of organizing accumulation and how policy can cope with these flaws. But the interpretation of Keynes that followed the Hicks-Hansen lines of thought has led to the neoclassical synthesis, and the banal proposition that all would be well if a proper mix of monetary and fiscal policies can be achieved.” (Minsky 1986, p. 156). Hence, Minsky rejected the neoclassical synthesis as an invalid interpretation of GT 1936 since it completely neglected the importance of uncertainty and the role money played in complex and sophisticated capitalist economic systems. In Minsky’s thought, market flaws, and the general propensity of the modern capitalist system towards financial fragility cannot simply be eliminated by governmental manipulation of aggregate demand. Economic theory must not be institutionally neutral, but rather institution-specific. It must incorporate the big government sector, long-lived assets and privately owned capital, complex financial markets, and institutions and usages, if the nature of modern capitalism is to be fully understood. In chapter 22 of GT 1936, Keynes, aware of the complexity of the phenomena, admitted that developing a thesis of the causes and details of trade cycles “...would occupy a book rather than a
chapter, and would require a close examination of facts.” (Keynes 1936, p. 341). Minsky embraced this legacy and developed the Financial Instability Hypothesis (the FIH), a theory which explains why, after prolonged periods of stability, conditions emerge that cause modern market economies to transition from robustness towards fragility. According to Minsky, business cycles, i.e., fluctuations in employment, output and income, are only surface features of deeper fluctuations in the financial sector and in financial conditions.

1. Banality of Neoclassical Synthesis and the Wall Street Paradigm

Minsky’s financial interpretation of Keynes’ GT 1936 is a product of his long and thorough study of the unbalanced development of closed developed capitalist economies. The goal of his research was to find answers to questions that had bothered him for some time: Why were developed capitalist countries with sophisticated financial systems prone to depressions and why was tranquility only a temporary state? Thus, the center of his research was not the state of tranquility, because Minsky did not believe in the sustainability of tranquility. He was interested in the long run developmental path of economies, which takes place with the calendar flow of time. Economies are, most of the time, in periods of transition and only temporarily in balance. While in a state of tranquility, conditions that are sufficient and necessary for a motion of the system towards financial fragility are put in place: “The Patinkin resolution and other attempts in the literature to treat what are called disequilibrium phenomena are peculiar in that, once they achieve the so-called full-employment equilibrium, they do not ask whether the equilibrium so defined contains ongoing processes that will cause it to be ruptured. A close look at what goes on when the system achieves such an equilibrium uncovers ongoing processes that tend to make for the breakdown of full employment. The ongoing processes tend to rupture a full-employment equilibrium in an upward direction; that is, once full employment is achieved and sustained the interaction among units tends to generate a more than full-employment speculative boom.” (Minsky 1986, p. 198). Due to the monetary nature of advanced capitalism and the complex relation between finance and investment, the

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60 Instead of the term equilibrium, Minsky preferred to use Joan Robinson’s term tranquility – a period during which “disruptive changes are not taking place.” (Minsky 1986, p. 197).
business cycle develops from tranquility to speculative mania and financial fragility (Bellofiore et al. 2010). If the appropriate reaction of the regulatory authorities does not take place, financial fragility ends in a difficult depression and debt deflation.

In his search for answers regarding how modern capitalistic economies function, not in some abstract model, but in the real world, Minsky rejected Hicks’ and Patinkin’s “bastardian” interpretation of Keynes, a view that reduced Keynes’ revolutionary insights to banality: “The conclusions based on the models derived from standard theoretical economics cannot be applied to the formulation of policy for our type of economy. Established economic theory, especially the highly mathematical theory largely developed after World War II, can demonstrate that an abstractly defined exchange mechanism will lead to a coherent, if not an optimum, result. However, this mathematical result is proven for models that abstract from corporate boardrooms and Wall Street. The model does not deal with time, money, uncertainty, financing of ownership of capital assets, and investment. (Minsky 1986, p. 4). ... As pointed out earlier, this logical jump is an act of faith, and policy advice based upon the neoclassical synthesis rests upon this act of faith. Modern orthodox economics is not and cannot be a basis for a serious approach to economic policy.” (Ibid, p. 193). In their non-financial interpretation of GT 1936, scholars of neoclassical synthesis completely neglected Keynes’ analysis of uncertainty, money and unstable expectations which, albeit sometimes in a vague and muddled manner, explain the pronounced volatility of private investments, and in the last resort, why output and employment are so liable to fluctuation. In Keynes’ view, modern financial systems are not prone to equilibrium but to cyclical movement with calendar flow of time: “Every reference by Keynes to an equilibrium is best interpreted as a reference to a transitory set of system variables toward which the economy is tending; but, in contrast to Marshall, as the economy moves toward such a set of system variables, endogenously determined changes occur which affect the set of system variables toward which the economy tends. The analogy is that a moving target, which is never achieved but for a fleeting instant, if at all. Each state, whether it be boom, crisis, debt-deflation, stagnation, or expansion, is transitory. During each short-period equilibrium, in Keynes’s view, processes are at work which will “disequilibrate” the system. Not only is stability an unattainable goal; whenever something approaching stability is achieved, destabilizing processes are set off.” (Minsky 1975, p. 59). Booms, depressions and debt-deflations are a normal outcome of inherently flawed capitalistic economies with sophisticated financial systems. Surprisingly or not, these precious and vital insights of Keynes had somehow been lost along the way.
In contrast to Keynes’ theory of inherently flawed modern capitalistic economies prone to permanent disequilibrium, the neoclassical synthesis argues that unemployment could persist thanks to the subversive activities of labour and in “particular, it is the handiwork of a villain – the trade unions. Note that in this argument the proximate victims of unemployment (workers) cause unemployment to persist; it thus appears as if the market mechanism not only yields a coherent result, but also retributive justice.” (Minsky 1986, p. 155). From the neoclassical synthesis point of view, the only benefit of GT 1936 was the insight that below full-employment equilibrium is possible, but not impossible to cure. The true panacea lies in wise manipulation of fiscal and monetary policy aiming at increasing aggregate demand, and consequently output and employment. This fine-tuning approach is capable of overcoming price and wage rigidities and institutional weaknesses and in the end delivering the classical fairly-tale economic system.

Furthermore, if prices and wages are flexible, there is no need for interventionist policies because the market will, through Patinkin’s real-balance effect, find a way to full employment equilibrium on its own. In other words, due to insufficient investments, an excess supply of labor is a possible market outcome, but only in the short run. Market forces aiming at restoring supply-demand balance will automatically be set in motion. If price rigidities are absent, money wages will decline and consequently provoke decline in commodity prices, leaving real wages intact. In this way, firms will not be stimulated to increase employment and consequently aggregate demand will not increase. Meanwhile, a fall in money wages and price level will increase the value of money. On the one hand, the now increased money supply will result in a fall in interest rates, but due to a decline in prices and consequently adverse profit expectations, investment consumption will not increase. At the same time, adverse profit expectations lead to a fall in the market value of capital assets. On the other hand, because the value of banking deposits will rise as well as the value of the debts of the banks' borrowers, the rising wealth of the depositors will be offset by declining wealth of borrowers and consumption will remain unchanged. However, households, banks and business apart from private debts and capital assets also own money and government bonds. The increased value of assets, i.e. money stock not related to private debts, will now, thanks to the rise in wealth, push consumption upward leading the system towards full employment.

However, Minsky notes that neoclassical synthesis is not capable of explaining causes of disequilibrium due to the fact that it is, in the first place constructed to yield a coherent result “which does not allow for dis-
ruptive internal dynamic processes.” (Ibid, p. 154). Disequilibrium may occur only due to “shocks or changes imposed from outside the system. Thus, a great deal of what happens in history is explained as the result of institutional failures in unique historical circumstances.” (Ibid, p. 155). The theory is supposed to explain how a system restores equilibrium only after disequilibrium had been generated. But even this explanation is not valid.

The reason lies in neglecting financial relations, precisely those that generate instability. In contrast to the Neverland of the barter paradigm, where “the image is of a yeoman or a craftsman trading in a village market”, Keynes’ theory “rests upon a speculative-financial paradigm—the image is of a banker making his deals on a Wall Street.” (Minsky 1975, p. 55). In his Wall Street paradigm, Minsky argues that money is not neutral and that the financial system does not dance to a rhythm played by the real sector (Dymski 1997). Contrary to the neoclassicists, Keynes insisted on the analysis of the financial sector from the perspective of bankers from the City and Wall Street. If we observe the world from a banker’s perspective we will see, Keynes argued, a world, in which money is not only the medium of exchange, i.e. a veil of barter arrangements,61 but the essential means for making financial arrangements in the process of exchanging future money for present. “The Keynes veil implies that money is connected with financing through time.” (Minsky 1992, p. 3). Thus, the world of finance is the paper world, a world of obligations to pay a certain amount of money today and in the future. This paper world arises from the fact that capital goods are very expensive and that consequently, in most cases, entrepreneurs are not in a position to finance their production from internal sources. Since, in advanced economies, expensive long-term capital assets are predominantly debt financed, a condition of stability requires investments to generate profits above debt commitments. Also, since the future is fundamentally uncertain, expectations are liable to disappointment, i.e. the possibility that an investment will fail to yield cash flow high enough to meet debt commitments is always open: “The fundamental speculative decision of a capitalist economy centers around how much, of the anticipated cash flow from normal operations, a firm, household, or financial institution pledges for the payment of interest and principal on liabilities. Liabilities (debts) are issued to finance—or pay for—positions in owned assets; ...The firm in accepting a liability structure in order to hold assets is betting that the ruling situation at the future dates will be such that the cash payment commitments can be met: it is estimating that the odds in

61 Which is at odds with Irving Fisher’s and Milton Friedman’s quantitative theory of money and the Modigliani-Miller irrelevance theory.
an uncertain future are favorable. Even though the contract may have additional protection to the lender embodied in other contract clauses, the unit acquiring the liability is also speculating, along with the firm, that these cash-flow commitments will be met. In a layered financial structure, the unit acquiring a liability may have liabilities of its own, and its ability to fulfill its obligations depends upon the cash flow it receives from its assets, i.e., other units’ liabilities.” (Minsky 1975, p. 84). If debt commitments exceed the cash receipts that investment yields, investing firms and their creditors increase their exposure to default and liquidation. In essence, the higher debt to equity ratio, the higher probability that default on any project will result in liquidation.

Thus, in advanced economies money supply does not predominantly consist of exogenously created paper money and gold. In contrast, money is predominantly created endogenously in the process of financing production of capital assets and positions in financial assets. So, contrary to the Patinkin resolution, in the real, rather than the abstract world “of simple, timeless exchange and production in which transactions among units are by barter” (Ibid, p. 8), price deflation “...increases the burden of indebtedness of capital-asset-owning units, which tends to constrain investment and employment. If the Patinkin effect is relevant it is only in the long haul and after a large price is extracted in lost output and employment. ... Unemployment is likely to become worse before it gets better once price deflation takes hold, and it may be worse for an uncomfortably long period. (Minsky 1986, p. 154, 155). ...Only after the financial structure is radically simplified, which may take many years, may falling prices be expansionary. In a world with complicated financial usages, if there is a road to full employment by way of the Patinkin real-balance effect, it may well go by way of hell.” (Ibid, p. 198). To conclude, the Patinkin resolution presupposes the neutrality of money. Since in advanced economies investments are financed by debt and the future is fundamentally uncertain, the assumption of real-monetary sector dichotomy does not hold.

As Keynes pointed out, the function of Wall Street is to reduce investment default risk (risk that return on investment will be below expected) and market risk (risk of capital loss). Also, as we already noted, minimizing default risk involves selling ownership stakes and subordinated debt claims, whereas market risk involves the “activity of forecasting the psychology of the market.” (Keynes 1936, p. 197). Thus, the stock exchange is a vehicle for reducing default risk at the expense of increasing market risk, which renders investment consumption, and resultant output and employment liable to unduly dramatic fluctuations. Wall Street is thus the chief force that determines the pace and direction of investment activ-
ity, and, as Minsky argues, financiers are not interested in the marginal productivity of capital as the neoclassical theory of investments assumes: “From a Wall Street perspective, capital assets are valuable not because they are productive in a physical sense but because they yield profits. To Wall Street the technical capacity of a Boeing 747 to deliver seat-miles is of secondary importance; what is important is the ability of an organization in a particular market and economic situation to operate 747s profitably. Similarly, whether nuclear power plants produce electricity, damage the environment, or are safe is not important from a Wall Street perspective; what is vital is the calculation of expected costs and revenues.” (Minsky 1986, p. 227).

Minsky’s theoretical interpretation of Keynes is mirrored in his financial theory of investment, which leads to the investment theory of business cycles, i.e. to his seminal FIH. In order to explain the phenomena of business cycles, the first step is to explain the factors and mechanisms that determine the volume of investments. In his financial theory of investment a central role is given to uncertainty and financial relations.

2. Minsky’s Financial Theory of Investment

As we pointed out, in his dual price theory, Keynes defined conditions that will lead to new investments. The supply price of capital goods is based on short run expectations and is, consequently, stable. On the other hand, the demand price of capital goods is grounded in the long run unstable expectations that go deep into a distant, vague and misty future. In this model, investments will increase when the ratio of demand price and supply price of capital goods is above 1.62 It appears that Keynes in The General Theory of Employment Interest and Money implicitly assumed, as did Tobin explicitly in his $q$ theory, that if the ratio of demand price and supply price of capital goods is above 1, investments will be financed. A question that Keynes did not answer and is the focus of Minsky’s theory of investments is how investment is financed: “Cash-flow commitments, present-value calculations, and liquid-asset holdings determine how developments in financial markets affect the behavior and the viability of economic units. As a result, the stability of the economy depends upon the

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62 Tobin’s theory of well organized and efficient markets, when investment ratio $q$ is above or below 1, mechanisms that will equalize these two prices in the long run are automatically activated. In Keynes’ and Minsky’s theory, when the investment ratio is not equal to 1 it is as well possible to expect, depending on the situation, the occurrence of destabilizing factors, so that it might happen that these two prices diverge in the long run.
way investment and positions in capital assets are financed. It will be argued that instability is determined by mechanisms within the system, not outside it; our economy is not unstable because it is shocked by oil, wars, or monetary surprises, but because of its nature.” (Ibid, p. 192).

In his financial theory of investments, Minsky claims that a basic characteristic of advanced economies is the existence of two sets of prices: the price of capital assets and the price of current output. Since it is part of both sets of prices, the function of investments is to align them. In his investment theory the price of capital assets, i.e. the demand price of capital goods, depends on supply and demand conditions. Supply of capital goods is inelastic in the short run and is therefore constant. Demand price is determined by the present value of expected future profits and expected liquidity of capital good: “In a corporate capitalist economy with a stock exchange, the market’s valuation of a firm’s capital assets and market position substitutes for the price of capital assets. ...This valuation varies with the course of the stock market. A stock market boom leads to a higher implicit market value of the underlying capital assets of the economy; conversely, a fall in the stock market lowers the implicit value.” (Ibid, p. 208). Thus, demand price critically depends on unstable endogenous expectations that reach into a distant, uncertain and vague future. The supply price of capital goods i.e. the price of current output is equal to the sum of technologically determined costs, mark-up and interest rate costs on short-term loans. Due to the given productive capacity, the supply price is, from a certain point, a rising function of the level of production. Up to this point Minsky’s theory of investment is similar to Tobin’s \( q \) theory. However, since in advanced economies “debt financing of positions in capital and financial assets is possible” (Ibid, p. 198), determination of the level of investments without considering how investments are financed is “palpable nonsense.” (Ibid, p. 210).

Minsky argues that in advanced economies, from a certain point, investment projects are externally financed. The entry of debt financing of investment activity into the big picture involves, due to fundamental uncertainty, risk of default. Consequently, due to possible default, and accordingly, increased exposure to bankruptcy, entrepreneurs will try to compensate risks that rise with indebtedness by lowering the demand price of capital goods. A fall in demand price that occurs as a consequence of an increase in the borrower’s risk (that increases with leveraging) lowers the investment ratio. How much the price of existing assets will fall, cannot be estimated objectively because it depends on the level of borrowers

\[ \text{63 Newly produced capital goods, and goods and services produced and provided by government, export and consumption sector.} \]
leverage and on borrowers subjective estimation of the influence of external financing on project risk and return (Pollin 1997). Since it depends on unstable long run subjective expectations (expected profits, liquidity and probability of default), demand price is very unstable and is consequently a primary source of significant cyclicality in investment spending.

On the other hand, as long as it is financed from internal sources, the supply price of current output does, due to capacity constrains, rise from a certain point with the level of production. However, if production of investment output is from some level of production financed by debt, the supply price must be adjusted upwards due to the increasing default risks faced by lenders. A lender’s risk depends on the degree of the borrower’s leverage (debt to equity ratio) and the creditor’s confidence in future cash flows. The more debt a borrower has on his liability side of the balance sheet, the lower the creditor’s confidence in future cash flows, the greater the lender’s risk and the greater the cost of capital. Terms to maturity are shorter, and dividend payouts, further borrowings and sale of assets are more restricted. Also, maintenance of some minimum stated net worth might be imposed on borrower. Rising lender risk can be only observed in part through an increase in interest rates. The residual of rising financial costs is unobservable. As in the case of a borrower, the level of financial costs depends on the lender’s subjective estimation: expected project profitability and estimated probability of default for a given level of borrower’s leverage. In general, the greater the margin of safety, i.e. the greater difference between expected project cash inflow and project financing costs and operating expenses, the lower borrower’s and lender’s risk will be.

To sum up, the amount and direction of a change in demand and supply price and consequently direction of investment spending is not determined by some golden rule, but rather depends on subjective judgment. Borrowers and lenders make decisions on the trial-and-error basis: If the action succeeds, the action is repeated and vice versa. In this way, stable business conditions naturally lead a system towards optimism, boom, overheating and in the end towards increased fragility. Thus, changes in the expectations of lenders and borrowers determine the pace and direction of investments, and consequently are a critical input into Minsky’s FIH, i.e. his investment theory of business cycles.

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64 The key difference in relation to Modigliani-Miller irrelevance theorem and Sharpe’s CAPM.

65 Besides Kalecki (1937), Keynes (1936) in chapter 11 defined borrower’s and lender’s risk somewhat differently.

66 In contrast to Tobin, according to Minsky, adjustments in demand and supply prices (borrower’s and lender’s risk) are a precondition for new investments to take place (Crotty 1990).
3. The FIH

In Minsky’s words the FIH is “...a theory of the impact of debt on system behavior and also incorporates the manner, in which debt is validated” (Minsky 1992, p. 6) and a “model of capitalist economy which does not rely upon exogenous shocks to generate business cycles of varying severity.” (Ibid, p. 8).

The FIH consists of two theorems. The first one is that a system can be both stable and unstable. The second is that during a prolonged period of prosperity, conditions emerge that cause system transition from an environment of stable towards an environment of unstable financial relations. The core thesis of the FIH is that stability is destabilizing because, in an environment of fundamental uncertainty, ignorant human beings have no other choice but to extrapolate stability into infinity. Naturally, with calendar flow of time, when agents extrapolate stability into infinity they become more confident and, as their aim is to pursue ever higher profits, they become more and more willing to increase their liabilities relative to income. As Irving Fisher argues, over-investment, over-speculation and over-confidence are not a serious danger to stability per se, but in combination with over-indebtedness. “I fancy that over-confidence seldom does any great harm except when, as, and if, it beguiles its victims into debt.” (Fisher 1933, p. 341). In that way, agents accumulate more risky debt structures.

In order to measure the degree of financial (in)stability, Minsky delineated three kinds of debt structure: hedge, speculative and Ponzi finance. Hedge units are expected to generate cash flow that will, in at any future moment, be above operating expenses (including dividend costs) and financing costs (debt principle and interest) for an amount of margin of safety wide enough to absorb unforeseen changes either in cash inflows or in cash outflows. Thus, the net present value of the hedge unit is always positive. The greater the share of equity capital, the greater the cushion, and the greater the probability that the unit is a hedge. (Minsky 1992). Its long-term investment ventures hedge unit finance by long-term liabilities, such as shares and long-term bonds.67 Even though future returns are uncertain, the soundness and solvency of a hedge unit does not depend on financial market conditions, but only on the conditions on product and

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67 Here Minsky points out that it is important that interest rate on long-term bonds is fixed. Otherwise, borrowing at floating rate makes unit speculative, although at ruling interest rate is hedge. (Minsky 1986, p. 231).
factor markets, i.e. they are vulnerable to a rise in costs of production and decline in revenues.

Speculative units are expected to generate cash flow that will not at any future moment be sufficient to pay out debt commitments. In a word, some time in the future, generated cash flow will be sufficient to meet interest, but not the principal commitment. Therefore, the speculative unit will, from time to time, when the margin of safety does not exist, be forced to roll over maturing debt in order to meet its principal commitment. However, apart from being insolvent from time to time, it is expected that the speculative unit’s cumulative margin of safety can remain above debt commitments over the lifetime of the loan. In a word, until the loan finally matures, the cumulative cushion may be positive, so that the project has a positive net present value. Thus, lender and borrower speculate that over the life of the loan, the borrower will be capable of paying out all his debt commitments, although it is possible that periodically the margin of safety will be non-existent. According to Minsky (1977), typical speculative units are banks. In contrast to hedge units, the viability of a speculative unit depends on financial market conditions as well as on the normal functioning of product and factor markets. Namely, the vulnerability of speculative units is triple. Firstly, if short-term interest rates increase above the expected level over a period when unit is forced to borrow, in order to refinance short-term debt, the debt burden increases. At the same time it is possible that cash inflow will remain unchanged. In that case, the margin of safety may turn negative. Secondly, since speculative finance “involves the short financing of long positions” (Minsky 1986, p. 231), it becomes clear that the margin of safety may turn negative in case of a simultaneous rise in short-term and long-term interest rates. A rise in short-term interest rates increases debt payment commitments in the short run, whereas a rise in long-term interest rates means a rise in the discount factor. A rise in the discount factor lowers the net present value of assets. Thirdly, an acceptable structure of debt depends on subjective judgment, so that divergences between realized and expected profits may lead to revision of the acceptable financial structure. If any of the three events happen, speculative units become Ponzi units.

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68 As a consequence of rise in lender’s risk and/or switch to restrictive monetary policy by central bank.

69 Functioning of speculative units is vulnerable to harsher financial terms in general provisions for collateral, maintenance of net worth, restrictions on dividends payouts etc.) and not only rise in short and long term interest rates: “The existence of codicils that state the other terms makes interest rates, by themselves, a misleading indicator of conditions under which investment can be financed.” (Minsky 1986, p. 254).
Ponzi units\textsuperscript{70} can emerge independently of internally or externally generated disturbances (transformation of speculative units to Ponzi units). Usually, on the basis of euphoric expectations, Ponzi units get into debt today in expectation of high profits that will be realized at some, unknown future moment (high capital gains). In other words, to keep Ponzi units afloat, prices of assets must continue to rise. In the case of Ponzi units, during most of the time or during the whole period of life of the loan, the margin of safety is non-existent. Ponzi units are not able to meet their principle and interest obligations, and since “financing costs are greater than income... ...the face amount of outstanding debt increases” (\textit{Ibid}, p. 231). Consequently, in relation to speculative units, the survival of Ponzi units depends even more on financial market conditions. A failure to obtain new short-term debt for financing existing debt obligations leads Ponzi units, in the short run, into bankruptcy. In a word, the survival of Ponzi units critically depends on the possibility of acquiring new debt and the quick sale of capital goods and various assets in its possession.

The proportion of hedge, speculative and Ponzi units in the economy is a measure of the robustness of the financial system. Overall, the higher the proportion of hedge units, the more stable the system. On the other hand, the higher the proportion of speculative and Ponzi units, the more dominant are forces which, in the event of endogenously or exogenously generated shock,\textsuperscript{71} will further destabilize the system.\textsuperscript{72} Therefore, after a prolonged period of prosperity, the system becomes dominated by speculative and Ponzi units and is, consequently, fragile, i.e. less capable of absorbing shocks which may cause financial crisis. As debt increases and liquidity stretches, the maximum interest rate that the system is able to bear declines, and units become increasingly vulnerable to even a small increase in interest rates or/and an unanticipated fall in profits.

\textsuperscript{70} Unit was named after Charles Ponzi, infamous Bostonian speculator in 1920s who invented pyramidal scheme of paying out existing depositors by funds raised from newcomers. When new depositors stop to arrive, scheme collapses.

\textsuperscript{71} Example of endogenously generated shock is a failure of some prominent financial institution or corporation and of exogenous sudden switch to restrictive monetary policy by the central bank in order to constraint inflation. Restrictive monetary policy causes rise in interest rates and therefore rise in debt burden of indebted units (Pollin 1997).

\textsuperscript{72} This is the case when “enterprise becomes the bubble on a whirlpool of speculation.” (Keynes 1936, p. 198).
4. Dynamics of the FIH: Endogenous System
Transition from Robustness to Financial Fragility

Minsky's analysis of the transition of the system from robust financial relations to financial fragility starts in the period of recovery of the system after a financial breakdown that took place in the not too distant past. This is the period when animal spirits are diminished, the level of investment and debt to equity are low whereas profit to interest cover and margin of safety are high. Risk premium and consequently risk aversion are high (high borrower's and lender's risk).

However, as the economy moves up from the trough, profits begin to increase. In the midst of low expectations and conservative financing practices it becomes obvious to market participants that earned profits easily validate debt commitments. Since success breeds success, the optimism of market participants gradually rises (Keen 2004). Also, as Minsky argues, the rise in market optimism might not be gradual but rather the result of some outside shock powerful enough to cause displacement of the system and consequently dramatic change in profit horizons and the expectations of agents. Such a shock might be the beginning or end of a war, an abundant or insufficient harvest, some revolutionary far-reaching invention (railway, automobile, radio, film, computers), a political event (Kindleberger and Aliber 2005) or, most frequently, expansion of liquidity in major financial centers. Expansion of liquidity might take the form of an increase in traditional measures of money or more complex changes in financial structure induced by a change in the regulatory framework or the profit-seeking activities of "merchants of debt".

For example, a change in the regulatory framework such as financial deregulation and liberalization stimulates the creation of new banks and deposits, thus expanding the monetary base and therefore money supply. On the other hand, profit-seeking activities end in significant increases in the turnover of some liquid assets or in transformation of illiquid assets.

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73 Expansion of liquidity in developed money centers contributes to optimism and a buoyant economy and is fertile ground for exploiting new emerging, but risky technologies. In later stages, newly embraced technologies result in the slashing of production, communication and transportation costs producing a self-reinforcing process of success breeding further success. In the international context, aberrant optimism, increased productivity and significantly reduced costs stimulate the flow of capital towards peripheral economies and the expansion of international trade and thus, generally speaking, the process of globalization (Pettis 2001b). As Pettis (2001b) argues "...globalization is primarily a monetary phenomenon."

74 In Minsky's vocabulary "merchants of debt" are financial mediators.
into liquid ones. As Minsky points out, what money is, is an elusive category, and is created in the process of financing positions in the stock of capital assets: “Money not only arises in the process of financing, but an economy has a number of different types of money: everyone can create money; the problem is to get it accepted” (Minsky 1986, p. 255). Acceptance of some financial innovation by a broader financial community and a rise in its turnover or simply a rise in turnover of some already existing financial asset results in an increase in liquidity and consequently an increase in the liquidity of financial markets which has the same effect as an increase in the supply of money – decline in real interest rates and consequently a rise in asset prices. This process is potentially self-reinforcing since a rise in asset prices leads to a rise in investments and a rise in investments to further rises in assets prices which in turn makes an increasing amount of assets more liquid (Pettis 2001a). Assets that move up in the liquidity hierarchy i.e. can perform the function of collateral for new debt or, like money, be directly exchanged for some other asset, become money-like assets. However, money-like status is not a static category but depends on the expectations, mood and risk perception of market participants.

Minsky also emphasizes the power of the financial sector and financial innovations (i.e. changes in underlying liquidity) to generate disequilibrating feedback mechanisms on its own when the real sector does not share the same amount of optimism with the banking sector. In the event of aggressive profit-seeking behavior from the banking sector, when supply of finance exceeds demand for investment financing, surplus supply will finance demand for securities and existing capital assets causing a rise in the demand price of capital assets in relation to the supply price of investment output: “This, as has been explained, increases investment activity and thus profit – leading to a further rise in the price of capital assets and long-lived financial instruments. The behavior of financial markets, then, can trigger a boom from seemingly stable expansions” (Ibid, p. 278). Therefore, systems evolve not only under the influence of demand originating in the business sector and individual investors, but also as a consequence of the profit-seeking activities of entrepreneurs in financial firms (Nasica 2010).

Be that as it may, no matter whether the optimism of market participants grows gradually if “...recent experience is that outstanding debts are easily serviced, then there will be a tendency to stretch debt ratios.” (Minsky 1986, p. 209). Risk for both borrowers and lenders falls, and the

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75 An example of turning illiquid assets into liquid ones is the massive securitization of real estate assets that occurred over the past twenty years.
required margin of safety diminishes. The demand price of capital rises, which results in an increase in investment demand and the price of financial assets. In order to finance new investment projects, borrowers increase demand for external financing. Since the financial industry is also a profit-seeking activity, the supply of money will accommodate only if bankers share borrower's optimism. In parallel with rising investment demand and business wealth, consumer wealth increases too and consequently consumer spending. The surge in aggregate demand positively influences income, employment and profits, which further fuels optimistic forecasts of expected cash flows and thus prices of securities.

In an environment of low short-term interest rates, i.e. where hedge financing dominates and where bankers share the optimism of borrowers, the opportunity to “make on the carry” induces speculative financing practices: “In a world dominated by hedge finance, profit opportunities exist for both borrowing units and banks to shift to a greater use of short-term debt to finance positions in capital assets and in long-term debt.” (Ibid, p. 235). Units engaged in exploiting arbitrage opportunities (short-term financing of long-term assets) are speculatively financed.

As merchants of debt, in pursuit of profits, aggressively pour fresh money into financial markets, the prices of securities rise, the investment ratio rises and the general level of financial speculation increases. In this phase of rising optimism as “...a recovery approaches full employment, the current generation of economic soothsayers will proclaim that the business cycle has been banished from the land and a new era of permanent prosperity has been inaugurated. Debts can be taken on because the new policy instruments – be it the Federal Reserve System or fiscal policy – together with the greater sophistication of the economic scientists advising on policy assure that crises and debt deflations are now things of the past.” (Minsky 1975, p. 126). In this way, rising optimism evolves into excessive optimism.

The euphoric climate “beguiles its victims” more and more into a debt: “During a boom the speculative demand for money decreases, and portfolios become more heavily weighted with debt-financed positions. ...Households and firms substitute non-money financial assets for money as their liquid reserves.” (Ibid, pp. 123, 124). In time, debts begin to rise faster than profits.76 Among liabilities, the fastest growing items are short-term debts. The debt to equity ratio rises further, profit to interest cover falls, the margin of safety is melting and in a growing number of cases turns negative, the liquidity of the system begins to fall and in the end

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76 The increase in profits is constrained by the rise in productivity, whereas expansion of money is much more flexible.
the supply of credit and prices of securities increase exponentially. Due to decreased liquidity and devaluation of highly liquid debt instruments (optimistic agents are now more prone to risky investments) the interest rate rises. However, this rise does not decelerate the boom, because in anticipation of high speculative capital gains (which far exceed prevailing interest rates), optimistic agents are more than willing to take on more debts. In other words, during the period of market euphoria, elasticity of demand for credit with respect to interest rates decreases. Furthermore, the domination of highly speculative Ponzi units in later phases of market euphoria additionally put an upward pressure on interest rates (Keen 2004).

In time, as the period of euphoria continues, the system becomes more and more fragile and speculative and Ponzi units begin to dominate. In short, fragility emerges endogenously in an upward phase of the business cycle. However, the state of euphoria and market booming phase is temporary. As Minsky argues, financing “...is often based upon an assumption ‘that the existing state of affairs will continue indefinitely’ [a quotation from Keynes, remark by authors], but of course this assumption proves false. During a boom the existing state is the boom with its accompanying capital gains and asset revaluations. During both a debt-deflation and a stagnant recession the same conventional assumption of the present always ruling is made; the guiding wisdom is that debts are to be avoided, for debts lead to disaster. ...But in truth neither the boom, nor the debt deflation, nor the stagnation, and certainly not a recovery or full-employment growth can continue indefinitely. Each state nurtures forces that lead to its own destruction.” (Minsky 1975, p. 126).

In such a fragile situation a “not unusual” event which usually occurs “...after the increase in demand financed by speculative finance has raised interest rates, the wages of labor, and prices of material so that profit margins and thus the ability to validate the past are eroded” (Minsky 1986, p. 245), is capable of pushing the system over the brink into financial instability. The term indicates that, as a result of excessive optimism and over-indebtedness (erosion of the margin of safety and consequent increases in borrower's and lender's risk), it is rational to expect, but hard to predict the occurrence of an event that will make visible the inescapable divergence between expectations and reality. The “...fragility of the system makes the appearance of such a surprise event likely ...the existence of such an event should best be understood as ... endogenous reaction to the pressures building in the financial system.” (Wolfson 2002, pp. 394, 395).

For example, this endogenously generated surprise event might be a failure of a large company or financial institution (Wolfson 2002).
Exogenous shock might also trigger the crisis. For example, if restrictive monetary policy were implemented (which would increase interest rates) in order to constrain inflation, the number of speculative and Ponzi units would tend to increase in relation to hedge units.\textsuperscript{78} It is important to note that external shock has the power to destabilize the system only because fragility has already been generated endogenously.

Consequently, as agents notice that expectations were over-optimistic and as realized profits are disappointing\textsuperscript{79}, they start to protect their position by attempting to raise their liquidity. To increase liquidity, financial mediators are forced to reduce the supply of credit to hedge and speculative units and/or to shorten the maturity of new loans at increasing borrowing costs (in that case speculative units tend to transform into Ponzi) and to deny new short-term credit to Ponzi units since interest rates high enough to compensate lenders for increased risks would push the Ponzi borrowers into bankruptcy (Kregel 1998; Pettis 2001a). Existing and newly established Ponzi units (emerged as a consequence of transformation of speculative units) will, in attempt to meet their debt commitments, decrease production in order to cut expenses, decrease inventory, sell their product at a significant discount, suspend ongoing investment ventures, lay off workers and “make position by selling out positions”.\textsuperscript{80} Crisis is on its way: “When the speculative demand for money increases, owing to an increase in the danger seen as arising from liability structures, then firms, households, and financial institutions try to sell or reduce their assets to repay debts. This leads to a fall in the price of assets. ... A major objective of business, bankers, and financial intermediaries in this situation is to clean up their balance sheets.” (Minsky 1975, pp. 122, 124).\textsuperscript{81} Liquidity preference rises sharply and distinction between money-like assets and money becomes noticeable; now the “...money rules the roost.” (\textit{Ibid}, p. 78).\textsuperscript{82} Intensified selling of assets by Ponzi units causes at first a halt in

\textsuperscript{78} When the system is fragile, in an environment of monetary constraint “…speculative units will become Ponzi units and the net worth of previously Ponzi units will quickly evaporate.” (Minsky 1992, p. 8).

\textsuperscript{79} Because, due to euphoria, investments are “…prompted by expectations which are destined to disappointment.” (Keynes 1936, p. 348).

\textsuperscript{80} Selling of various assets and physical capital in possession (Minsky 1992).

\textsuperscript{81} As we can see, the capability to meet debt payments does not depend exclusively on the projected cash flows capital goods will generate in the future, but also on the capacity to sell or borrow against liquid assets. Liquidity of balance sheets is a crucial precondition for surviving and overcoming difficulties which arise when, in times of stress, liquidity in financial markets vanishes.

\textsuperscript{82} This kind of tension and anxiety is nicely described by Shakespeare when Richard III demanded in distress a horse to perform function of liquidity (escape) vehicle: “A horse, a horse, my kingdom for a horse!”
the dynamic rise of prices, immediately followed by a sharp fall in the prices of assets. The markets have gone down. The investment ratio falls, investment activity is depressed, and consequently expected profits fall and optimism evaporates. In parallel to business, consumer wealth melts away, and with it consumer spending. Positive feedback is activated, and the economy enters a downward vicious circle. As aggregate demand ebbs, unemployment and profits decline, fueling further decline in financial assets prices.

If, in this downward movement, the economic authorities do not implement expansive fiscal and monetary policy, debt-deflation will appear on the scene. As Irving Fisher argued in his debt deflation theory of the Great Depression, a fall in asset prices raises the value of money and at the same time the real value of debts. In this way, the more debtors try to decrease their debt, the more the value of their debt rises. A decrease of asset prices, contrary to Say’s Law, causes further decreases in asset prices, aggregate demand, output and employment. Falling prices are followed by declining aggregate demand due to general decline, not only in investments, but also in consumption, which arises as a consequence of the fall in household incomes and the rise in unemployment.

Of course, Minsky was well aware of the fact that government intervention, i.e. socialization of losses, increases the moral hazard in the future and induces ever riskier behavior in market participants: “Because the interventions lead to a quick halt to the downturn, financial disturbances, which force lender-of-last-resort intervention by the authorities, no longer lead to sustained price decreases; instead, the actions that are taken to prevent a debt deflation and a depression set a groundwork for a subsequent burst of expansion followed by inflation.” (Minsky 1986, p. 281). But, on the other hand, if the system is on the verge of crisis, abolition of rogue corporations and financial institutions is the only possible way to avoid deep depression. That is why, in time, after each new bailout episode, crises tend to erupt more frequently and tend to be more severe.

In order to ameliorate inherently destabilizing forces, the central bank should not focus only on the growth rate of the textbook definition of money supply, but also on the evolution of special forms of money as instruments for different purposes (monies or money-like assets). Thus, the process of creating and destroying money, “cannot be understood unless allowance is made for financial evolution and innovation: money, in truth, is an endogenously determined variable—the supply is responsive to demand and not something mechanically controlled by the Federal Reserve.” (Ibid, pp. 252, 253).

The cure lies in continual and, as much as possible, timely updating of financial market regulation rules and regulating practices. The monetary
authorities should, if possible, remain only one step behind creative financial engineers: “If the disrupting effects of banking are to be constrained, the authorities must drop their blinders and accept the need to guide and control the evolution of financial usages and practices. In a world of businessmen and financial intermediaries who aggressively seek profit, innovators will always outpace regulators; the authorities cannot prevent changes in the structure of portfolios from occurring. What they can do is keep the asset-equity ratio of banks within bounds by setting equity absorption ratios for various types of assets. If the authorities constrain banks and are aware of the activities of fringe banks and other financial institutions, they are in a better position to attenuate the disruptive expansionary tendencies of our economy.” (Ibid, p. 281).

5. Endogeneity of Money and Central Bank’s Limits in Controlling Money Supply

The question that arises is why the monetary authorities, which we could naturally assume are not prone to euphoric optimism, do not use the tools of monetary policy to prevent a dynamic rise in borrowing and thus financial fragility. Minsky (1957) argues that the answer lies in their limited power to control expansion of the money supply. Namely, supply of money is only imprecisely controlled by the central bank, since it is demand driven. When bankers share the optimism of borrowers, they will innovate their liability management modus in order to endogenously expand the money supply. If a central bank constrains the money supply through restriction of reserve growth, banks will increase the velocity of money by replacing demand deposits which are a cheap source of financing but at the same time burdened with high reserve requirements, with money market instruments (federal funds, certificates of deposits, repurchase agreements etc.) which are a more expensive source of financing but at the same time burdened with low reserve requirements. In this way, banks are able to increase the supply of money to the certain degree. Naturally, since banks find that their costs of financing have increased, market interest rates will also increase. However, as we mentioned, this rise does not decelerate the boom, because in anticipation of high speculative capital gains (which far exceed prevailing interest rates), optimistic agents are more than willing to increase their indebtedness. In addition, Ponzi units which accrue in later phases of market euphoria, additionally put an upward pressure on interest rates.
What is more, the rise in interest rates stimulates proliferation of financial innovations, which is the most important factor that induces agents to accept more and more risky behavior. Ruthless competition among financial institutions in their battle for potential clients ends in an eternal process of creating financial innovations: “In economies where borrowing and lending exists ingenuity goes into developing and introducing financial innovations, just as into production and marketing innovations.” (Minsky 1975, p. 126). With a proliferation of financial innovations, the available amount of finance goes up, which increases demand for existing assets, pushing up their prices. Because assets serve as collateral, rising asset prices allows even more debt to be emitted, thereby further increasing demand for finance. Therefore, financial markets are not mean-reverting, but momentum-driven (reflexive). The key concept of financial innovations is to find new and cheaper ways to finance investment and speculative activity, implying that, with the proliferation of financial innovations, the costs of financing need not rise. No less important, with the proliferation of financial innovation, in times of euphoria and expansion, the part of the financial market that is under the regulation of the monetary authorities shrinks. In this way, the movement of the system towards more fragile financial relations is supported by a process in which “more traditional and benign debt structures” (Magnus 2007, p. 7) are steadily replaced by borrowing that depends on new debt to repay existing loans.83 In essence, as history shows, financial innovations are nothing more than new forms of previously prohibited lending practices: “The world of finance hails invention of the wheel over and over again, often in a slightly more unstable version.” (Galbraith 1993, p. 19). When collapse comes “defects of the new ways and the new institutions are revealed...” (Minsky 1986, p. 281).

If, on the other hand, monetary policy is accommodative, the supply of money will increase without provoking a rise in interest rates. Meanwhile, in time, as the ratio of debt to equity in the system rises, lender’s risk will rise and consequently interest rates. Hence, no matter whether central bank policy is accommodative or not, interest rates will rise. The only difference is that in the case of a non-accommodative policy the velocity of money accelerates whereas interest rates will, in comparison to

83 Magnus (2007) named the period of rapid acceleration in debt the ”Minsky moment” which soon after became a fashionable catch phrase in high financial circles. However, Magnus also wrote that “Minsky moments are rare” and “are the raison d’être for activist fiscal and monetary policies designed to restore stability.” (Magnus 2007, p. 8). As Tavasci and Toporowski (2010) point out this cannot be farther from the truth, since Minsky did not think of modern capitalist economies as self-regulated and self-equilibrating systems, but, on the contrary, as disequilibrating systems continually thriving on financial instability.
an accommodative monetary environment, rise more sharply causing proliferation of financial innovations. The point is that, no matter whether central bank policy is accommodative or not, expansion and euphoria are unavoidable.

6. The FIH in Open Economy

Minsky’s model of crisis generation in a closed economy with developed financial markets Kregel (1998) expands to open developing economies, in which most of the debt is foreign short-term debt or debt set on a roll-over basis (floating-rate debt) and debt denominated in hard currency. To potentially dangerous exogenous shocks Kregel (1998) adds three more: increases in interest rates and interest rate differentials in international financial markets; depreciation of the local currency; and worsening of terms of trade or decrease in demand for core export products. All three shocks have a negative impact on the margin of safety.

Rises in international interest rate differentials and foreign interest rates increase short-term debt commitments, while revenues are unchanged or fall in the event of a looming crisis. Depreciation of local currency implies a rise in value of debt denominated in hard currency in local currency terms. Also, if a local industry is dependent on imported inputs, depreciation of the local currency raises the costs of production and consequently lowers the margin of safety. Furthermore, profits may fall further, if import costs rise by the full amount of depreciation, whereas, on the other hand, in an attempt to increase its foreign income a producer increases foreign sales. Increases in foreign sales in most cases lead to decreasing prices in international markets. It is usual that depreciation of local currency goes together with the rise in domestic interest rates since higher interest rates are seen by monetary authorities as a powerful weapon against weak currency and evaporating confidence of foreign investors. Since, in contrast to units in a closed economy, units in open market economies are also vulnerable to international interest rate and exchange rate shocks, Arestis and Glickman (2002) call such organizations super-speculative-financing units. Lastly, worsened terms of trade or fall in demand of the core export products directly decrease incomes and narrow margins of safety.

Banks that raise funds in international markets, where most of the debt is short-term and denominated in hard currency are exposed to one additional risk, the risk of reducing its credit rating. Namely, exogenous

84 Beside restrictive monetary policy in the case of closed economies.
shocks cause reduction of liquidity and soundness of domestic banks’ borrowers, and consequently reductions in the quality of the banks’ assets. Due to the rising proportion of non-performing loans in banks’ portfolios, lenders will raise interest rate spreads on international funding. On the other hand, due to rising difficulties in the real sector (as a consequence of exogenous shock) and higher interest rate spreads, banks will not be able to recover by charging higher interest rates to their distressed domestic borrowers. If the change of the interest rate credit spread is sufficiently high, a bank can be transformed into a Ponzi unit in a very short period. If this happens, the bank, confronted with a lack of liquidity, will increase financing costs and simultaneously shorten the maturity of new loans and reduce financing of hedge and speculative units (speculative units tend to transform into Ponzis) and require repayment of Ponzi debt commitments. At the same time, it may happen that international creditors refuse any further short-term financing to the domestic banks. In that case, the banks will stop financing the real sector, require immediate repayment of debts and will often take over collateral and try to sell it as quickly as possible (at significant discounts, i.e. at fire-sale prices). Also, domestic banks will be unwilling to lend one to another, which may lead to a sharp contraction of the domestic interbank market. It is important to point out that external shocks will have destabilizing power only if the national economy is simultaneously financially fragile, that is, as Pettis (2001a) suggests, if an inverted capital structure is put in place. An inverted capital structure is a design of the liability side of the national economy’s balance sheet, which transmits external shocks into the internal economy in a way that increases earnings volatility, i.e. causes borrowers’ revenues and financing costs to move sharply in opposite directions. Moreover, in the case of an open economy, excessively optimistic expectations created in a robust internal environment are highly correlated with a stable and robust external environment. Namely, when an economy is robust and the environment is stable, agents do not expect the occurrence of any negative external shocks. Rising optimism and confidence of officials and big business in developing countries and thus extrapolation of good times infinitely into the future, make an inverted capital structure as appear to be a rational way of lowering financing costs over time.

85 “Make position by selling out positions”.
86 Dominant share of short-term or floating-rate debt and/or debt denominated in hard currency in total debts are examples of inverted liability structures at the sovereign level.
7. Investment versus Liquidity Model of Capital Flows from Developed to Developing Countries

Before we set out the model of the development of financial fragility in emerging markets, it is important to understand why capital flows from rich to poor countries. Pettis (2001a) argues that there are two main theoretical models usually used to explain this issue. The first one is a mainstream model or, as Pettis (2001a) calls it, “investment model”, which stresses the importance of local economic reforms aiming at achieving macroeconomic stability and liberalization and deregulation of domestic financial markets and trade. If properly implemented, the desired market reforms would lead, in the near future, to a prolonged period of sustainable economic growth, simultaneously creating profit opportunities for international investors. Widely prized economic reforms in the international community are centered around diminishing the role of the state in economic life and typically include some of the following; privatization in order to dispel fears of investors that governmental support to certain industries or particular firms may end in increasing the budget deficit (Grabel 1996b); restrictive monetary and fiscal policy aimed at taming and eliminating inflation; achieving and sustaining a fiscal balance or surplus; trade and financial liberalization and deregulation; pegging of the local currency against the U.S. dollar or some other hard currency or adjusting the exchange rate within the prevailing band. Once these market-led stabilization policies deliver the first positive results, investor confidence grows, and capital inflow gains momentum (Wolfson 2002). The investment model stresses the rationality of investors seeking new opportunities to earn profits, who respond to improved economic prospects in countries, which were, up to that moment, excluded from major capital centers. In such a way, improved economic conditions precede investment inflows.

However, Pettis (2001a) holds that although appealing, real world experiences do not support the investment model. There are numerous examples of experimenting with desired economic reforms in Latin American countries, which were not followed by capital inflows. One would expect that capital inflows into developing countries are more random than actual experience shows, i.e. highly correlated with the timing of implementation of economic reforms. However, as Pettis (2001a) stresses, there is little evidence that capital flows respond to desired policy decisions in developing countries. On the contrary, what can actually be seen is that the timing of capital inflows towards developing countries is virtually identical, although there is no reason to assume that different countries around the world simultaneously undergo preferable political and
economic changes. Therefore, capital movements to poor countries are better explained by the “liquidity model”, which emphasizes the source, and not the destination – the spark that initiates massive capital movements towards developing countries is Minskyan liquidity expansion in rich countries.

8. The Anatomy of Minskyan Crisis in Open Economies

According to the liquidity model, the displacement or event that triggers massive capital movements towards developing countries is Minskyan liquidity expansion in rich countries. As liquidity in rich countries rises, financial markets take off, the real interest rate drops and a growing number of assets become more money-like, which further reinforces liquidity expansion. As the liquidity of financial markets and thus turnover increase, the volatility of risky assets starts to decline which makes them a more attractive investment destination in comparison to traditional assets. In response to lower volatility, over-optimistic investors systematically underestimate risks or overestimate prospective earnings in nontraditional sectors. As, in time, investors start to exhaust local higher risk investment opportunities, some capital finds its way toward developing countries in order to “make on the carry”.87 Still, an important precondition for capital inflows is macroeconomic and foreign exchange rate stabilization as well as financial liberalization and deregulation of the host country. Deregulation opens all doors to foreign wealth owners since it enables them to do business in different types of financial and real estate markets within country.

In their profit-seeking activity, foreign investors will buy domestic financial assets88 and domestic corporations and financial intermediaries will, due to high local interest rates, refrain from raising debt domestically and, in order to maximally exploit arbitrage opportunities, borrow short-term funds in low interest major financial centers and lend locally these funds later at higher interest rates or finance buying of long-term securities, real estate and capital assets. The rise in price of local financial, real estate and capital assets has two important effects. Firstly, it implies a rise in the demand price of capital assets in relation to the supply price of

87 In case of open economies “making on the carry” means borrowing short-term funds in developed low-interest rates markets and their investment at higher interest rates in developing countries.

88 Predominantly loans to domestic banks and firms and portfolio and real estate investments.
investment output causing a rise in investment activity and consequently employment, consumption and output. Exports also grow, since liquidity expansion in major financial centers entails higher consumption, and increased export demand usually leads to higher commodity prices. However, since the other side of the massive capital inflow coin is a trade deficit, imports go up faster than exports. Secondly, it increases turnover of local financial and real estate assets and therefore their liquidity. New liquid assets can now perform the function of collateral and a rise in the value of collateral justifies the increased value of loans demanded. Growing capital inflows, as well as an ever rising leverage ratio (debt to equity) are the order of the day, since, in a booming market, financial and real estate assets can always be sold at inflated prices.

As liquidity rises, interest rates and interest spreads fall. Large capital inflows in economies with a floating exchange rate regime and balanced current account cause their currencies to appreciate, whereas those that suffer persistently high current account deficits see, at least, stable nominal exchange rate levels. Also, no matter whether the economy implements a fixed or floating exchange rate regime, central banks usually sterilize capital inflows in excess relative to their current account deficits in order to avoid appreciation of the real foreign exchange rate, aiming at preserving a competitive position in international markets. In that way, quasi fiscal costs simultaneously increase with the country’s margin of safety (foreign exchange reserves).

All in all, a growing economy and a stable or appreciating currency create the impression of improved economic conditions which further reinforces capital inflow and the optimism of market participants. (Arestis and Glickman 2002). Stimulated by economic growth and rising profits, local politicians and elites agitate and call for broadening of the scope and further deepening of internationally preferable economic reforms. This is done in the belief that it was the reforms that were attracting capital inflows and not vice versa – that in truth the increasing volume of capital

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89 The nominal exchange rate is the rate at which one can trade the currency of one country for the currency of another. The real exchange rate is the nominal exchange rate adjusted for relative prices among the countries under consideration.

90 The immediate consequence of massive capital inflows is a sharp rise in demand for local currency. In order to prevent nominal exchange rate appreciation, central banks intervene in the foreign exchange market, i.e. buy foreign currency and sell local currency, which, in the final instance, leads to a rise in the money supply and foreign exchange reserves. However, in order to prevent inflation driven by such a rise in the money supply, central banks often conduct a process of sterilized foreign exchange operation in money markets. For example, by selling repos, the central bank withdraws domestic currency from circulation and in such a way as to leave the monetary base and money supply intact.
inflows created new profit opportunities which stimulated local officials and big business to give up resisting economic changes.\footnote{Foreign capital facilitates financing of fiscal deficits, low-cost financing of local industries that oppose trade liberalization, building of new infrastructure etc. (Pettis 2001b).} On the other hand, international investors further increase their investments in the developing country since, they claim, the applied policies are valid and future advancement in reforms will provide permanent economic growth and thus capital inflows.\footnote{Grabel (1996b) writes that the necessity to conduct neoliberal economic reforms in order to attract and maintain capital inflows leads to “compromised policy autonomy”; i.e. policy autonomy constrained \textit{ex ante} and \textit{ex post}.} (Pettis 2001a). Extrapolation of good times and stability into an infinite future in concert with flourishing optimism and confidence usually lead to inverted capital structure being seen as a rational way to lower financing costs over time.

Meanwhile, in parallel with intensive capital inflows and the resultant advancement of market reforms, the externally financed, dynamic increase in aggregate demand leads to local price increases, especially, due to lack of international competition, in non-tradable sectors.\footnote{Construction, financial intermediation, real estate, renting, wholesale and retail etc.} (Frenkel and Rapetti 2009). The rise in prices of non-tradable sectors further attracts new, mainly speculative investments and thus provokes a further increase in inflationary pressures. Increases in price level usually lead to appreciation of the real exchange rate and thus a worsening of the trade balance. Again, foreign exchange rate appreciation stimulates further inflow of speculative capital in search for capital gains by holding local assets, thus further supporting expansion of credit and aggregate output. Increases in the burden of interest and dividend payments in combination with a worsening trade balance lead to current account deficits. One more factor that may contribute to deterioration of the trade balance and appreciation of real foreign exchange rates is growth of real wages.

Taken together, the progressive worsening of current account and the increase in foreign liabilities, and in particular short-term liabilities denominated in hard currency, lead to a rise in the external debt to foreign exchange reserves ratio.

9. From Boom to Bust

In the end, after several good and seemingly prosperous years, the system collapses under an unsustainable level of debt burden. Pettis (2001a) differentiates between two types of shock that can trigger crisis in emerg-
ing markets. The first one is the occurrence of a “not unusual” event in major financial markets after several good years that leads to a long-term sharp reversion of excess liquidity. The long-term retreat of risk-prone capital results in a rise in real interest rates, whereas the decline in global aggregate demand leads to a sharp fall in the commodity prices and export revenues of developing countries. Reluctance of international lenders to refinance debts and the sharp fall in export revenues may end in defaults and restructurings for sovereign borrowers. During a global debt crisis, refinancing problems affect all high-risk assets and borrowers.94

The second type of triggering event is a local “not unusual” event95 in an environment of internally accumulated financial difficulties reflected in a deterioration of the external balance, possibly (but not necessarily) in combination with some external shock which leads to a short-term collapse in financing at the margin. As a consequence of reversed market optimism, in fear of huge capital losses, international investors start en masse to sell risky and buy low-risk assets in developed financial markets thereby causing temporary capital outflow.96 This type of crisis could, in the event of an internally built unstable (inverted) capital structure lead to a solvency crisis, i.e. market collapse and widespread defaults and bankruptcies. However, since these shocks occur in an environment of stable global liquidity conditions, if the market defaults are not devastating97 or if an outside lender of last resort injects timely liquidity, aiming at preventing the debt deflation from taking its toll, the recovery of a crisis-hit country can be unexpectedly swift.98 In contrast to a long-term liquidity contraction, short-term collapses usually do not end in global defaults.

No matter whether the triggering event is a long-term liquidity contraction or a short-term flight to quality, their common feature is massive escape of international capital from local emerging markets, i.e. massive

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94 Examples of a long-term liquidity contraction are the Great Depression in the 1930s, the Great Debt Crisis in the early 1980s and the current Great Recession that started in 2007.

95 For example failure of some prominent financial institution of corporation, political crisis, war, natural disasters, social unrest, revealing of some political or economic affaire or corruption scheme etc.

96 Examples of short-term collapses are Mexico in 1994 and Asia in 1997.

97 In case of correlated capital structure where majority of debt is medium or long-term fixed rate debt denominated in local currency (Pettis 2001a).

98 As the example of the Great Asian Crisis shows, unnecessary restrictive policy measures imposed after the crisis erupted aiming at restoring foreign investors’ confidence and reverting capital outflows actually aggravated the problems, and resulted in a full-fledged solvency crisis, i.e. massive bankruptcies and debt deflation and consequently a drastic fall in imports which led to large current account surpluses (Kregel 1998; Radonjić 2007).
sale of local-currency denominated assets. Since in such a situation “there is no such thing as liquidity of investment for the community as a whole” (Keynes 1936, p. 194) the win-win strategy is to liquidate positions in local assets before one’s competitors. In this beauty contest game, if an agent believes that the average agent thinks the local market will fall, in anticipation of a decrease in the price of local assets and currency, he will rush to sell local assets as soon as possible, in order to avoid capital losses and acquire accumulated capital gains (Crotty 1994; Keynes 1936; Radonjić 2009a). If other agents form the same or similar expectations, they will all, in an attempt to remain one step ahead, rush for the exit, thereby pushing prices down. Even in the absence of evidence that the balance sheets of domestic financial intermediaries and corporations have deteriorated, the rush for the exit will cause a collapse of prices of domestic assets and thus deterioration in domestic financial conditions. The sale of domestic assets on a massive scale will put heavy depreciating pressure on the domestic currency.

The formerly heralded and praised government will try to reverse outflow and attract new inflows by further intensification of the restrictive policies initially adopted.99 This strategy usually deepens the crisis and the situation may be further aggravated if domestic authorities are compelled to seek financial support from multilateral agencies (Cruz and Walters 2010).

In an unsuccessful attempt to protect the currency, central bankers will deplete foreign exchange reserves 100 and sharply raise interest rates aiming at stopping the dramatic fall. As we already said, a dramatic fall in the value of local currency and a significant increase in interest rates when most of the debt is short-term or set on an adjustable basis and denominated in hard currency instantly melts the margins of safety and transforms speculative and super-speculative units into Ponzi units. Ponzi units will sell domestic currency further, in an attempt to meet their hard-currency denominated debt commitments, and thus put additional downward pressure on the exchange rate, thus increasing the debt burden of borrowers. Fisher’s (1933) paradox sets in at this point: the more debtors try to reduce their debt, the more the value of their debt rises and the more the value of the local currency is reduced. In addition, domestic currency depreciation hits wage-earners dependent on imported wage goods hard, and makes the import of capital goods costly. (Grabel 1996b).

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99 What Grabel (1996b) calls constrained policy autonomy ex post.
100 Meaning that the authorities actually give up the resources necessary for ameliorating the consequences of the coming economic downturn (Ibid).
When the bust comes, local inhabitants’ sentiments about market-led reforms reverse strongly. The backlash against financial and trade liberalization usually leads to calls for more inward-oriented development policy, protectionism and the birth or reanimation of populist and/or nationalist movements (Pettis 2001b).

As Minsky recommends, in order to prevent debt-deflation and a consequent sharp fall in investments, output, consumption and employment, the government should support aggregate demand and corporate profits through massive deficit spending, whereas, at the same time, the central bank, as a lender of last resort, has to provide liquidity to indebted units101: “...the combined behavior of the government and of the central bank, in the face of financial disarray and declining income, not only prevents deep depressions but also sets the stage for a serious and accelerating inflation to follow. (Minsky 1986, p. 17). ... the income and employment effect, which operates through government demand for goods, services, and labor; the budget effect, which operates through generating sectoral surpluses and deficits; and the portfolio effect, which exists because the financial instruments put out to finance a deficit must appear in some portfolio. (Ibid, p. 24). ... An institution that performs a lender-of-last-resort function guarantees that the terms of some contracts will be fulfilled, regardless of market conditions or the business situation of the particular debtor. Thus, a lender of last resort diminishes the risk of default of the assets it guarantees. Assets with low default risk are readily marketable-they are liquid.” (Ibid, p. 47).

Since most of the debt in emerging markets is denominated in foreign currency and the stability of the exchange rate has to be preserved, the central bank’s function as a lender of last resort in emerging markets is severely constrained. As a result, massive financial support is needed from developed countries and international financial institutions. However, the IMF, as the international bailing-out institution, usually imposes restrictive fiscal and monetary policy measures in order to restore a sustainable balance of payment dynamics and avert inflation spikes, thereby amplifying debt-deflation difficulties.102

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101 In a word, government should try, by all means, to avoid constrained policy autonomy ex post.

102 This was the case in Mexico in 1994 and Asia in 1997. In contrast to those sudden stop episodes, the IMF refrained from imposing austerity measures when financial crisis hit emerging Europe in 2008, which is why, as we will see later, the debt deflation episode has been successfully avoided so far.
10. Third Generation Models of International Financial Crisis

Over the last 30 years or so financial boom-bust episodes have started to occur on a regular basis and with increasing frequency in emerging markets. As a result, some economists have expressed their dissatisfaction with models which see financial crisis as a consequence of either government policy mistakes, exogenous shock or simply self-fulfilling prophecies. Neither the first nor the second generation models were sufficient to explain the financial crises that hit many developing countries starting from the mid-1990s, first Mexico, then developing countries in South East Asia, Latin America and now Eastern Europe. None of these countries ran conflicting fiscal and exchange rate policies, and neither did they have an incentive to devalue their currency. Third generation models recognize the importance of speculation, liquidity, “making on the carry”, asymmetric shocks, debt-deflation and interdependences between markets and unit's balance sheets in explaining financial crises. (Nesvetailova 2007). Crisis may not be simply the consequence of government misconduct, such as large current account deficits, which may be an outcome of poor domestic competitiveness policy and large tariff protection. They can also be caused by a poorly designed capital structure (high share of hard-currency denominated debts), which internally amplifies external shocks and in that way can cause real estate or share price bubbles to burst, large corporations to collapse and bank runs to begin. Also, in many cases, an external shocks such as worsening of the terms of trade or an internal non-economic shock, like a political crisis, war or some natural catastrophe can trigger crisis (Calvo et al. 2008).

Third generation models explore the influence of real exchange rate depreciation and the sudden stop of capital inflow on real sector balance sheets in the context of wide-spread dollarization or euroization. They also explore the reinforcing impact that banking crises exert on developing countries that are prone or are already suffering a currency crisis. These models were first introduced by Krugman (1999) and later refined by other authors.103 In this type of crisis, the real exchange rate depreciates rapidly and abruptly, usually following a sudden stop in capital inflows, whereby the affected developing country may experience any or all of the following detrimental effects. The first effect is an abrupt current account adjustment leading to strong contraction of domestic supply. The second is a surge in domestic and foreign debts due to liability dollarization or

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103 For more details see Calvo (1999); Calvo et al. (2008); Chang and Velasco (2000).
euroization, which makes it very hard for firms producing non-tradable goods or services to repay their obligations. Over time, dollarized or euroized loans with domestic banks become non-performing loans. The third detrimental effect that may have an impact on the crisis-hit developing country are bank bankruptcies stemming from loan losses and liquidity compression which usually lead to a credit crunch. The currency crisis and the large real exchange rate depreciation might even give rise to a full-blown banking crisis if the solvency of banks deteriorated significantly, and this is most often the case if the share of loans originated in foreign currencies or indexed to them is large (Chang and Velasco 2000). It is not uncommon for crisis eruption to cause a bank run, which usually occurs if the public starts believing that massive bank bankruptcies are inevitable, even if such a belief later proves to be unfounded. Bank runs nevertheless do cause bank bankruptcies through a self-fulfilling prophecy leading to a blockade of payment systems, a credit crunch and widespread illiquidity. Finally, all these problems usually cause severe output contraction. In addition, those emerging countries whose banking systems rely more on foreign borrowing will be in even deeper difficulties ensuing from currency attacks. Whether or not the depreciation will materialize into an external default or widespread banking system failure depends on the size of the depreciation, the volume of foreign-exchange denominated or indexed obligations and the flexibility of the producers to switch from non-tradable production to tradable production (Calvo et al. 2008). Thus, real exchange rate depreciations are most dangerous after a long period of large capital inflows, especially in the form of credits, leading countries to accumulate more vulnerabilities. Potentially strong balance-sheet effects stemming from dollarization or euroization prove to be excellent predictors of currency crises. The importance of the current account deficit prior to the sudden stop lies in its strong correlation with the required size of the real exchange rate depreciation that is needed to reverse such deficit into a surplus.

One of the most frequent triggers of currency crisis classified under the third generation models is a capital inflow sudden stop episode (Ibid). It can be defined as a sudden and unexpected fall in capital inflows to the country, below long-term mean values, which results in a significant output contraction. Similarly, capital flow reversals are more severe events defined as abrupt changes turning capital inflows into capital outflows.

A special case of sudden stops is the so-called systemic sudden stop of capital flows, which is defined as a large and unexpected financial account reversal, i.e. a reversal of capital flows that occurs during periods of international or regional turmoil triggered by international financial crisis
(long-term liquidity contraction as defined above). (Ibid). Turmoil is reflected in a sharp increase in interest rates and contractions in international credit and aggregate demand. The common causes of such external events are major banking sector crises, recessions or inflation surges in large developed countries. The order of events starts from an initial external shock, causing capital inflows to stop and depriving the country of the opportunity to finance its current account deficit and repay maturing foreign debts. This requires a contraction of the current account that can be achieved by a contraction in domestic demand for tradable goods and, often, a real exchange rate depreciation. Real exchange rate depreciations increase the burden of foreign exchange debt relative to GDP and lead to financial distress and widespread bankruptcies in the real sector, in the case of unhedged borrowers with large liability dollarization or euroization. Finally, an output slump marks the beginning of a serious recession.

11. Some Other Alternative Views

Rodrik, (1998) blames international financial integration for making it possible for capital inflow sudden stops to cause sharp swings in output, current account and the exchange rates. The relevance of financial integration stems from the fact that a country must be financially integrated with other countries in order to experience both capital inflows and outflows.

Berglöf et al. (2009) properly called the capital inflows into Eastern Europe stemming from the European financial integration a “mixed blessing”. The financial integration did bring a rapid income convergence to Central, Eastern and South-Eastern Europe but at the expense of an increase in vulnerabilities and the creation of many other problems at the same time.

Reinhart and Reinhart (2008) have a more negative view on financial integration and unstable capital flows. They observed numerous cases of bonanzas during the last five decades and found that capital flow “bonanzas” or excessive capital inflows are not a blessing, either for advanced or developing markets. They produce more frequent economic crises, i.e. debt defaults, banking, inflation and currency crashes in developing countries. Moreover, bonanzas incline policy makers to pro-cyclical fiscal policies and attempts to avoid an exchange rate appreciation, which very likely to contribute to economic vulnerability. An important finding of these authors is that not only do profitable investment opportunities attract foreign capital but also potential close integration with a strong anchor coun-

104 Constrained policy autonomy ex ante.
try or group of countries that will ultimately discipline policy makers and narrow exchange rate volatility and country risk spreads and supports the growth of local equity prices.

Kalantzis (2004) showed, by using a theoretically built model, that the necessary condition for a balance of payments crisis to occur is for a developing country to liberalize the capital account. In this way, it becomes a recipient of regular capital inflows bringing high growth along with foreign debt. On the other hand, if such a country wants to avoid balance of payments crises it must choose to stay in the state of autarchy by maintaining capital controls along with moderate growth. However, the choice of capital account liberalization is not sufficient since the occurrence of crisis also depends on the structure of the economy. Financial account liberalization can have different effects on different economies. Productive ones will benefit while the less productive will also experience growth benefits during normal times, but at the expense of increased likelihood of a costly balance of payments crisis. This author showed that a developing country that is more integrated into international financial markets in terms of larger capital inflows might end up becoming more fragile or, on the contrary, more resilient. It will become financially fragile when its non-tradable sectors become too large in relation to tradable sectors, which destabilizes the economy. When capital stops flowing into a country with such a fragile economic structure, strong real exchange rate depreciation is imminent. This redirects capital inflows to tradable sectors, depressing investments in non-tradable sectors to zero and provoking large scale bankruptcies of corporations producing non-tradable goods and services.

On the other hand, contrary to Kalantzis’ findings, Rodrik, (1998) sees no evidence that financially integrated developing countries perform better than those with capital controls. However, they do suffer from the damaging effect produced by surges in capital inflows. His final conclusion is that liberalization of capital inflows should be implemented only when a developing country puts a proper institutional infrastructure in place, i.e. when it grows from a developing to a developed country. The reason is that only institutional development has the power to make a risky policy of financial liberalization yield significant benefits, although this process might last for decades.

Berglöf et al. (2009) discovered that capital inflows and financial integration increased the vulnerabilities of East European countries in the pre-crisis period but later turned out to be a stabilizing factor. However, the crisis of the East European countries is very specific in many aspects including the exceptionally large threat to West European financial stability stemming from a potentially uncontrolled unfolding of a debt-deflation
scenario. In some different setting, in which, for example, only an individual small developing country falls prey to an isolated capital inflow sudden stop, it could turn out that its uncontrolled currency crisis and the consequent fallout might be too small to require a coordinated international bailout or austerity measures. This would lead to a situation in which the vulnerabilities stemming from large capital inflows in the pre-crisis period are much more costly than all the benefits stemming from such capital inflows. Therefore, developing East European countries should not rest assured that their financial integration with West European countries is a blanket insurance policy protecting them from the impact of all shocks that bring to the surface all their accumulated vulnerabilities.
IV The Fallen Angels: Mexico and the Asian Tigers

In this chapter we analyze the Mexican and Asian financial crisis, and in those which follow, in greater detail, we examine the late financial crisis in Eastern Europe. In our opinion, these crises are best explained within the Minskyan analytical framework, since, on the basis of over-optimistic expectations, dynamical movements of capital towards host countries was exogenously generated, whereas financial difficulties were accumulated endogenously (currency risk and “making on the carry”). Also, after a period of prolonged expansion, the simultaneous effect of further endogenous and exogenous shocks within an already fragile environment pushed those systems into financial instability.

As we have said, capital movements to poor countries are better explained by the liquidity model, according to which the event that triggers massive capital movements towards developing countries is Minskyan liquidity expansion in rich countries. Dynamic capital inflow then propels economic growth in the destination country and, in general, creates a sense of macroeconomic stability and strength in the local economy. Economic growth, growing self-confidence, a sense of macroeconomic stability and expectation of permanent capital inflows then reinforce and stimulate policy reforms which are in line with the preferences of the international financial community. In other words, the liquidity model claims that capital inflows precede economic reforms. In line with the liquidity approach, the
liquidity boom in developed countries and the following lending expansion to developing markets of the late 1980s and early 1990s that preceded the Mexican “Tequila” Crisis and the Great Asian Crisis can be explained as a consequence of three events (Pettis 2001a). First, American savers switched their savings from the equity in their homes to stocks and bonds and especially to mortgage backed securities – financial innovations used to monetize illiquid real estate assets. Second, akin to the Asian tigers in the late 1990s, Japan (along with the other Asian countries) recycled huge trade surpluses in the early and middle 1980s by investing in foreign financial assets, primarily in U.S. Treasury debt instruments and large cap U.S. stocks. Third, Pettis (2001a) assumes that Russian tycoons who had looted their country in the process of a wild and nontransparent privatization and pilfered a significant share of export earnings found safe haven for their money in the European banks. All in all, the combined effect of these liquidity displacement factors launched a massive movement of capital towards developing countries in the early 1990s. As can be seen in Table 1, between 1991 and 1996 official flows to developing countries declined drastically and turned into outflow whereas, in the same period, the rate of total flows increased by more than 30% annually.

Table 1. Capital Flows to Developing Countries (in billions of US$)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Net official flows</td>
<td>37</td>
<td>22</td>
<td>20</td>
<td>2</td>
<td>26</td>
<td>-1</td>
<td>24</td>
<td>42</td>
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<td>Net private flows</td>
<td>124</td>
<td>119</td>
<td>182</td>
<td>153</td>
<td>193</td>
<td>212</td>
<td>149</td>
<td>64</td>
</tr>
<tr>
<td>Net direct investment</td>
<td>31</td>
<td>36</td>
<td>57</td>
<td>83</td>
<td>97</td>
<td>116</td>
<td>143</td>
<td>131</td>
</tr>
<tr>
<td>Net portfolio investment</td>
<td>37</td>
<td>51</td>
<td>114</td>
<td>106</td>
<td>41</td>
<td>81</td>
<td>67</td>
<td>37</td>
</tr>
<tr>
<td>Other net investment</td>
<td>56</td>
<td>33</td>
<td>11</td>
<td>-36</td>
<td>55</td>
<td>15</td>
<td>-60</td>
<td>-103</td>
</tr>
<tr>
<td>Net capital flows</td>
<td>160</td>
<td>142</td>
<td>202</td>
<td>154</td>
<td>219</td>
<td>211</td>
<td>173</td>
<td>106</td>
</tr>
</tbody>
</table>


1. The Mexican Tequila Party and Hangover

The period up to 1989 was tranquil and robust. At the time, memories of the not too distant economic breakdown that took place in 1982 (The Great Debt Crisis) were still fresh. In the next five years, an inward-oriented economic system based on import substitution, high protective barriers and, above all, corrupted political elites was in recession. High budget and
current account deficits, raging inflation, disappointing economic growth and legislatures hostile to foreign investors, kept foreign capital away from this part of the world. In the 1981–1989 period, the average rate of growth of Mexican GDP was 1.3%, well below the rate of population growth in the same period. Aggregate demand was depressed, mostly thanks to the very low level of investments. In 1982–1986 the average rate of growth of gross investments was negative and amounted to minus 6.5% (Cruz et al. 2006). Due to fresh and unpleasant memories of the recent financial breakdown and implementation of monetary austerity (the constitutive part of the late 1987 stabilization plan), the lending policies of the banks were highly conservative, and potential borrowers, unwilling to get into debt, financed most of their investments from retained earnings. In addition, external factors contributed significantly to the Mexican slowdown. During the early and mid 1980s, the price of oil, a major Mexican export product, decreased drastically. All in all, the investment climate and economic situation in Mexico were outstandingly pessimistic and somber in the years that preceded 1988 (Radonjić 2008).

However, in the years that were about to come, several internationally preferred policy changes occurred in Mexico which coincided with a liquidity expansion and a decrease in interest rates in developed countries (displacement) in the early 1990s. First, in December 1987, the laissez-faire oriented Mexican president Miguel de la Madrid, determined to stabilize economy and irreversibly renew investor confidence, launched a stabilization plan. Elimination of budget deficits and inflation, exchange rate stabilization, control of wages and prices (income policy), initiation of the privatization process of state-owed enterprises, relaxation of bank reserve requirements and removal of trade tariffs, necessary import licenses approved by government and strict rules concerning foreign ownership were the mainstays of his plan. In order to achieve this quite ambitious plan, de la Madrid imposed fiscal and monetary austerity, and in early 1988 adhered to a crawling-peg exchange-rate regime (in relation to the U.S. dollar). The second factor that positively influenced investors perception of the Mexican economy was the U.S. Treasury Secretary Nicholas Brady’s announcement in July 1989 that Mexican debt would be converted at a discount into Brady bonds, while part of the debt would be forgiven. In the end, the Brady plan served more as a positive psychological impulse, because debt relief was modest, whereas annual transfers related to external debt service decreased to 1% of GDP annually (Carstens and Schwartz 1998). In addition, in 1989 and 1990 restrictions to foreign investments in

105 For example, real GDP par capita in 1986 was 10% below its 1981 level (Krugman 2000).
domestic bonds and stocks were lifted. Last but not least, came an element frequently used to support and rationalize investments in Mexico, the initiative of president Carlos Salinas de Gortari\textsuperscript{106} to establish a regional free trade zone comprising Mexico, the USA and Canada (named the North American Free Trade Agreement – NAFTA). International investors interpreted this move by president Salinas as a definitive signal of irreversible determination on the part of the Mexican authorities to persevere in the reforms undertaken (Krugman 2000).

As liquidity expanded in developed countries and real interest rates dropped and since Mexico had liberalized its capital account and deregulated local financial markets a window of opportunity to “make on the carry”, stimulated profit-seeking agents to direct more and more capital towards Mexico (Table 2).\textsuperscript{107}

The consequent dynamic inflow of capital made the Mexican reforms appear astonishing and admirable. During the euphoric phase that covered 1989–1990, inflation decreased from 159.1% in 1987 to 51.7% in 1988, 19.7% in 1989 and in 1990 it increased to 30%. The budget deficit fell from 14.1% of GDP in 1987 to 4.5% in 1989 and 2% in 1990. Also, the nominal interest rate saw a dramatic fall from 123% in 1987 to 55.4% in 1988, 48% in 1989 reaching 34.4% in 1990 (Cruz et al. 2006). In a word, the macroeconomic stabilization program was, it seemed at the time, more than successful. Resultantly, borrower’s and lender’s risk fell dramatically and foreign capital started a dynamic inflow. Total capital inflow surged from 591 million US$ in 1988 to 4.3 billion US$ in 1989 and reached an astonishing 17 billion US$ in 1990 (Table 3). Most of the capital inflow in 1990 was in the form of loans and deposits (65%). (Carstens and Schwartz 1998). In parallel with the dynamic capital inflow and the sharp decrease in government fiscal deficits,\textsuperscript{108} bank credit to the private sector soared from 11.1% of GDP in 1988 to 15.5% in 1989 and finally 17.4% in 1990 (73% increase in absolute terms in a two-year period). (Cruz et al. 2006). What is more, in July 1990 the Mexican authorities announced initiation of privatization of banks and allowed foreign majority ownership over do-

\textsuperscript{106} Came to power in 1988 as de la Madrid’s designated successor (Krugman 2000).

\textsuperscript{107} Resultantly, the value of the Mexican stock exchange index increased sharply. The proportion of foreign investments in domestic-currency denominated securities in the total of portfolio investments was 26.7% and 45.3% in 1991 and 1992 respectively (during the several years that proceeded 1991, foreign investments in domestic currency-denominated securities were non-existent). (Capital Account of Mexico in Carstens and Schwartz 1998).

\textsuperscript{108} A sharp decrease in fiscal deficits increased the amount of resources available for private investment.
mestic soon-to-be-privatized banks (*Ibid*). This decision initiated transi-
tion of the system from the euphoric phase to the overheating 1991–1993
period.

**Table 2. Interest Rates (3 Months in %)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Cetes</th>
<th>Tesobonos</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>December</td>
<td>40.19</td>
<td>15.07</td>
<td>8.01</td>
</tr>
<tr>
<td>1990</td>
<td>December</td>
<td>25.84</td>
<td>12</td>
<td>7.91</td>
</tr>
<tr>
<td>1991</td>
<td>December</td>
<td>17.33</td>
<td>9.06</td>
<td>4.54</td>
</tr>
<tr>
<td>1992</td>
<td>December</td>
<td>17.53</td>
<td>3.48</td>
<td>0.53</td>
</tr>
<tr>
<td>1993</td>
<td>December</td>
<td>11.71</td>
<td>5.09</td>
<td>3.08</td>
</tr>
<tr>
<td>1994</td>
<td>January</td>
<td>10.89</td>
<td>4.67</td>
<td>3.02</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>9.13</td>
<td>4.34</td>
<td>3.21</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>11.97</td>
<td>7.27</td>
<td>3.52</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>16.45</td>
<td>7.75</td>
<td>3.74</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>16.54</td>
<td>7.05</td>
<td>4.19</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>16.48</td>
<td>6.95</td>
<td>4.18</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>17.19</td>
<td>7.25</td>
<td>4.39</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>13.82</td>
<td>7.24</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>13.1</td>
<td>6.79</td>
<td>4.64</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>14.35</td>
<td>6.85</td>
<td>4.96</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>14.76</td>
<td>7.58</td>
<td>5.52</td>
</tr>
<tr>
<td></td>
<td>Dec. (1st. week)</td>
<td>14.58</td>
<td>7.4</td>
<td>5.65</td>
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<td></td>
<td>Dec. (2nd. week)</td>
<td>14.89</td>
<td>7.5</td>
<td>5.7</td>
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<tr>
<td></td>
<td>Dec. (3rd. week)</td>
<td>17</td>
<td>8.26</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>Dec. (4th. week)</td>
<td>31.99</td>
<td>10.49</td>
<td>5.5</td>
</tr>
<tr>
<td>1995</td>
<td>Jan (1st. week)</td>
<td>34.99</td>
<td>12.49</td>
<td>5.55</td>
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<td></td>
<td>Jan. (2nd. week)</td>
<td>40.94</td>
<td>19.5</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>Jan. (3rd. week)</td>
<td>39</td>
<td>19.75</td>
<td>5.65</td>
</tr>
<tr>
<td></td>
<td>Jan. (4th. week)</td>
<td>38</td>
<td>24.98</td>
<td>5.75</td>
</tr>
</tbody>
</table>

Note: 1989–1992 Tesobono rates are for 28 days.
Source: Sachs et al. (1995).

In 1991–1993, excessive optimism led to further intensification of
capital inflows. The Mexican market-led reforms were heralded by the in-
ternational community, and the Mexican economy was seen as the world's
most dynamic emerging market. Nearly half of the capital inflows to Latin America went into Mexico (Ros 2001). However, following the FIH pattern, the structure of capital inflow went through a dramatic mutation as short-term speculative capital ascended the throne.\footnote{109} Total capital inflow in 1991 amounted to 25.5 billion US$ and in relation to 1990 increased by 50%. But over 50% of the 1991 total capital inflow was in the form of highly speculative and reversible portfolio investments.

Table 3. Mexico: Selected Macroeconomic Indicators

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>GDP real growth (in %)</td>
<td>1.3</td>
<td>4.1</td>
<td>5.2</td>
<td>4.2</td>
<td>3.5</td>
<td>1.9</td>
<td>4.5</td>
<td>-6.2</td>
</tr>
<tr>
<td>Population growth (in %)</td>
<td>1.9</td>
<td>2</td>
<td>1.8</td>
<td>2</td>
<td>1.8</td>
<td>1.85</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment rate (% of total labor force)</td>
<td>3.5</td>
<td>2.9</td>
<td>2.7</td>
<td>2.7</td>
<td>2.8</td>
<td>3.4</td>
<td>3.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Fiscal balance (% of GDP)</td>
<td>-8.9</td>
<td>-4.6</td>
<td>-2.5</td>
<td>2.9</td>
<td>4.1</td>
<td>0.5</td>
<td>0</td>
<td>-0.5</td>
</tr>
<tr>
<td>Current account (% of GDP)</td>
<td>-1.3</td>
<td>-2.6</td>
<td>-2.8</td>
<td>-4.7</td>
<td>-6.7</td>
<td>-5.8</td>
<td>-7</td>
<td>-0.5</td>
</tr>
<tr>
<td>Bank credit to private sector (% of GDP)</td>
<td>11.1</td>
<td>15.6</td>
<td>17.5</td>
<td>20.9</td>
<td>28</td>
<td>31.7</td>
<td>38.7</td>
<td>29.2</td>
</tr>
<tr>
<td>Total capital inflow (billions of dollars)</td>
<td>0.591</td>
<td>4.346</td>
<td>16.996</td>
<td>25.507</td>
<td>20.866</td>
<td>36.085</td>
<td>20.254</td>
<td>22.763</td>
</tr>
<tr>
<td>Loans and deposits (billions of dollars)</td>
<td>-3.289</td>
<td>0.819</td>
<td>10.993</td>
<td>7.992</td>
<td>-1.567</td>
<td>2.777</td>
<td>1.099</td>
<td>22.952</td>
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<tr>
<td>Total foreign investment (billions of dollars)</td>
<td>3.879</td>
<td>3.527</td>
<td>6.003</td>
<td>17.514</td>
<td>22.434</td>
<td>33.308</td>
<td>19.155</td>
<td>-0.188</td>
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<tr>
<td>Portfolio investment (billions of dollars)</td>
<td>1</td>
<td>0.351</td>
<td>3.37</td>
<td>12.753</td>
<td>18.041</td>
<td>28.919</td>
<td>8.182</td>
<td>-9.715</td>
</tr>
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</table>

Sources: Capital Account of Mexico (in Carstens and Schwartz 1998), World Development Indicators (World Bank), World Economic Outlook Database (International Monetary Fund).

This trend continued over the next two years. In 1992 total capital inflow fell slightly (20.9 billion US$) but the proportion of portfolio investments in total capital inflow soared to 80%. In 1993, the Mexican financial market was at its height. Total capital inflow skyrocketed to 36.1 billion US$ while the proportion of portfolio investment remained extremely high (80.3%). \textit{(Ibid)}. No less important, in parallel with the...\footnote{109 As Keynes and Minsky noted, in the midst of a boom period, on the wings of overly optimistic expectations, agents project continuance of the boom, and consequently investment ventures previously seen as risky are now accepted as sane decisions.}
dynamic rise in portfolio investments, the indebtedness of the domestic banking sector dramatically increased. The dynamic increase in domestic banks’ indebtedness was facilitated by initiation of a privatization process by president Salinas in 1991-1992 when 18 domestic banks were sold. Income generated in the process of privatization of domestic banks (12.4 billion US$) was used to replenish foreign exchange reserves and repay foreign debt (Cruz et al. 2006).

110 The dynamic increase in domestic banks’ indebtedness was facilitated by initiation of a privatization process by president Salinas in 1991-1992 when 18 domestic banks were sold. Income generated in the process of privatization of domestic banks (12.4 billion US$) was used to replenish foreign exchange reserves and repay foreign debt (Cruz et al. 2006).

111 Measure of financial fragility (Grabel 2003).

112 The annual rate of growth of gross investments was 10.9% in 1991, 10.8% in 1992 and 2.5% in 1993 (Cruz et al. 2006).
In order to reach a complete estimation of the level of Mexican financial fragility, we must now, reveal where the bulk of this dynamic capital inflow went. It is a textbook rule that if the bulk of capital inflow goes into productive capital investment, capable of generating foreign exchange income in the future, a current account deficit\textsuperscript{113} is sustainable and, in general, the perils of suffering a speculative attack subside.

It is indicative enough that the proportion of industry generated income fell from 22% in 1980 to 20% of GDP in 1993, and that from 1991–1994 Mexican exports decreased by 15%. On the other hand, in the same period the share of income generated in the financial and real-estate sector increased from 8.6% to 14.9% of GDP (Cypher 1996). The share in profits and interest income in the total profits and interest income of the tradable goods sector decreased from 25.1% in 1988 to 13.8% in 1994, whereas the share of the non-tradable goods sector increased from 31.4% to 36% in the same period (Ros 2001). Further, in 1989–1992 the combined value of Mexican corporate stocks soared from 11% to roughly 50% of GDP (Cypher 1996). Also, after it had experienced a sharp fall in value in the first half of 1993 (near 20%), the Mexican stock index, increased by roughly 60% before the end of the year (Mishkin 1996). It is also important to note that in the 1989–1994 period, the general price level increased by a factor 3.6 while in the same period the price index of urban land in Mexico increased 17.6 times (Carstens and Schwartz 1998).

Therefore, we may safely conclude that only a minor part of the capital inflow was directed to the expansion of productive capital capacities.

\textsuperscript{113} In 1992 and 1993 the current account deficit reached 7.4% and 6.4% of GDP respectively (Cypher 1996).
What is more, the bulk of feverish capital inflow went into speculative portfolio investments, the real-estate sector (highly speculative investment in office buildings and shopping centers) and consumer spending. For example, in the 1988–1994 period, credit directed into consumer durable goods was increasing 67% annually, credit card lending 31% and mortgage loans 47% (Ibid). Hence, the share of household credit in total credit increased from 9.6% in December 1989 to 26.7% in November 1994 (Ros 1998). In parallel, bank profits, mainly generated by financial alchemy, rose dramatically. As a result, “...there can be little doubt that the financial sector was draining the industrial sector of the Mexican economy of its ability to expand its productive base.” (Cypher 1996, p. 455). Not surprisingly, the proportion of non-performing loans in total bank loans surged from 3% in 1990 to 7% in 1993.

The other side of the coin of an expanding credit and financial sector was reflected in accumulation imbalances at the macroeconomic level. As can be seen from Table 3, in the 1988–1994 period, the rate of economic growth was well below the growth rate of total capital inflows. Output grew at a moderate annual rate of 3.3%, not much ahead of population growth (1.8% annually). On the other hand, in the period up to March 1994, reserves of foreign exchange grew, the real exchange rate continuously appreciated, and the current account deficit widened (Table 5).

Being fully committed to a crawling-peg exchange-rate regime and accordingly to preventing nominal appreciation of the peso, massive capital inflows ended up in foreign exchange reserves. On the other hand, in order to tame inflation and prevent real exchange rate appreciation of the peso and thus deterioration of competitiveness of the Mexican economy, the central bank continually sterilized capital inflows by selling peso-denominated (Cetes) and dollar-denominated (Tesobonos) short-term bonds in excess of the current account deficit, mainly to foreigners. However, in this way a vicious circle had been created: continual sterilization of capital inflows drove up local interest rates which further stimulated arbitrageurs to “make on the carry”, leading in turn to ever-increasing public debt, interest rates and consequently, further deterioration of the current account deficit (Tables 2 and 5).

115 Annual average growth of capital inflows in the 1988-1994 period was 58.8%.
Table 5. Selected Macroeconomic Variables and the Components of Domestic Debt

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<tr>
<td>Current account (% of GDP)</td>
<td>-2.6</td>
<td>-2.8</td>
<td>-4.7</td>
<td>-6.7</td>
<td>-5.8</td>
<td>-7</td>
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<tr>
<td>Reserves (billions of dollars)</td>
<td>8.82</td>
<td>10.168</td>
<td>17.547</td>
<td>18.544</td>
<td>24.573</td>
<td>6.148</td>
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<tr>
<td>Real exchange rate (1988=100)</td>
<td>94.6</td>
<td>89.9</td>
<td>82</td>
<td>75</td>
<td>70.8</td>
<td>73.6</td>
</tr>
<tr>
<td>Ajustabonos (billions of dollars)</td>
<td>1.221</td>
<td>4.859</td>
<td>12.696</td>
<td>11.642</td>
<td>10.849</td>
<td>5.371</td>
</tr>
<tr>
<td>Tesobonos (billions of dollars)</td>
<td>0.075</td>
<td>0.408</td>
<td>0.302</td>
<td>0.296</td>
<td>1.237</td>
<td>17.78</td>
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</table>

Sources: Sachs et al. (1995) and World Development Indicators (World Bank).

As can be seen from Table 6, the cause of widening the current account deficit lies in a decrease in domestic savings (from 19.4% to 15.6% of GDP between 1988 and 1994) due to high private consumption which rose from 69.4% to 71% of GDP between 1988 and 1994 as well as an increase in private gross investments from 14.2% to 16.6% of GDP in the same period. In other words, sources of increase in GDP were grounded in the explosion in private consumption facilitated by massive capital inflow and aggressive loan pushing by commercial banks and dynamic investment activity mainly in non-tradable sectors like construction and real estate.

Table 6. Components of the Mexican Gross Domestic Product (as % of GDP, current prices)

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<td>100</td>
<td>100</td>
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<tr>
<td>Private Consumption</td>
<td>69.4</td>
<td>70.3</td>
<td>70.9</td>
<td>71.8</td>
<td>72.2</td>
<td>71.5</td>
<td>71</td>
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<tr>
<td>Government Consumption</td>
<td>8.6</td>
<td>8.5</td>
<td>8.4</td>
<td>9</td>
<td>10.1</td>
<td>10.8</td>
<td>11.3</td>
</tr>
<tr>
<td>Total Investment</td>
<td>20.4</td>
<td>21.3</td>
<td>21.9</td>
<td>22.4</td>
<td>23.3</td>
<td>22</td>
<td>23.6</td>
</tr>
<tr>
<td>Private Investment</td>
<td>14.2</td>
<td>13.3</td>
<td>13.7</td>
<td>14.9</td>
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<td>4.2</td>
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<tr>
<td>Change in Inventories</td>
<td>1.2</td>
<td>3.2</td>
<td>3.3</td>
<td>2.9</td>
<td>2.5</td>
<td>1.6</td>
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<tr>
<td>Trade Balance</td>
<td>1.5</td>
<td>-0.2</td>
<td>-0.9</td>
<td>-3.2</td>
<td>-5.5</td>
<td>-4.3</td>
<td>-5.8</td>
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</table>

Source: Sachs et al. (1995).

However, notwithstanding the new-born popularity of Mexico in the world financial community, seminal economist Rudiger Dornbusch to-
together with Alejandro Werner (1994) were already arguing in 1993 that the cause of the unsatisfactory output growth of the Mexican economy was the overvalued peso which negatively influenced exports. In his opinion, a 30% devaluation of the peso would boost Mexican exports and economic growth. On the other side, the Mexican authorities saw a stable exchange rate as a key factor of their economic success over the past six years, and refused even to consider this possibility. Now, looking back from the Minskyan perspective it is not clear that a 30% devaluation of the peso would have influenced exports positively. In the first place, bearing in mind the high share of foreign-currency denominated debt, a 30% devaluation would have caused a rise in indebtedness of local agents in peso terms. Also, since the dominant share of credit denominated in foreign currency extended by commercial banks went into expanding the non-tradable sector, the proportion of speculative and Ponzi units in the system would have increased sharply, which would probably have ended up, not in expansion but in a decline of employment, output and exports. Secondly, even if we assume that in 1993, the economic system was robust, (which obviously it was not), it is not certain that shrinking industry could have met foreign demand fully, quantitatively or qualitatively. If the combined effect of the peso devaluation had been a sharp rise in the debt burden of producers and a mild increase in production as a consequence of increased foreign demand, it seems that the end result would have been less that favorable.

All in all, the financial fragility and the deteriorating external position of the Mexican economy at the beginning of 1994 became all too obvious. The short-term liabilities of the government and banking sector were already out of control. The ratio of $M_2$ to GDP increased from 25% in 1989 to over 33% in 1993 and the ratio of $M_2$ to foreign exchange reserves amounted to 4.87 in 1993 (Table 7). This is important since in a system of fractional reserve banking, the government implicitly or explicitly insures deposits. A high level of short-term liabilities in relation to foreign exchange reserves at least open up the possibility of bank runs which could easily lead to currency breakdown. Also, the ratio of $M_3$ ($M_2$ + non-bank short-term debt) to GDP increased from 36% to 41% in the same period and the ratio of $M_3$ to foreign exchange reserves reached 6 in 1993. Consequently, the ratio of short-term public debt (the sum of Cetes and Tesobonos) to foreign exchange international reserves was 1.1 (Sachs et al. 1995). The ratio of foreign exchange international reserves to private and public foreign-currency denominated debt \(^{116}\) was 0.24 (Cruz et al. 2006).

\(^{116}\) Measure of capital flight risk (Grabel 2003).
In such a situation, minor disappointments are capable of launching massive capital outflow.

Be this as it may, 1994 began badly for Mexico. Events ("unusual") that signaled growing political instability coupled with accumulated financial fragility resulted in an abrupt change in market sentiment. Armed rebellion in the rural state of Chiapas in January, the decision of the U.S. Federal Reserve Board to increase interest rates in February\(^\text{117}\) and the assassination of Donaldo Colosio, the Western-oriented presidential candidate in March pushed the system over the brink into financial instability. Excessive optimism reversed, and the accumulated financial difficulties came to the surface. Doubt in the ability of the Mexican authorities to sustain a pegged foreign exchange rate led foreign investors and wealthy Mexicans to launch a massive escape from the peso and peso-denominated assets. In the next three months, the Mexican government lost approximately 10 billion US$ of foreign exchange reserves. In order to stop depletion of foreign exchange reserves and preserve or attract new capital inflows, the Mexican authorities increased the nominal interest rate on Cetes bonds from 11.97% in March to 16.45% in April (Sachs et al. 1995).\(^\text{118}\) However, in fear of widespread bankruptcies of over-indebted banks, corporations and households, the Mexican government opted for preventing a further increase in interest rates. In parallel, the risk premium on peso-denominated assets skyrocketed. Consequently, massive capital outflow took place. Short of foreign capital, and in an attempt to resist an increase in interest rates, the Central Bank expanded domestic credit, i.e. started to buy the short-term liabilities of the private sector at interest rates below those demanded by international financiers and the dollar-indexed short-term debt of the government (Tesobonos). On the other hand, private borrowers used their pesos to buy dollars from the Central Bank thus additionally contributing to a precipitous fall in reserves and further widening of the current account deficit.\(^\text{119}\)

At the same time, aiming at replenishing reserves (margin of safety) and slowing down the sale of dollars, the Mexican government propelled conversion of peso denominated short-term government debt (Cetes),\(^\text{120}\)

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117 Which opened possibility of reversing direction of carry trade.
118 Constrained policy autonomy \textit{ex post}.
119 We can see in Table 7 that the monetary base in 1994 was more-or-less constant, whereas reserves declined in line with the widening of the current account deficit.
120 Resultantly, as early as April 1994, the ratio of foreign-currency denominated M\(^3\) and foreign exchange reserves was equal to 1.34 and in December 5.48 (Sachs et al. 1995).
peso-denominated long-term bonds (Bondes) and the peso-denominated inflation-indexed long-term bonds (Ajustabonos) into dollar-indexed short-term bonds (Tesobonos). In this way it seemed that investors had freed themselves of currency risk and, on the other side, the central bank borrowed funds at rates which were substantially lower than peso interest rates (Table 2). (Pettis 2001a). As a result, the hemorrhaging of foreign exchange reserves temporary stopped in June, and the proportion of foreign-currency denominated debt in total debt rose sharply, which significantly increased the risks of possible sharp currency depreciation. In addition, it significantly increased the proportion of short-term debts in total debts.\textsuperscript{121} As a result, a large proportion of debt was due the very next year. By November, the issuance of Tesobonos soared (Table 5). Consequently, as Minsky argued, as credit expands, the quality of credit declines and the system becomes progressively illiquid.

As soon as investors became aware that over-indebted business subjects, households and government, exposed to severe currency depreciation and interest rate risks, had actually been illiquid, they refused to roll over peso and dollar-denominated debt and rushed for the exit. Consequently, investor’s fears of a market collapse ensured its realization (Grabel 1996a). Currency attacks began in November and finally on 22 December, the Central Bank gave up fixing the peso. From a February peak of 29 billion US$, reserves dropped to 6 billion US$ at the end of the year. In only two days (20–22 December), the Mexican authorities spent nearly 4 billion US$ in a futile attempt to defend the peso. At the end of December, the ratio of $M^2$ to foreign exchange reserves amounted to an astonishing 13.9 and $M_3^2$ to foreign exchange reserves 18 (Table 7). The ratio of the value of Tesobonos to foreign exchange reserves was nearly 3 and the ratio of total public debt to foreign exchange reserves was 5.3 (Sachs et al. 1995). The ratio of foreign-currency denominated debt to local-currency denominated debt reached 2.20 and the ratio of short-term debt to long-term debt reached 3.15. The ratio of foreign exchange international reserves to private and public foreign-currency denominated debt was 0.06 (Cruz et al. 2006). Simultaneously, the stock exchange fell nearly 30% from a September 1994 peak to the end of December (Mishkin 1996).

\textsuperscript{121} Average maturity of government bonds decreased form 306 days in April 1994 to 206 in December 1994 (Cruz et al. 2006).
Table 7. Monetary Indicators (millions of US$)

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<tbody>
<tr>
<td>M1</td>
<td>11.888</td>
<td>17.069</td>
<td>35.785</td>
<td>40.595</td>
<td>47.945</td>
<td>46.628</td>
<td>45.244</td>
<td>42.869</td>
<td>41.887</td>
<td>41.751</td>
<td>41.192</td>
<td>41.058</td>
<td>40.958</td>
<td>40.760</td>
<td>40.762</td>
<td>42.313</td>
<td>29.018</td>
<td></td>
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<tr>
<td>M2</td>
<td>47.342</td>
<td>62.056</td>
<td>87.633</td>
<td>104.031</td>
<td>119.409</td>
<td>117.926</td>
<td>114.391</td>
<td>113.220</td>
<td>119.501</td>
<td>118.325</td>
<td>117.747</td>
<td>120.524</td>
<td>123.981</td>
<td>122.299</td>
<td>124.581</td>
<td>127.183</td>
<td>85.429</td>
<td></td>
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<tr>
<td>M3</td>
<td>69.186</td>
<td>87.604</td>
<td>103.622</td>
<td>120.563</td>
<td>149.358</td>
<td>149.279</td>
<td>148.358</td>
<td>142.824</td>
<td>144.242</td>
<td>145.439</td>
<td>145.225</td>
<td>148.417</td>
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<td>153.831</td>
<td>155.219</td>
<td>111.033</td>
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<tr>
<td>M1/Reserves</td>
<td>1.8</td>
<td>1.68</td>
<td>2.04</td>
<td>2.19</td>
<td>1.95</td>
<td>1.77</td>
<td>1.55</td>
<td>1.74</td>
<td>2.42</td>
<td>2.44</td>
<td>2.57</td>
<td>2.54</td>
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<td>2.36</td>
<td>3.39</td>
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<tr>
<td>M2/Reserves</td>
<td>7.15</td>
<td>6.1</td>
<td>4.99</td>
<td>5.61</td>
<td>4.87</td>
<td>4.49</td>
<td>3.92</td>
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<td>M3/Reserves</td>
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<td>8.62</td>
<td>5.91</td>
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<td>6.1</td>
<td>5.68</td>
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<td>9.18</td>
<td>9.37</td>
<td>9.41</td>
<td>8.92</td>
<td>12.45</td>
<td>18.1</td>
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Note: 1989–1993 figures are for the month December

Definitions:
M1=Currency+Checking Accounts
M2=M1+short-therm banking securities
M3=M2+ short-therm banking securities

Source: Ibid.
In an attempt to regain investor confidence after the sharp currency depreciation had taken place, the Mexican Government increased annual interest rates on Cetes from 17% in December 1994 to near 40% in January 1995. As we would expect, a combination of overly pessimistic investors and sharp currency depreciation coupled with a rise in interest rates (domination of Ponzi units) activated a downward spiral. The system was in free fall. By April 1995, the Mexican stock exchange fell another 30% in peso terms and 65% in dollar terms and in relation to its January 1994 value the peso lost 82.9% of its value with respect to the dollar (Cypher 1996; Mishkin 1996). The proportion of non-performing loans in total bank loans increased from 8.7% in 1994 to nearly 17% in 1995 (Mishkin 1996). Furthermore, the level of non-performing loans was substantially underestimated due to the lax Mexican in comparison to U.S. accounting principles.

Debt-deflation emerged with devastating consequences. “Making position by selling out positions” quickly spread to the rest of the world and particularly Latin American markets (the “tequila effect”). Economic growth, gross capital investment and consumption slumped, a large number of workers were fired and thousands of business entities went bankrupt (Krugman 2000). No less important, devastating debt-deflation consequences were further deepened by implementation of restrictive monetary and fiscal policy that came in the package with the U.S. led financial support aiming at bailing-out foreign investors and socializing banks’ losses.

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122 By international standards, a banking sector with overdue loans amounting to 4% of total bank loans is considered to be extremely fragile and risky (Cypher 1996).

123 Instead of the complete value of the loan (principal and interest), in the Mexican accounting standards only unpaid dues after 90 days were registered as non-performing. According to Salomon Brothers estimation (using U.S. accounting principles) the share of non-performing loans in total loans was between 30 and 40% or equivalently reached amount between 8 and 11% of GDP (Carstens and Schwartz 1998; Cypher 1996).

124 Economic growth in 1995 turned out to be negative (-6.5%), as well as gross capital investments (-29%) and consumption (-8.4%). (Cruz et al. 2006).

125 Urban unemployment increased from 3.7% in 1994 to 6.2% in 1995 (Ros 2001). What is more, it is an astonishing fact that in early 1995 30-40% of population received minimum wages (worth only 35% of their 1978 level). Not surprisingly, in 1995 consumption and aggregate demand in general, were negative (Cypher 1996).

126 A 50 billion US$ credit line was provided by the U.S. Treasury, the International Monetary Fund, the World Bank, the Bank of Canada, the Bank for International Settlements and the InterAmerican Bank (Carstens and Schwartz 1998; Cypher 1996).
It is clear that the primary cause of the crisis was an abrupt change in foreign investor sentiment, which took place when it became clear that realized outcomes would diverge from those euphorically expected. Of course, financial deregulation and liberalization with no delay, the neoliberal universal recipe for economic prosperity, made it possible for local business and households to take on excessive levels of debt. Apart from the excessive indebtedness of local business and households, two more factors contributed significantly to the creation of a financially fragile environment – predominant short-term debt and the large share of debt which was denominated in hard currency.

2. The Asian Flu: Per Astra ad Aspera

The financial crisis that erupted in five Southeast Asian countries (SEAC – Thailand, Malaysia, South Korea, the Philippines and Indonesia) in the late 1990s was, to-date, the most global and potentially most dangerous crisis in the post-WWII period. The financial conflagration blazed up in July 1997 in Thailand and as quick as lightning spread to Malaysia, South Korea, the Philippines and Indonesia. Moreover, the crises seriously shook Japan, Taiwan, Hong-Kong and Singapore.

We start our analysis in a period when a robust SEAC attracted the attention of the Western financial community. The question that arises is why this dynamic inflow of international private capital took place and how it led to the creation of a financially fragile environment?

Capital movements towards the SEAC are a representative example of the validity of the liquidity approach. Namely, the massive capital inflows into the SEAC certainly were not stimulated by successful implementation of free market reforms. If anything is obvious, it is to credit the dynamic growth of the SEAC to several decades of government economic planning and implacable promotion of production and exports at the expense of severe restrictions on imports and consumption.

Thus, massive capital inflows in the SEAC can best be understood as the result of a liquidity expansion in major financial centers in the early 1990s as well as the end of the Cold War, and the consequent evaporation of willingness to economically support and tolerate the SEAC’s markets lack of openness to Western commodities and financial capital. Also, due to sluggish aggregate demand growth during the 1980s and its mirror im-
age excess production capacities and fierce international competition,\textsuperscript{127} expanding SEAC markets, with low risk and positive interest rate differentials,\textsuperscript{128} suddenly took central place in the minds of Western financiers. After years of intensive pressure from Western and local businessmen,\textsuperscript{129} the SEAC finally gave up and deregulated and fully liberalized capital accounts at the beginning of the 1990s.

Apart from high rates of output growth, savings and investment, low unemployment, balanced or surplus fiscal balances and moderate inflation, the excessive optimism of foreign investors was additionally fueled by a prolonged period of foreign exchange rate stability in the SEAC (Tables 8, 9, 10, 11, 12, 13, 14). Additionally, through fiscal policy (tax relief), local governments stimulated the fund raising of domestic agents on the international market.\textsuperscript{130} At the same time, lulled by effectively fixed currencies, foreign and domestic investors failed to hedge against foreign exchange risks.

\textsuperscript{127} Weak global aggregate demand was a consequence of depressed global wages due to: exports of production from developed countries into low tax and wage countries; imports of cheap labor force mainly from China, India and the former communist countries; high interest rates environment; restrictive fiscal policy; labor-saving rather than capacity expanding investments. On the other hand, shrinking markets led to decreasing profits which consequently forced global producers into merciless struggle for customers. Coercive competition resulted in overinvestment and speeding up technological innovation and consistently acceleration in amortization of existing technologies (Crotty and Dymski 2000).

\textsuperscript{128} For example, interest rates in international markets were up to 50\% lower than those in the semi-controlled South Korean financial market (\textit{Ibid}).

\textsuperscript{129} For example, exerted pressure by family-owned conglomerates called chaebol in South Korea was especially intensive.

\textsuperscript{130} For example, in the Philippines, reserve requirements on foreign deposits did not exist whereas on peso deposits reserve requirements were 13\%. Consistently, the tax rate on incomes on foreign investments was 10\% whereas the tax rate on other incomes was 35\% (Corsetti et al. 1998a).
### Table 8. Real GDP Growth (in percent)

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<td>Indonesia</td>
<td></td>
<td>4.9</td>
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Source: Authors' calculations based on International Financial Statistics.

### Table 9. Savings Rate (in percent of GDP)

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Source: Ibid.

### Table 10. Investments (in percent of GDP)

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Source: Ibid.
Table 11. Unemployment Rate (in percent)

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Source: Ibid.

Table 12. Government Fiscal Balances (in percent of GDP)

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Table 13. CPI inflation (in percent, year-end)

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Source: Authors' calculations based on International Financial Statistics.

Table 14. Market Exchange Rate (local currency per 1 US$)

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Great expectations resulted in more than intensive private capital inflows into the region (Table 15).\footnote{Net private capital inflow to the SEAC increased from the level of 1.4\% of combined GDP in the period 1986-90 to 6.7\% of combined GDP in the period 1990-96 (Radelet and Sachs 1998).}

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<td>49.5</td>
<td>55.5</td>
<td>−21.3</td>
</tr>
<tr>
<td>- Non-bank private creditors</td>
<td>4.2</td>
<td>12.4</td>
<td>18.4</td>
<td>13.7</td>
</tr>
<tr>
<td>\textit{Official flows, net}</td>
<td>7</td>
<td>3.6</td>
<td>−0.2</td>
<td>27.2</td>
</tr>
<tr>
<td>- International institutions</td>
<td>−0.4</td>
<td>−0.6</td>
<td>−1</td>
<td>23</td>
</tr>
<tr>
<td>- Bilateral creditors</td>
<td>7.4</td>
<td>4.2</td>
<td>0.7</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>RESIDENT LENDING/OTHER, NET\textsuperscript{*}</strong></td>
<td>−17.5</td>
<td>−25.9</td>
<td>−19.6</td>
<td>−11.9</td>
</tr>
<tr>
<td><strong>RESERVES EXCL.GOLD (− = increase)</strong></td>
<td>−5.4</td>
<td>−13.7</td>
<td>−18.3</td>
<td>22.7</td>
</tr>
</tbody>
</table>

\textsuperscript{e} = estimate

** Including resident net lending, monetary gold and errors and omissions


However, during the boom period of optimistic sentiment investors did not give too much weight to current account problems because capital inflow was so intense that it, not only financed current account deficits, but also, as we will see \textit{infra}, continually put pressure on local currencies to appreciate (Tables 16 and 17).
### Table 16. Current Account (in percent of GDP)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>−2.5</td>
<td>−3.1</td>
<td>−2.0</td>
<td>−1.3</td>
<td>−1.5</td>
<td>−3.0</td>
<td>−2.9</td>
<td>−1.6</td>
<td>3.8</td>
<td>3.7</td>
<td>4.8</td>
<td>4.3</td>
<td>4.0</td>
</tr>
<tr>
<td>South Korea</td>
<td>−0.7</td>
<td>−2.6</td>
<td>−1.2</td>
<td>0.2</td>
<td>−0.9</td>
<td>−1.6</td>
<td>−4.0</td>
<td>−1.5</td>
<td>11.2</td>
<td>5.3</td>
<td>2.3</td>
<td>1.6</td>
<td>0.9</td>
</tr>
<tr>
<td>Malaysia</td>
<td>−2.1</td>
<td>−8.5</td>
<td>−3.7</td>
<td>−4.5</td>
<td>−7.4</td>
<td>−9.6</td>
<td>−4.4</td>
<td>−5.8</td>
<td>13.0</td>
<td>15.7</td>
<td>9.0</td>
<td>7.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Philippines</td>
<td>−6.1</td>
<td>−2.1</td>
<td>−1.9</td>
<td>−5.5</td>
<td>−4.4</td>
<td>−2.6</td>
<td>−4.6</td>
<td>−5.2</td>
<td>2.3</td>
<td>−3.8</td>
<td>−2.9</td>
<td>−2.4</td>
<td>−0.4</td>
</tr>
<tr>
<td>Thailand</td>
<td>−8.3</td>
<td>−7.5</td>
<td>−5.5</td>
<td>−5.0</td>
<td>−5.4</td>
<td>−7.9</td>
<td>−7.9</td>
<td>−2.1</td>
<td>12.8</td>
<td>10.2</td>
<td>7.6</td>
<td>4.4</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on International Financial Statistics.

### Table 17. Financial Account (in percent of GDP)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>3.5</td>
<td>3.2</td>
<td>0.7</td>
<td>2.6</td>
<td>4.0</td>
<td>3.0</td>
<td>4.6</td>
<td>1.6</td>
<td>−3.8</td>
<td>−3.7</td>
<td>−7.8</td>
<td>−3.9</td>
<td>−2.6</td>
</tr>
<tr>
<td>South Korea</td>
<td>1.5</td>
<td>2.5</td>
<td>1.0</td>
<td>0.1</td>
<td>1.4</td>
<td>1.9</td>
<td>3.9</td>
<td>2.6</td>
<td>−9.5</td>
<td>−4.4</td>
<td>−2.1</td>
<td>−2.0</td>
<td>−0.8</td>
</tr>
<tr>
<td>Malaysia</td>
<td>−0.5</td>
<td>8.8</td>
<td>3.6</td>
<td>−0.8</td>
<td>5.8</td>
<td>10.4</td>
<td>6.8</td>
<td>8.1</td>
<td>−9.6</td>
<td>−14.1</td>
<td>−4.4</td>
<td>−5.5</td>
<td>−6.9</td>
</tr>
<tr>
<td>Philippines</td>
<td>4.9</td>
<td>1.4</td>
<td>4.6</td>
<td>5.1</td>
<td>5.8</td>
<td>5.7</td>
<td>8.3</td>
<td>11.9</td>
<td>−1.3</td>
<td>−0.3</td>
<td>5.1</td>
<td>1.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Thailand</td>
<td>6.7</td>
<td>7.3</td>
<td>6.0</td>
<td>5.3</td>
<td>5.6</td>
<td>8.8</td>
<td>9.5</td>
<td>4.2</td>
<td>−10.3</td>
<td>−10.2</td>
<td>−7.0</td>
<td>−4.1</td>
<td>−4.8</td>
</tr>
</tbody>
</table>

Source: Ibid.
As we may further see, in all the SEAC, apart from Malaysia, financial capital predominantly entered in the form of commercial bank loans (Table 18). Due to high risk aversion and fear of unexpected sharp depreciation, banks predominantly issued debt denominated in hard currency.

### Table 18. International Claims Held by Foreign Banks – Distribution by Maturity and Sector (billions of US$)

<table>
<thead>
<tr>
<th></th>
<th>Total Outstanding</th>
<th>Banks Public Sector</th>
<th>Non-bank private sector</th>
<th>Short-term Reserves</th>
<th>Short-term/Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>End 1995</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>44.5</td>
<td>8.9</td>
<td>6.7</td>
<td>28.8</td>
<td>27.6</td>
</tr>
<tr>
<td>Malaysia</td>
<td>16.8</td>
<td>4.4</td>
<td>2.1</td>
<td>10.1</td>
<td>7.9</td>
</tr>
<tr>
<td>Philippines</td>
<td>8.3</td>
<td>2.2</td>
<td>2.7</td>
<td>3.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Thailand</td>
<td>62.8</td>
<td>25.8</td>
<td>2.3</td>
<td>34.7</td>
<td>43.6</td>
</tr>
<tr>
<td>South Korea</td>
<td>77.5</td>
<td>50</td>
<td>6.2</td>
<td>21.4</td>
<td>54.3</td>
</tr>
<tr>
<td>Total</td>
<td>209.9</td>
<td>91.3</td>
<td>20</td>
<td>98.4</td>
<td>137.5</td>
</tr>
</tbody>
</table>

| **End 1996** |                   |                     |                         |                    |                    |
| Indonesia  | 55.5              | 11.7                | 6.9                     | 36.8               | 34.2               | 19.3               | 1.8               |
| Malaysia  | 22.2              | 6.5                 | 2                       | 13.7               | 11.2               | 27.1               | 0.4               |
| Philippines | 13.3           | 5.2                 | 2.7                     | 5.3                | 7.7                | 11.7               | 0.7               |
| Thailand  | 70.2              | 25.9                | 2.3                     | 41.9               | 45.7               | 38.7               | 1.2               |
| South Korea | 100             | 65.9                | 5.7                     | 28.3               | 67.5               | 34.1               | 2                 |
| Total     | 261.2             | 115.2               | 19.6                    | 126                | 166.3              |                    |                    |

| **Mid–1997** |                   |                     |                         |                    |                    |
| Indonesia  | 58.7              | 12.4                | 6.5                     | 39.7               | 34.7               | 20.3               | 1.7               |
| Malaysia  | 28.8              | 10.5                | 1.9                     | 16.5               | 16.3               | 26.6               | 0.6               |
| Philippines | 14.1           | 5.5                 | 1.9                     | 6.8                | 8.3                | 9.8                | 0.8               |
| Thailand  | 69.4              | 26.1                | 2                       | 41.3               | 45.6               | 31.4               | 1.5               |
| South Korea | 103.4         | 67.3                | 4.4                     | 31.7               | 70.2               | 34.1               | 2.1               |
| Total     | 274.4             | 121.8               | 16.7                    | 136                | 175.1              |                    |                    |

What is more, because of exceptionally high aversion to illiquidity\footnote{Acceptance and implementation of neoliberal economic doctrine by the most developed Western countries caused a significant rise in market uncertainty worldwide (Crotty and Dymski 2000).} as well as the opportunity to make on the carry, foreign financiers predominantly granted short-term debt (Table 19). Resultantly, the ratio of external short-term debt to foreign exchange reserves, and summation of debt service and external short-term debt to foreign exchange reserves – indicators of currency risk (Grabel 2003)\footnote{The risk is that the local currency may collapse under the pressure of foreign investors rushing to exit assets denominated in local currency. Grabel (2003) uses the ratio of reserves to short-term external debt as a measure of currency risk.} – illustrate a very fragile financial environment, not to say a looming liquidity crisis in all the countries apart from Malaysia.

Table 19. Short-Term Debt (as % of total), Ratio of Short-Term Debt to Reserves and Ratio of Debt Service and Short-Term Debt to Reserves

<table>
<thead>
<tr>
<th></th>
<th>S. Korea</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>Short term debt (% of total)</td>
<td>30.87</td>
<td>15.92</td>
<td>12.43</td>
<td>14.48</td>
</tr>
<tr>
<td></td>
<td>Short-term debt/Reserves</td>
<td>0.72</td>
<td>1.49</td>
<td>0.2</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Debt Service + Short-term debt/Reserves</td>
<td>1.27</td>
<td>2.8</td>
<td>0.64</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>Short-term debt/Reserves</td>
<td>0.82</td>
<td>1.55</td>
<td>0.2</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Debt Service + Short-term debt/Reserves</td>
<td>1.26</td>
<td>2.8</td>
<td>0.5</td>
<td>2.6</td>
</tr>
<tr>
<td>1992</td>
<td>Short term debt (% of total)</td>
<td>26.99</td>
<td>20.52</td>
<td>18.18</td>
<td>15.93</td>
</tr>
<tr>
<td></td>
<td>Short-term debt/Reserves</td>
<td>0.7</td>
<td>1.73</td>
<td>0.2</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Debt Service + Short-term debt/Reserves</td>
<td>1.1</td>
<td>2.9</td>
<td>0.5</td>
<td>2.2</td>
</tr>
<tr>
<td>1993</td>
<td>Short term debt (% of total)</td>
<td>25.85</td>
<td>20.17</td>
<td>26.58</td>
<td>14.01</td>
</tr>
<tr>
<td></td>
<td>Short-term debt/Reserves</td>
<td>0.6</td>
<td>1.6</td>
<td>0.25</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Debt Service + Short-term debt/Reserves</td>
<td>1.1</td>
<td>2.8</td>
<td>0.42</td>
<td>2.1</td>
</tr>
</tbody>
</table>
1994  
| Short term debt (% of total) | 25.47 | 18.05 | 21.13 | 14.29 | 60.67 |
| Short-term debt/Reserves | 0.54 | 1.6 | 0.24 | 1 | 1 |
| Debt Service + Short-term debt/Reserves | 0.85 | 2.8 | 0.5 | 1.7 | 1.3 |

1995  
| Short term debt (% of total) | 51.6 | 20.87 | 21.19 | 13.38 | 72.36 |
| Short-term debt/Reserves | 1.71 | 1.9 | 0.3 | 0.83 | 1.14 |
| Debt Service + Short-term debt/Reserves | 2.1 | 3.1 | 0.56 | 1.7 | 1.4 |

1996  
| Short term debt (% of total) | 50.2 | 24.98 | 27.83 | 19.34 | 41.41 |
| Short-term debt/Reserves | 2.03 | 1.8 | 0.41 | 0.8 | 1 |
| Debt Service + Short-term debt/Reserves | 2.4 | 3 | 0.7 | 1.4 | 1.2 |

Note: Debt service includes interest on all debts plus the principal to be repaid on long-term debt.
Source: Corsetti et al. (1998a).

As expected, local banks flooded with money, downgraded lending standards and massively expanded credit activity (Tables 20 and 21).

Table 20. Bank Lending to Private Non-Financial Sector (% growth)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>20.78</td>
<td>12.55</td>
<td>12.94</td>
<td>20.08</td>
<td>15.45</td>
<td>20</td>
<td>21.95</td>
</tr>
<tr>
<td>Indonesia</td>
<td>17.82</td>
<td>12.29</td>
<td>25.48</td>
<td>22.97</td>
<td>22.57</td>
<td>21.45</td>
<td>46.42</td>
</tr>
<tr>
<td>Malaysia</td>
<td>20.58</td>
<td>10.79</td>
<td>10.8</td>
<td>16.04</td>
<td>30.65</td>
<td>25.77</td>
<td>26.96</td>
</tr>
<tr>
<td>Philippines</td>
<td>7.33</td>
<td>24.66</td>
<td>40.74</td>
<td>26.52</td>
<td>45.39</td>
<td>48.72</td>
<td>28.96</td>
</tr>
<tr>
<td>Thailand</td>
<td>20.45</td>
<td>20.52</td>
<td>24.03</td>
<td>30.26</td>
<td>23.76</td>
<td>14.63</td>
<td>19.8</td>
</tr>
</tbody>
</table>

Source: Ibid.
### Table 21. Bank Lending to Private Non-Financial Sector (% of GDP)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>52.54</td>
<td>52.81</td>
<td>53.34</td>
<td>54.21</td>
<td>56.84</td>
<td>57.04</td>
<td>61.81</td>
<td>69.79</td>
</tr>
<tr>
<td>Indonesia</td>
<td>49.67</td>
<td>50.32</td>
<td>49.45</td>
<td>48.9</td>
<td>51.88</td>
<td>53.48</td>
<td>55.42</td>
<td>69.23</td>
</tr>
<tr>
<td>Malaysia</td>
<td>71.36</td>
<td>75.29</td>
<td>74.72</td>
<td>74.06</td>
<td>74.61</td>
<td>84.8</td>
<td>93.39</td>
<td>106.91</td>
</tr>
<tr>
<td>Philippines</td>
<td>19.17</td>
<td>17.76</td>
<td>20.44</td>
<td>26.37</td>
<td>29.06</td>
<td>37.52</td>
<td>48.98</td>
<td>56.53</td>
</tr>
<tr>
<td>Thailand</td>
<td>64.3</td>
<td>67.7</td>
<td>72.24</td>
<td>80</td>
<td>91</td>
<td>97.62</td>
<td>101.94</td>
<td>116.33</td>
</tr>
</tbody>
</table>

Source: Ibid.

Meanwhile, over-optimistic domestic borrowers, sure of growing profit rates, were more than ready to get into short-term debt and to direct those funds towards massive long-term investments in manufacturing and short-term oriented speculation in stock markets\(^{134}\) and the property sector\(^{135}\) which ended in the emergence and, not long after, bursting of a speculative bubble (Tables 22 and 23).\(^{136}\)

### Table 22. Stock Market Prices Indexes (end of year)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>417</td>
<td>274</td>
<td>274</td>
<td>588</td>
<td>469</td>
<td>513</td>
<td>637</td>
<td>401</td>
</tr>
<tr>
<td>South Korea</td>
<td>696</td>
<td>610</td>
<td>678</td>
<td>866</td>
<td>1,027</td>
<td>882</td>
<td>651</td>
<td>376</td>
</tr>
<tr>
<td>Malaysia</td>
<td>505</td>
<td>556</td>
<td>643</td>
<td>1,275</td>
<td>971</td>
<td>995</td>
<td>1,237</td>
<td>594</td>
</tr>
<tr>
<td>Philippines</td>
<td>651</td>
<td>1,151</td>
<td>1,256</td>
<td>3,196</td>
<td>2,785</td>
<td>2,594</td>
<td>3,170</td>
<td>1,869</td>
</tr>
<tr>
<td>Thailand</td>
<td>612</td>
<td>711</td>
<td>893</td>
<td>1,682</td>
<td>1,360</td>
<td>1,280</td>
<td>831</td>
<td>372</td>
</tr>
</tbody>
</table>

Source: Ibid.

---

134 For example, in the period between 1990-93 prices in Thai stock market increased 175% (395% in property sector), and in the period 1994-96 prices decreased 51% (73%). In the period 1990-96 stock market prices increased 145% (160%) in Malaysia and 385% (271%) in Philippines (Corsetti et al. 1998a).

135 At the end of 1997 share of property sector in bank lending amounted to 30-40% in Thailand, 25-30% in Indonesia, 30-40% in Malaysia, 15-20% in Philippines and 15-25% in South Korea (Arestis and Glickman 2002).

136 Apart from attractive short-term capital gains, significant motive for dynamic inflow of funds into stock and real estate markets was sharp decrease in incomes of SEAC’s exporting sector (Kregel 1998).
Table 23. Stock Market Prices Indexes of Property Sector (end of year)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>na</td>
<td>119</td>
<td>66</td>
<td>214</td>
<td>140</td>
<td>112</td>
<td>143</td>
<td>40</td>
</tr>
<tr>
<td>Malaysia</td>
<td>113</td>
<td>113</td>
<td>126</td>
<td>369</td>
<td>240</td>
<td>199</td>
<td>294</td>
<td>64</td>
</tr>
<tr>
<td>Philippines</td>
<td>32</td>
<td>34</td>
<td>39</td>
<td>81</td>
<td>80</td>
<td>87</td>
<td>119</td>
<td>59</td>
</tr>
<tr>
<td>Thailand</td>
<td>74</td>
<td>82</td>
<td>168</td>
<td>367</td>
<td>232</td>
<td>192</td>
<td>99</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Ibid.

Consequently, illiquidity problems progressively spread through the system. One of the most important indicators of coming crisis, the proportion of non-performing loans in total bank loans, soared to extremely high levels in all five countries.\textsuperscript{137}

Simultaneously, several factors negatively influenced the export earnings of the SEAC. Sluggish aggregate demand and globally excessive production capacities that had been built in the struggle for shrinking markets had a profoundly negative influence on current accounts (Table 16). Also, in 1994, China, another fierce competitor of the SEAC, sharply devalued its currency.

Furthermore, a factor that kept inflation rates above those in developed countries were the incompletely sterilized capital inflows due to the high fiscal or quasi fiscal costs related to the sterilization. Consequently, money supply increased rapidly (Table 24).

Table 24. Money Supply $M_2$ Aggregate (annual growth rate in percent)

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<tbody>
<tr>
<td>South Korea</td>
<td>21.9</td>
<td>14.9</td>
<td>16.6</td>
<td>18.7</td>
<td>15.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Indonesia</td>
<td>17.5</td>
<td>19.8</td>
<td>20.2</td>
<td>20</td>
<td>27.2</td>
<td>27.2</td>
</tr>
<tr>
<td>Malaysia</td>
<td>16.9</td>
<td>29.2</td>
<td>26.6</td>
<td>12.7</td>
<td>20</td>
<td>21.8</td>
</tr>
<tr>
<td>Philippines</td>
<td>17.3</td>
<td>13.6</td>
<td>27.1</td>
<td>24.4</td>
<td>24.2</td>
<td>23.2</td>
</tr>
<tr>
<td>Thailand</td>
<td>19.8</td>
<td>15.6</td>
<td>18.4</td>
<td>12.9</td>
<td>17</td>
<td>12.6</td>
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Sterilization, again, encouraged even more short-term inflows via the high interest rates paid on domestic currency denominated assets. The in-

\textsuperscript{137} At the end of 1996 share of non-performing loans in total bank loans amounted to 8% in South Korea, 13% in Indonesia, 10% in Malaysia, 14% in Philippines and 13% in Thailand (Corsetti et al. 1998a).
flation differential, the credit boom, the surge in prices of local assets and non-tradable goods as well as the dollar appreciation in 1995 to which most of the regional currencies were pegged, caused these countries to experience a significant real exchange rate appreciation (Table 25) against the currencies of their main trading partners, notably Japan and other Asian countries. Real exchange rate appreciation additionally contributed to deterioration of the SEAC’s current accounts.

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<tbody>
<tr>
<td>South Korea</td>
<td>100</td>
<td>99</td>
<td>94</td>
<td>93</td>
<td>91</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>Indonesia</td>
<td>100</td>
<td>99</td>
<td>92</td>
<td>88</td>
<td>92</td>
<td>89</td>
<td>80</td>
</tr>
<tr>
<td>Malaysia</td>
<td>100</td>
<td>99</td>
<td>87</td>
<td>88</td>
<td>86</td>
<td>84</td>
<td>78</td>
</tr>
<tr>
<td>Philippines</td>
<td>100</td>
<td>82</td>
<td>69</td>
<td>71</td>
<td>62</td>
<td>63</td>
<td>56</td>
</tr>
<tr>
<td>Thailand</td>
<td>100</td>
<td>97</td>
<td>90</td>
<td>88</td>
<td>89</td>
<td>87</td>
<td>80</td>
</tr>
</tbody>
</table>

Note: An decrease means appreciation.

Dynamic growth in the indebtedness of domestic banks and the private non-financial sector (Table 18), predominantly short-term debt denominated in hard currency and adverse movements on the side of export earnings, exposed the SEAC to the risk of a sudden change of foreign investor sentiments caused by the unexpected occurrence of an endogenous and/or exogenous shock.

As a result of the cumulative effects of destabilizing factors, at the beginning of the second half of the 1990s, the SEAC became extremely fragile. Speculative and Ponzi units became dominant. The scene was set for the occurrence of an event that had the power to provoke a complete reversal in investor sentiments. At this point, we could mark three events as possible triggers of investor panic.\(^{138}\) These events occurred simultaneously during the winter and spring of 1997.

In January 1997 the South Korean conglomerate Hanbo Steel, burdened with 6 billion US$ debt, went bankrupt. It was the first liquidation of a conglomerate for a decade. Sammi Steel and Kia Motors followed.\(^{139}\)

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\(^{138}\) The first signals that the system had become fragile were emitted by the stock markets that started with a mild fall in 1996. However, because of excessive optimism those signals were largely ignored.

\(^{139}\) After financial deregulation and liberalization had been put in place, chaebols suddenly gained unlimited access to foreign liquidity. Consequently, the already rather high debt to equity ratio of chaebols increased further to unprecedented levels. At the end of 1996, the average debt to equity ratio for the 30 largest chaebols was 333%. For
At the same time, the first signals that massive investments in financial markets and real estate markets had gone sour came from Thailand. At the end of June, one of the biggest Thai financial companies, Finance One, went bankrupt.140

Finally, at the beginning of May, the widely accepted view among foreign investors was that Japan was engaged in a full-fledged recovery after a several-year-long debt-deflation episode. In anticipation that the Bank of Japan would raise the discount rate, short-term interest rates increased. As a result of foreign investor’s rising optimism (as it soon turned out unjustified), the Japanese yen appreciated and the carry trade reversed its direction.141

Financial problems and massive private capital outflow towards Japan, called investor’s attention to a problem pushed for several years into the background – the problem of the high current account deficit in Thailand. Once overseas investors realized that the winning strategy was to withdraw funds before others, massive capital flight took place. At first, Thai monetary authorities tried to defend the baht and simultaneously, due to the over-indebtedness of local business, the monetary authorities hesitated to increase interest rates in order to regain foreign investor’s confidence. In anticipation of imminent depreciation, in a rush to pay out foreign debt commitments, local business borrowed in baht and bought dollars; hedge funds and speculators borrowed in baht and subsequently converted them into dollars; en masse, wealthy Thais started simultaneous selling of domestic government bonds and buying American government bonds (Krugman 2000). In mid-May, the Bank of Thailand was forced to start intervening heavily in the foreign exchange market in order to defend the baht. It reportedly spent almost 7 billion dollars on the spot market in its defense of the local currency and another 23 billion dollars in forward sales over the course of the first six months in 1997, and quickly imposed measures to discourage speculations against the baht. These measures forbade financial institutions to either lend or “short” the baht to non-residents or to buy back baht denominated bonds before maturity. Consequently, the market was divided into two segments, the local one

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Example, the debt to equity ratio for Sammi Steel was immense 3,245% and for Jinro group 8,598% (Ibid). In a word, at the end of 1996 chaebols had already become time bombs.

140 Near 70% of loans, Finance One invested in property, hire purchase and stock margin lending (Corsetti et al. 1998b).

141 A major creditor country of the SEAC was Japan. For example, the share in total claims against SEAC banks held by banks from Japan at the end of 1996 was 40% in Indonesia, 37% in Malaysia, 12% in the Philippines, 53% in Thailand and 24% in South Korea (Radelet and Sachs 1998).
and the off-shore one. However, this move did not avert market pressure against the baht but rather intensified it even more. The Bank of Thailand depleted its foreign exchange reserves and on 2nd July dropped its efforts to defend the peg to the US dollar and declared a managed float regime for baht trading. The period after the devaluation of the Thai baht at the beginning of July 1997 was marked by a sudden and exorbitant collapse of asset prices, corporate defaults, financial turmoil, and most importantly, a severe recession.

In a matter of a few weeks, panics spread to other SEAC markets and the markets of developing countries world-wide. The mechanism of contagious devaluations, when a fall in value of one currency causes further decreases in value of others was activated. By the end of July, the baht had fallen by 25% relative to its value at the beginning of the year, the Indonesian rupiah by 9%, the Malaysian ringgit by 4% and Philippine peso by 10% (Corsetti et al. 1998b). The South Korean won started a rapid fall somewhat later in November in which it lost 39% of its value as of December 1996 (Ibid). In the rest of the world, signs of global contagion started to appear, with the Czech and Slovakian currencies feeling the heaviest pressure while the risk premium on Latin American Brady bonds grew wider. Heightened risk premiums aggravated developing countries’ borrowing costs sharply and hampered the ability of borrowers to service their debts. Currencies and stock markets in Taiwan, Hong Kong and Singapore started feeling downward pressures as well. The contagion spread further and by the end of the year pressure had become significantly elevated in Brazil, Russia, Greece and other countries whose monetary authorities sought safety in raising domestic interest rates and foreign exchange market intervention. Trading volumes in stock markets in many developing countries dried up during this period. Mature stock markets suffered also, but the U.S. dollar exhibited significant appreciation due to flight to safety as investors perceived it as a safe haven in difficult times.

All the way until signing conditional bail-out packages with the IMF, the SEAC (without Malaysia), refused to increase interest rates. However, after the IMF took over command, they were forced to raise them sharply.\textsuperscript{142} As Minsky would expect, this measure produced a counter effect. Currencies continued to free fall. By January 1998 the currencies of the SEAC nominally depreciated by somewhat more than 50% relative to their July 1997 value (immediately before the crisis erupted). Domestic stock

\textsuperscript{142} The Philippines extended the stand-by arrangement that had been signed before the crises erupted. Thailand signed on 5 August 1997, Indonesia on 31 October, South Korea on 4 December and Malaysia refused to sign it (Radelet and Sachs 1998).
and real estate prices plunged simultaneously with the currencies. The primary cause of the crisis was the sudden and ill-designed deregulation and financial liberalization which made it possible for local business to incur excessive debt, to use Fisher’s expression, “lent importance” (Fisher 1933, p. 341) to investor’s panic. Mismanaged financial deregulation and liberalization and not corruption or cronyism are at the root of the crisis. Massive financing of long-term investments with short-term funds and debts denominated in hard currency left the SEAC vulnerable to a sudden collapse of investor confidence.

The accusations of cronyism leveled at that SEAC governments by the IMF, suggesting that their interventions and involvement in free market forces caused inefficient capital allocation are not justified. Corruption and speculative activities were present, but they certainly were not the hallmark of the SEAC. If this had been the case, it would be difficult to explain the economic success of the SEAC that preceded financial deregulation and liberalization. Inefficient and irrational capital allocation

143 In relation to an average value in 1996, the value of the stock market index in 1997 decreased by 37% (72% for companies in the property business), 52% (78%), 41% (50.4%), 55.2% (93%) and 42.3% (n/a) in Indonesia, Malaysia, the Philippines, Thailand and South Korea respectively (Corsetti et al. 1998a). The fall of the stock markets continued after 1997. The ratio of stock prices December 2000/January 1997 was 0.16, 0.37, 0.22, 0.18 and 0.52 in Indonesia, Malaysia, the Philippines, Thailand and South Korea respectively (Barro 2001).

144 On the contrary, as Chang et al. (1998) claim, in the two decades that preceded the crisis there is no evidence that the South Korean government bailed-out a falling chaebol. There were occasions when the government assisted the take-over or supported the enterprise restructuring of a falling unit of chaebol. However, assistance was conditioned with measures that severely impaired managerial autonomy. So, as Chang et al. (1998) rightly put it, the issue of moral hazard is not about whether a unit in difficulties was assisted by government, but whether irresponsible management was punished.

145 For example, as Chang et al. (1998) point out, the dismantling and not implementation of industrial policy in South Korea brought overinvestment and overcapacity and, consequently, declining profits due to the low capacity utilization and falling export prices of leading industries such as electronics, cars, steel, petrochemicals and shipbuilding. Declining profits in combination with excessive short-term debt led to a melting of the margins of safety and bankruptcies of some well-known corporations (Kia, Sammi, Hatai, Jinro etc).

146 However it is hard to believe that foreign investors did not know about the cronyism of dictators such as Ferdinand Marcos in the Philippines and Suharto in Indonesia.

147 For example, during the reign of a military junta and general Park Chung Hee in South Korea in the 1961-1979 period, the purpose of a periodically declared state of
is also a hallmark of loosely regulated and non-transparent markets. On the other hand, the SEAC fought against those flaws by directly regulating capital flows, limiting the scope of interest rate movements and building and stimulating close relations between lenders and borrowers. Although there was some misallocation of financial resources, Stiglitz (2002) argues that precisely the local governments’ measures of financial market control, significantly contributed to financial sector stability and, generally speaking, to efficient employment of domestic savings in the years that preceded the financial opening of the region. Stiglitz (2002) also admits that some misallocation of credit occurred and that financial institutions had been supervised poorly, but, as Chang et al. (1998) and Dymski and Crotty (2000) argue, since macroeconomic fundamentals were strong, the presence of speculative activities cannot be proof that systems were fatally flawed.

In a word, the economic systems of SEAC could function efficiently only as an integral part. Complete opening of the SEAC markets to foreign capital inflows undermined controlled and rational capital allocation and led to disintegration of economies that had functioned successfully for so long. Finally, we believe it highly debatable that even the most developed and deepest financial markets would have succeeded in withstanding such an abrupt change in investment sentiment as was seen in the Asian crisis, after such intense (mostly short-term) capital inflow.148

Contrary to the Minskyan recipes for overcoming debt-deflation, the IMF implemented policy measures that are completely opposite to the FIH logic. The reason for this was erroneous problem diagnosis. According to the IMF, in its nature, the Asian crisis was no different from the classical balance-of-payments crises that struck South American countries at the end of the 1970s and at the beginning of 1980s. Policy measures of “deflations and depreciations” as a remedy against high budget deficits, raging inflation and uncontrolled growth in import consumption were logically consistent: implementation of restrictive monetary and fiscal policy in order to decrease aggregate demand and consequently balance fiscal spending, decrease inflation and import demand. The aim of depreciation was to increase export earnings and (simultaneously with a decrease in imports) to create a current account surplus. Consistently, balanced bud-

emergency was not only confrontation with political opponents, but also with corrup
government officials.  

148 For example, in South Korea at the end of January 1998, as a consequence of the won’s depreciation, commitments in local currency terms were doubled and additionally as a consequence of a sharp rise in interest rates, debt commitments again doubled. In sum, the debt commitments of local business were 4 times greater. (Kregel 1998).
gets and balance of payments in combination with low inflation positively influence foreign investors confidence (Stiglitz 2002).

However, the SEAC had never had problems with deficit budget spending, high inflation or excessive aggregate demand. On the contrary, in the period of the IMF intervention, debt-deflation was already raging. On the other hand, current account deficits in the region were not the product of high import consumption, but high imports of capital goods (Kregel 1998). Thus, the IMF was not supposed to deal with a flow problem – imports were greater than exports where in expectation of creation of current account surplus and attraction of foreign capital is recommended to implement measures that decrease imports and increase exports and interest rates. The problem was a stock problem, where financial intermediaries and corporations were trying, by all possible means, to pay off their foreign debts and regain their liquidity by “making position by selling out positions”. “In Keynesian term it was a problem of a shift in liquidity preference, not a problem of a shift in spending propensities that had to be achieved.” (Ibid, p. 14).

In a situation of raging debt-deflation, the first thing that had to be done was to prevent further spreading of insolvency through the system. The only way to succeed in this intention, in a situation of stagnant global aggregate demand, would have been to implement an expansive fiscal and monetary policy. However, the IMF implemented a restrictive monetary policy in expectation that high interest rates would attract foreign capital and in that way stabilize exchange rates. Up to the moment of the IMF’s intervention, depreciation had already pushed overindebted units into bankruptcy. A sharp increase in interest rates in an environment where thirst for liquidity was ubiquitous was the wrong decision because, at that time, the increased cost of capital exerted additional pressure on units that had survived the currency depreciation shocks. Of course, foreign investors knew that rising interest rates in a system where liquidity shortage is widespread would deepen recession (Radonjić 2007). Consequently, capital flight accelerated. Also, the aim of restrictive fiscal policy was to decrease import demand and hence (along with the positive influence of currency depreciation on exports) create a current account surplus and high interest rates attract foreign capital and subsequent dynamic foreign capital inflow stabilizes the exchange rate.

To support domestic demand and corporate profits.

To provide corporations with credit under reasonable terms in order to support production processes and put floor to dropping asset prices.
surplus;\textsuperscript{152} constrain inflation as a consequence of rising import prices (because of currency depreciation) and prevent creation of the budget deficits that would have emerged if insolvent financial units had been financed. Furthermore, the IMF ordered immediate closure of insolvent financial institutions and banks that did not meet international capital standards, which further significantly aggravated the problem of financing business activities.\textsuperscript{153}

Eventually, corporations that faced decreasing global aggregate demand and decreasing domestic demand (as a consequence of restrictive fiscal policy) were unable to finance the production process (as a consequence of restrictive monetary policy and declining sales) and repayment of debts. Consequently, exporters were forced to sell from inventories which led to a rapid decrease in export prices, and since import prices increased simultaneously with depreciation of the local currencies, terms of trade deteriorated. The millstone around the neck of domestic consumption in the end created a current account surplus, but only at the price of vanished imports and a drastic decrease in the local inhabitants’ standard of living (\textit{Ibid}). In addition, decreased aggregate demand in the region exported the crisis, and caused contagion-like knock on effects of recession worldwide.\textsuperscript{154}

Ironically, only a year later, in fear of a global melt-down, the Fed organized the bail-out of the American global hedge fund Long-Term Capital Management, the very action that the Fed officials and Western financiers had labeled crony capitalism in the case of the SEAC. Allan Sloan colorfully explained in Newsweek how dangerous preaching can be: “For 15 months, as financial markets in country after country collapsed like straw huts in a typhoon, the United States lectured the rest of the world about the evils of crony capitalism – of bailing out rich, connected insiders while letting everyone else suffer. U.S. officials and financiers talked about letting market forces allocate capital for maximum efficiency. Thai peasants, Korean steelworkers and Moscow pensioners may suffer horribly as their local economies and currencies collapse – but we solemnly told them

\begin{itemize}
\item \textsuperscript{152} Current account surpluses in the SEAC emerged because import expenses decreased faster than export income (restrictive policies obstructed sustaining the level of production, not to mention a rise in the level of production). (Stiglitz 2002).
\item \textsuperscript{153} In Thailand 56 out of 91 finance companies were liquidated, in Indonesia 16 commercial banks were closed and in South Korea 14 out of 30 merchant banks were suspended (Radelet and Sachs 1998).
\item \textsuperscript{154} A drastic decrease in the imports of SEAC caused a collapse of prices of raw materials and oil especially. The decrease in price of oil in 1998 hit Russia very hard (Stiglitz 2002).
\end{itemize}
that was a cost they had to pay for the greater good of the world. Capital should be free to flow to the places where it gets the highest and best use. Cronyism bad. Capitalism good. Then came the imminent collapse of Long-Term Capital Management L.P., the quintessential member of The Club, with rich fat-cat investors and rich hotshot connected managers. Faster than you can say 'bailout', crony capitalism U.S. style raised its ugly head – the New York branch of the Federal Reserve Board orchestrated a $3.65 billion rescue by 14 banks and brokerage houses. John Meriwether and the rest of the guys who ran the fund onto the rocks got to keep their jobs. The fund's investors, whose stakes would have been wiped out in a collapse, salvaged about seven cents on the dollar, with a chance to recover more if things go well. The rescuers even agreed to pay a management fee on their rescue fund, albeit at less than half of Long-Term Capital's normal, obscene rate.” (Sloan 1998).

As the case of the Great Asian crisis shows, restrictive policy measures imposed by the IMF resulted in massive bankruptcies and debt deflation and consequently a drastic fall in imports which led to large current account surpluses.\(^{155}\) The Combined current account deficit of 26 billion US$ of the five most afflicted Asian countries in 1997 transformed into a combined current account surplus of 69 billion US$ in 1998 (Pettis 2001a). These surpluses were later used to repay debts and invest in U.S. Treasury bonds. As we will see later, recycling of the Asian current account surpluses, among other things, led to a significant increase in the liquidity of financial markets in developed countries and particularly the U.S., and consequently to the Global credit crunch that took place in 2007.

\(^{155}\) In contrast to the cases of the Mexican and Asian crisis, in midst of its crisis, Argentina gave up constrained policy autonomy \textit{ex post}, and adopted alternative policy measures aimed not at bailing-out foreign investors and restoring their confidence but on restoring economic growth and further development of its industry. In the first place, when the crisis erupted, Argentinean officials declared default on public debt distancing itself from the IMF. Next the economic authorities gave up the currency board foreign exchange regime, imposed capital controls (minimum stay of capital was one year, obligation for investors to lock away 30% of the capital they invest for 12 months), partially froze bank deposits which gave them more space in controlling the foreign exchange rate and monetary policy. That is why, as Cruz and Walters (2010) claim, post crisis economic growth in Argentina was double that recorded in Mexico and Brazil which responded to the crisis by further intensification of the neoliberal agenda.
V Financial Tumbling in Eastern Europe: From the Ashes of Socialism to the Dust of Capitalism

Nearly twenty years ago, the socialist countries of emerging Europe decided to abandon the essentially dysfunctional model of accumulation based on the state and collective ownership. In these systems, the state was a key actor and the final outcome had been a continual accumulation of systematic deficit and usage of different palliative mechanisms in order to temporarily cover the deficit or to transfer this deficit into the future at the expense of forthcoming, yet to be born, generations. In order to establish sound and self-sustaining economic systems, the emerging European countries entered the process of transition, implementing standard procedures: macroeconomic stabilization, liberalization and deregulation, institutional reforms, restructuring of the real and financial sector and social adjustment. Following ten years of tectonic changes, the process of transition more or less came to an end in 2000, and some of the countries have even joined the European Union. However, the eruption of the current global financial crisis has revealed numerous weaknesses in most former socialist economies. On average, it is clear that most of them failed to create a stable macroeconomic environment, i.e. they cannot continue to function without permanent foreign credit doping. As we
see it, the global financial crisis per se did not cause, but only shed light on financial difficulties in emerging European economies, accumulated in the period of several years prior to the world financial crisis outburst. Still, there were notable cross-country differences in severity of crisis impact on local output. The countries that based their growth model on balanced development of both the tradable and non-tradable sectors and were less dependent on foreign capital inflows to finance their investments and consumption experienced only mild and short term output decline and vice versa. Countries that based their growth model on faster growth of the non-tradable than tradable sectors, whereas such growth was primarily financed by foreign borrowings faced sharp output decline and would have experienced the outburst of debt deflation episodes for certain, if foreign and local governments and international financial institutions had not timely and massively intervened.

1. Prelude to Financial Crisis in Eastern Europe: Global Savings “Glut”, Subprime Crisis and the Global Credit Crunch

Only a decade before the global financial crisis erupted in August 2007, David Shulman, chief equity strategist of Salomon Brothers had claimed that we lived in a new age and a brave new world; the age of the New Paradigm. The world had become a much safer place thanks to the ability of central bankers and governments to tame inflation and avoid deep recessions. (Chancellor 2007). This argument was also used as justification of the rapid growth in U.S. stock prices, especially in the technology sector. Surprisingly enough, only a few years later, the stock market crashed, but the liquidity expansion of the U.S. financial markets continued thanks to the cheap money policy followed by the Fed over the next five years156 and massive securitization of house mortgages, students’ loans, auto finance, credit card debt, etc.

2. Cheap Money Policy in the U.S.

The cheap money policy and consequent dynamic increase in indebtedness of U.S. market participants in the aftermath of dot-com crash was

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156 The Fed reduced the fed funds rate 27 times from the beginning of 2001 until the summer of 2003, thereby reducing it from 6.5 percent to 1 percent. (Justin Yifu Lin 2008).
enabled by a massive deployment of the trade surpluses of Asian and oil exporting countries by U.S. financial markets. Namely, seeking to avoid financial breakdowns and the imposition of austerity measures in the future, East Asian countries gave themselves the task of accumulating a large stock of the U.S. dollar reserves as well as stimulating export growth aiming at increasing their employment and economic growth. They aggressively bought dollars in order to prevent appreciation of their own currencies and used those dollars to buy US Treasury debt instruments. In this way, Asian countries sterilized their dollar purchases and thus prevented inflation from eroding their export competitiveness (Skidelsky 2009). At the same time, since the U.S. is the issuer of the world’s key currency, and since it has been able to borrow its own currency without limits at low interest rates, it could live beyond its means, i.e. run persistent current account deficits for a long period of time, without disruptions in real exchange or interest rates.158

157 Between 1973 and 2005 total debt in the U.S. rose from 140% to 328.6 % of GDP and financial sector debt grew much faster than the debt of the non-financial sector. The debt of the financial sector increased from 15% in 1973 to 104% of GDP in 2005. The increase in the debt of the financial sector significantly accelerated between 2000 and 2005 when it rose from 88% to 104% of GDP. In 2006 financial sector debt was 14.2 trillion US$. In the same period the debt of non-financial sector increased from 142% to 216% of GDP. The debt of non-financial corporations rose from 30.3% in 1973 to 42.4% of GDP in 2005 and reached 9 trillion US$ in 2006. At the same time, the increase in the debt of households was striking – from 45.2% to 94% of GDP and only between 2000 and 2005 it increased 67% and amounted to 12.8 trillion US$ in 2006 (9.7 trillion US$ housing loans and 2.4 trillion US$ in credit card loans). Household-sector debt to disposable income ratio rose from about 90% at the end of 1990s to 122% in 2005. During the 1990s the compound annual growth of debt to income ratio was 1.25% and between 2000 and 2005 it grew at an annual compound rate in excess of 5%. Although in this five-year period interest rates were at historically low levels, the debt payments-to-disposable-income ratio reached record highs of 13.55%. The fastest growing component of household debt was mortgage debt. Thus, the household-sector mortgage debt to disposable income ratio rose from about 60% at the end of 1990s to 90% in 2005 (and consequently median house prices in the U.S. increased 40% in the 2000-2006 period to 234,000 US$). Additionally, in 2006, the U.S. public debt was 5 trillion US$ of which 2.2 trillion US$ was financed by foreign investors. About 64% of this 2.2 trillion US$ was held by foreign central banks. Japan held 612 billion US$ and China 420 billion US$. At the same time, foreigners owned 46% of the U.S. Treasury bonds, 27% of corporate bonds and 14% of government agency bonds. For more details see Papadimitriou et al. (2006); Palley (2007); Lim Mah-Hui (2008).

158 The accumulated current account deficit of the U.S. economy between 2000 and 2006 was about 4 trillion US$ and only in 2006 it reached 800 billion US$ (6% of GDP). The biggest import items were oil products at about 300 billion US$, vehicles at 123 billion US$, electrical and electronic equipment at 83 billion US$ and different consumer products at about 200 billion US$ (Morris 2008). In 2007 the U.S. current ac-
3. Securitization of Mortgages and Rise of the Subprime Market

Through the process of massive securitization, previously illiquid mortgage, students and car loans and credit card debt were transformed into liquid securities that trade readily, which has the same effect as an increase in the supply of money.

However, around one decade before the proponents of the conventional wisdom announced the era of the New Paradigm, Minsky in his Memo on Securitization had recognized the potential perils of the securitization process. There are three hallmarks of his view on securitization:

1. “That which can be securitized, will be securitized.”
2. “Securitization lowers the weight of that part of the financing structure that the central bank is committed to protect.”
3. “The investment banker hires ‘econometricians’ or financial economists to demonstrate that the risks of default on interest and principle of some class of the securities it proposes to issue are so small that these instruments deserve to have an investment rating that implies a low interest rate.” (Minsky 1987, pp. 2–4).

In Minsky’s opinion, securitization was the response of highly regulated financial institutions, such as banks and thrifts to the restrictive monetary policy of the Fed governor Paul Volcker, aimed at permanent termination of inflation in early 1980s. The high fed funds rate put financial institutions subjected to interest rate ceilings into a subordinated position. They could not attract new funds and make profits on the basis of the difference between earnings on assets and deposit interest rate obligations. Also, Minsky calculated that, in order to survive, banks and other regulated financial institutions should reach a required profit margin between interest rates earned on assets and interest rates paid on liabilities of about 450 basis points. This profit margin includes a normal rate of return on capital as well as high costs due to non-earning reserves and costly servicing of customers that other financial institutions did not face (Wray 2007). In other words, due to the fact that they were subjected to reserve and capital adequacy requirements and due to costly relationship

count deficit amounted to 790 billion US$ and 93% of this amount was financed by the combined current account surpluses of China, Japan, Germany and Saudi Arabia (Lim Mah-Hui 2008). Estimation of the U.S. Treasury in 2007 was that total accumulated surpluses in all reserve currencies owned by foreign governments reached 7.6 trillion US$ or more than 60% of global savings. Of this amount 2.2 trillion US$ was owned by oil exporting countries, 2.2 trillion US$ by East Asia excluding Japan and India (of which around 1.1 trillion US$ was owned by China) and around 1 trillion US$ by Japan (Morris 2008).
banking, regulated financial players became not only institutions that generated low profits, but institutions that were on the verge of bankruptcy. In order to survive and compete with unregulated low cost financial players (they were not subjected to restrictive regulations and did not practice costly relationship banking), regulated financial institutions found a way out in securitization, i.e. the originate-and-distribute banking model. Consequently, instead of profit margins generated as the difference between interest earned on assets and interest paid on liabilities, fee-oriented activities became primary income sources. Naturally, with the development of highly profitable securitization activity (not only house mortgages were subject to securitization, but also student loans, auto finance, credit card debts, etc), as Minsky predicted, the Fed controlled an ever shrinking part of the financial markets. The secret of profitability in financial business, Minsky claimed, was to persuade AAA borrower to accept the terms reserved for BBB borrowers or equally, to persuade investors that underlying BBB mortgages are equally as risky as underlying AAA mortgages. To perform this kind of financial alchemy, financial engineers invented different credit enhancement techniques, of which the most powerful was to engage a respected credit rating agency to accommodate investment banker’s demands. The credit rating agency would use calculations made by econometricians or financial economists of creators of securities to justify investment grade status and, accordingly, the low interest rates that new kinds of innovative debt instruments offer. In addition, Minsky (1987) pointed out that securitization was part of the wider process of globalization, because securitization created financial securities that were recognized all over the world irrespective of national boundaries: “Globalization requires the conformity of institutions across national lines and in particular the ability of creditors to capture assets that underlie the securities.” (Minsky, p. 3). In other words, in contrast to optimists and free market believers, Minsky announced the era of perpetual financial instability.

As we mentioned, starting at the beginning of the 1980s, in order, on the one hand, to attract new funds, and on the other to avoid interest rate ceilings (Regulation Q), reserve and capital adequacy requirements, big commercial banks and thrifts developed new asset and liability management practices. On the liability side, in order to ameliorate the competitive pressures that the money market, mutual funds and the commercial paper market imposed, and at the same time to attract necessary funds for financing their business activity, banks decreased their dependency on retail deposits and resorted to a greater extent to selling securities, especially interbank borrowing and other forms of short-term and long-term debt including securitization. The blooming of securitization in the last two decades of the previous century boosted the growth of the repo market, since securitized loans, especially mortgage loans became eligible collateral-
al for repo transactions. In a word, banks decreased their dependency on deposit funding and expanded potential financing sources, simultaneously prompting rapid growth of the money markets, particularly the repo market. In that way, financial stability deteriorated and potential for crisis increased, since, as Minsky (1957) rightly noted, switching to CDs or repo agreements as new sources of fund-raising is the equivalent to substitution of time for demand deposits. Although this means that the potential base for raising new funds had increased, it also means that increased dependence on short-term, more unstable and interest sensitive funds, increase the financial fragility of the banking system.

On the asset side, big banks and thrifts adhered to the originate-to-distribute model. Namely, the bank creates mortgage loans and then pulls them together and securitizes and / or sells them to investment bankers, who, on the basis of the pooled mortgages, create different exotic debt instruments (mortgage backed securities, collateralized loan obligations, collateralized debt obligations), slicing them into different risk tranches to suit investors’ needs. In that way, regulated financial institutions moved mortgages off their balance sheets, avoiding high reserve, capital adequacy and customer servicing costs, and replaced interest earnings as the primary source of profits with fee incomes generated through the business of originating loans, assessing risks, servicing the mortgages and providing back-up credit lines to buyers of their products (Wray 2007). In this way, a hazardous incentive structure was created. Because the banks, thrifts and mortgage brokers had moved the mortgages off their balance sheets, they were not interested in the quality of loans, i.e. the future solvency of the borrowers. Because they earned fee incomes, they were primarily interested in maximizing the quantity of granted loans, never mind the solvency prospects of the borrower. Consequently, the subprime mortgage market bloomed. Borrowers with less than full required documentation (low doc loans), those with none of the necessary documentation (no doc loans), those who lied about their incomes and assets (liar loans) and finally borrowers with no income, no job, no assets (NINJA loans),

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159 Between 1998 and 2008, the size of repo market surged from 2 to 10 trillion US$ (Silipo 2010).

160 In last two decades securitized home mortgages increased form 25% to 55% of all U.S. home mortgages. Simultaneously, securitization of commercial mortgages and consumer credit rose from zero to 30% (Ibid).

161 For example, the total assets of the ten largest publicly listed European and American banks more than doubled in the period 2002-2007 and amounted to 15 trillion euro. At the same time, the loan-to-asset ratio decreased from 50% in 1998 to about 35% in 2007 implying a sharp rise in other banking investments like securities holdings and trading activities. (Ibid).
all of a sudden, became eligible customers. At the same time, mortgage officers had an incentive to lie and deceive potential customers, because they were richly rewarded if they succeeded in pushing loans with unfavorable terms, which increased the value of the mortgage-backed securities. In this way, financial innovations with low or no down payment found their way to the ignorant and, often, deceived borrowers who would take out “interest-only” loans and “option adjustable rate” mortgages (option ARMs) with initially low “teaser” interest rates but with very high reset rates later (Ibid). Of course, as long as the prices of houses keep rising (collateral) and/or interest rates stayed low, Ponzi units survived and increased their debts, for instance, to refinance mortgage loans or raise home equity loans.

On the other hand, the commercial banks that had securitized illiquid subprime mortgages and investment banks that had been buying pools of subprime mortgages massively, and then securitizing them, were selling a great number of various exotic mortgage-backed securities to big profit-hungry financial institutions. To find buyers for junk, investment banks were forced to apply financial alchemy, or, in other words, credit enhancement strategies.

Firstly, on the basis of the pool of subprime mortgages they created securities that belonged to different tranches in order to meet the differ-

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162 Chancellor (2008) argues that subprime borrowers simply could not refuse lenders’ generous offers. Namely, in terms of options, lenders were selling to insolvent people (credit contracts with low initial payments and interest rate and low or non-existent down payment) for free call option on assets expected to rise in value. With rising house values, borrowers were able to increase their debt. At the same time, lenders sold put option to insolvent borrowers for free, because if the value of a house falls, the borrower could put back the house to the lender.

163 Close analysis of 2.5 trillion US$ worth of subprime loans undertaken by the Wall Street Journal showed that in 2005, 55% and in 2006 61% of subprime borrowers were eligible for conventional loans (Wray 2007).

164 McCulley (2008) suggests that borrowers with no documentation, no income, no down payment and with teaser interest rates are even more speculative borrowers than Minsky's Ponzi units. He calls them Ponzi squared units, because they are not only incapable of covering their principal and interest rate obligations out of their cash flow, but also, they do not have any stake in this kind of contract.

165 The dynamic rise in house prices enabled consumption spending growth to outstrip income growth. Consumption spending financed by home equity loans and refinancing loans became the most important driving force of U.S. economic growth in years that followed the dot-com crash. For example, the percentage of Freddie Mac refinanced loans that had new higher loan amounts was 74% in the second quarter of 2005 and 72% in the third quarter of 2005. What is more, home equity withdrawals used for paying off debt are not included in consumption spending. However, if a home equity loan is used to pay off credit card purchases, then the home equity loan actually finances consumption expenditure (Papadimitriou et al. 2006, 2007).
ent risk-return preferences of investors. For example, if historical analysis of what we must emphasize, is unrepresentative data during the housing boom shows that the loss ratio on subprime mortgages was no more than 10%, then securities that were backed by the subprime mortgage pool would be divided into AAA or senior tranche (70%), the mezzanine or junior tranche (20%) and the subordinated tranche (10%). Now, the owners of the AAA tranche would be paid first from income that was generated by the underlying pool of mortgages, i.e. if borrowers defaulted, the owners of the subordinated and junior tranche would be the first to feel it. In that way, thanks to “overcollateralization”, it appeared, that the AAA or senior tranche were quite safe securities, and consequently a suitable investment for big financial players like insurance companies and pension funds (Lim Mah-Hui 2008; Wray 2007). What is more, thanks to the short historical experience with nonconforming loans, a booming market and the low rate of default of subprime borrowers, it appeared that junior tranche securities (the owners of junior tranche securities would be paid only if the owners of senior tranche were fully serviced) were also fairly safe and could be sold for high prices to unregulated financial players like hedge funds. To make things worse, it seemed there was virtually no limit to the creative financial layering which made junk assets look like investment grade. Thus, financial engineers often made CDOs of CDOs (CDO\textsuperscript{2}), i.e. pools of subordinated CDO tranches that were, in same vein, horizontally tiered in tranches so that the first to be paid tranche receives investment grade. The next step was to further create CDO\textsuperscript{3}, CDO\textsuperscript{4} and so forth.

Secondly, investment banks, as Minsky had predicted, hired respectable credit rating agencies to grant investment grade status to overcollateralized senior tranches, disregarding the fact that the underlying assets were junk. Due to the conflict of interest (because they were handsomely paid for providing these rating services to commercial and investment banks\textsuperscript{166}) and the fact that the credit agencies used the calculations of their customers (investment banks) to assess potential default risks, junk was easily and smoothly transformed into rather safe securities, with high prices and low interest rates.

The third key group of players, after credit raters, were the insurance institutions, which provided seemingly unlimited liquidity to junk mortgage backed securities and collateralized debt obligations. The big insurance companies with a tiny capital base massively insured junk securities (nominally investment grade securities) and helped to validate the high rating status assigned by the credit raters, ensuring a deep market and low interest rate spreads (Wray 2007). On the other hand, the health of the

\textsuperscript{166} Fees for rating exotic debt instruments were twice as high as the fees for rating corporate bonds (Wray 2007).
insurers was assessed by the credit rating agencies. By providing insurance for investment grade securities (junk actually), insurers at the same time satisfied the necessary conditions to acquire high credit ratings. The sellers of dubious financial instruments implemented other techniques to secure markets for their products, and additional sources of income such as early payment penalties and buy-back guaranties in the event of disappointing performance of their products.

Also, the illusion had been created that regulated financial institutions had simultaneously freed themselves of the default risk of borrowers by moving risky mortgages off their balance sheets. Namely, big commercial banks, set up in tax heaven countries, structured investment vehicles (SIVs), conduits designed to hold highly risky assets such as MBSs or CDOs. Technically, SIVs are controlled and managed, but legally separated from money center banks (Morris 2008). In order to maximize profits and to generate hefty fees, banks made on the carry on a grand scale by placing short-term asset-backed commercial papers (most frequently mature in three months) in order to finance the purchase of long-term, very risky but higher yielding CDOs and MBSs. To minimize financing costs of funding, the big banks provided SIVs with back-up credit lines. So, when the crisis erupted and creditors refused to roll over debt, in order to prevent massive defaults on SIVs, the big banks started to hoard money heavily which led to the credit crunch. What is more, in order to avoid panic and a herd-like collapse of financial markets, major money center banks brought SIVs assets onto their own balance sheets (Radonjić and Zec 2010). Unfortunately, as it turned out, the collapse of this financially fragile system was inevitable.

A further opaque financial innovation that deepened the potential for full-fledged financial collapse was the credit default swap, a derivative financial instrument used by banks to insure the loan portfolios of other banks against any losses, for fees. On the other hand, buyers of insurance freed up regulatory capital for further expansion of credit. Uncontrolled proliferation of this derivative instrument led to a staggering 45 trillion US$ notional value of credit default swaps by the end of 2007, which was in multiple excess of the available capital base (Ibid).

167 On the other hand, when subprime borrowers started to default massively, agents began to suspect in credit rating status of nominally investment grade securities assigned by the credit raters. At the same time, they became aware that higher rate of default than predicted could put insufficiently capitalized insurers into difficulties. Consistently, credit raters downgraded the credit ratings of insurers. Now, insurance of mortgage backed securities became worthless, because health of insurers has been called into question. In that way, mortgage backed securities lost their investment grade status and panic emerged (Wray 2007).
All in all, a vicious circle was created: exotic innovations expanded the supply of funds, banks were able to emit new loans as they moved pools of mortgage loans off their books, new loans increased the demand for houses, pushing the prices of houses up. The increased prices of houses justified the increased size of loans required and ever rising leverage ratio (debt to equity), since, in a booming market, houses could always be refinanced or sold at inflated prices if a Ponzi unit faced difficulties.

The new banking model of originate-and-distribute adds a very important novelty to the dynamics of Minsky's FIH. Namely, in the new, originate-and-distribute deregulated environment with obvious incentive problems, a prolonged period of prosperity might not be needed for Ponzi units to be created and become dominant. In this new banking practice, loan originators and credit rating agencies were not motivated to properly screen potential borrowers and new credit enhancement strategies (over-collateralization and subordinated debt) became widely used techniques for the production of investment grade structured financial instruments out of junk assets. In this way, Ponzi units may begin to dominate from the very beginning of the expansion phase. All that is necessary is a favorable trend in the prices of the assets that are the object of Ponzi-style speculation (Wray and Tymoigne 2007).

4. The Great Moderation

After the collapse of the dot-com market, recession was successfully avoided thanks not only to a cheap money policy and the massive securitization of illiquid assets but also to the new form of life taken on by the New Paradigm. Himself under the liquidity illusion, Ben Bernanke, governor of the Fed, announced in 2004 that we lived in the age of the Great Moderation, an age of controlled inflation and low volatility of financial markets. Because volatility and risk are synonyms in financial vocabulary, this actually meant that the investment business had become less risky; suddenly, the future was less uncertain and vague. In fact, the causes of the decline in the volatility of the financial markets were straightforward; improved monetary policy constrained inflation and extended business cycles, globalization made possible the efficient distribution of risk worldwide, communication and risk assessment had become more efficient thanks to significant improvements in information technology, securitization of former illiquid and risky mortgages allowed dispersion and transfer of risks to those best equipped to bear it and the explosive growth of derivative instruments allowed undesired risks to be hedged. We cannot but admit that these reasons sound convincing, bearing in mind the fact that, on several occasions over the last ten years, skillful and decisive U.S.
monetary authorities have succeeded in preventing financial crisis and the spreading of its effects worldwide. Consequently, it is logical to conclude that, if the world was a safer and a more stable place, inflation was under control, business cycles were extended and bankruptcies had become a thing of the past, then government, corporations and households could increase their debt burden at acceptable risk. As Minsky had predicted, the refusal to credit Cassandra-like warnings, in concert with the rise in economic growth, infallibly led to an excessive increase in indebtedness. The only problem was that from 2002 to 2006 debt grew at a rate three times faster than economic activity. In other words, Americans increased their debt only to finance consumption and not investment, since the share of investment in GDP in the U.S. and other developed countries remained stable for years (Skidelsky 2009). What actually happened was that even though monetary expansion prevented a deeper downturn by stimulating the real estate market, it caused the inception of a real estate price bubble, which burst several years later. This bubble compensated for the wealth losses in the stock market, because housing stock comprised a large share of households’ wealth. Higher housing prices, coupled with the Fed’s aggressive monetary policy that swamped the U.S. with excess liquidity, fueled a surge in private consumption. Thus, household consumption accounted for two-thirds of the U.S. GDP growth in 2004 and only home equity loans, i.e. mortgage equity withdrawals aimed at buying consumer durables and second homes skyrocketed from 20 billion US$ in the early 1990s to 700 billion US$ or 5% of GDP in 2004 (Lim Mah-Hui 2008).

168 For example, the near-collapse of LTCM in 1998, the dot-com crash in 2000, the instability that followed the terrorist attacks in 2001, the collapse of Enron and WorldCom, etc.

169 From 2002 to 2006, debt in the U.S. increased by more than 8 trillion US$ whereas at the same time GDP increased by 2.8 trillion US$ (Chancellor, 2007). That is why Epstein (2001) warned about the perils of growing financialization of the world and in particular the U.S. economy. Epstein (2001) defines financialization as a process that leads to the increased importance of financial markets, financial motives, financial institutions and financial elites in shaping economic policy at the national and international level. This process increases the benefits of money rentiers and makes the rich even richer and the poor even poorer. The rapid increase in debt of the financial and non-financial sector, trading volumes in word financial markets, growing inequality in the distribution of incomes and redirecting of incomes from the real to the financial sector and from labor to capital are the principal impacts of financialization. For example, growth in wages has been completely detached from growth in productivity over the last 40 years. In this period the productivity of U.S. workers nearly doubled, whereas growth of wages has remained stagnant. The magnitude of these disproporions is most conspicuous when average salaries in the financial and the real private sector are compared. Thus, in 2006 the average salary of the average investment banker was 435,000 US$ per year compared to 40,368 US$ per year for the average worker in the private sector. Also, although returns in the hedge fund business fell by about 50% in comparison to the 1990s, the top 25 hedge fund managers earned on average 570 million US$ and the top 3 over 1 billion US$ each in 2006 (Lim Mah-Hui 2008).
2008; Skidelsky 2009). This was not a problem, however, for conventional thinkers since deepened financial markets were capable of supporting more debt for the same level of economic activity.

5. Liquidity Expansion in the U.S. and Ensuing Expansion of Emerging Markets

In line with the liquidity model, liquidity expansion in the most developed economy in the world led in no time to liquidity expansion in other developed countries exposed to financial markets in the US, and further, due to the increased optimism and consequently profit appetite of Western investors, to massive capital flows towards investment outlets – developing countries. Resultantly, developing countries exhibited similar or even more pronounced economic growth in the period between 2002 and 2007 in comparison to rich countries (Figure 1).

Dynamic growth in the developed world stirred up developing countries’ growth by increasing export revenues and commodity prices, FDI, portfolio investments, cross-border lending\[^{170}\] and workers’ remittances. Developing countries’ exports accelerated more rapidly compared to the 1990s, which led to an increased share of exports in aggregate developing countries’ GDP from 29 percent in 2000 to 39 percent in 2007. (Lin 2008). New private capital inflows to developing countries increased in 2007 by 269 billion US$ and reached a record high of 1 trillion US$, which was more than 7% of aggregate developing countries’ GDP. (World Bank 2008). Remittances followed suit and increased sharply reaching a total of 240 billion US$ worldwide. The upswing of capital inflows led to an investment boom in many developing countries, mostly in the transitional countries of Central, East and Southeast Europe, Russia, China, Brazil, India, South Africa and others. This provided additional support to developed countries’ growth through increased export demand for their capital goods, demand which originated from the developing countries’ investment booms. As a result of these reinforcing flows, developing countries as a group achieved the highest output growth in decades. From 2003 to 2007, developing countries’ GDP grew more than 5 percent annually, and peaked at 8 percent in 2006, where investments alone delivered roughly 4 percentage points of GDP growth. At the same time, a small U.S. fiscal surplus in 2001 overturned into a sizeable deficit from 2003 onwards, mainly due to reductions in taxation and increases in defense expenditure. Since the U.S. was already exhibiting low interest rates, as well as a low rate of savings, the fiscal deficit contributed to an increase in the current account deficit and higher

\[^{170}\] Cross-border lending denotes direct lending of non-resident banks to local banks and companies.
export demand for developing countries goods and again, through increased demand for the capital goods of developing countries to further economic growth of developed economies.

Figure 1. GDP Growth Rates for Major Economies and Regions


171 Advanced economies – Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, Spain, Australia, Canada, Hong Kong, Denmark, Iceland, Israel, Japan, South Korea, New Zealand, Norway, San Marino, Singapore, Sweden, Switzerland, the United Kingdom, the United States; CEE – Albania, Bulgaria, Croatia, the Czech Republic, Poland, Hungary, Slovenia, Latvia, Lithuania, Estonia, Macedonia, Romania, Turkey; Western Hemisphere Developing Countries: South and Central America and Caribbean countries; CIS – Russia, Ukraine, Belarus, Kazakhstan, Kirgizistan, Georgia, Mongolia; Developing Asia - Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China Mainland, China Macao, Fiji, India, Indonesia, Lao, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Samoa, Salomen Islands, Sri Lanka, Thailand, Vanuatu, Vietnam.
6. Subprime Crash and the Global Credit Crunch

Seemingly suddenly, in August 2007, reality struck home brutally. Financial markets came to a sudden stop. Although the first signs of accumulated difficulties became visible in 2006 when house prices peaked, in March 2007 when debtors in the subprime mortgage market started to declare bankruptcy, and in July 2007 when big banks found that they could not sell originated loans, the credit crunch finally arrived in August 2007. The monetary authorities and mainstream economists were stunned. The crisis erupted in the subprime mortgage market and afterwards, as quick as lightning, it spread to other U.S. financial markets and markets worldwide. The first hit was taken by the money market, namely the asset-backed commercial paper market. When it became clear that subprime borrowers would default massively, and that the situation would not improve with time, big banks stopped buying the commercial papers of hedge funds and big investment banks, because they used short-term funds raised on the money markets to buy huge long-term subprime mortgage packages and various exotic debt instruments created to support the blooming of low quality mortgage loans. Consequently, several major financial institutions in the United States were on the verge of collapse, and, most notably, the prominent global financial giant Lehman Brothers went bankrupt. Furthermore, markets for differently structured packages [mortgage-backed securities, collateralized debt obligations (CDO), CDO$^2$, CDO$^3$, etc.] broke down and interbank lending was brought to a halt because, in order to finance their long-term mortgage positions, hedge and money market funds, faced with a drained commercial paper market, were forced to use their back-up credit lines (Soros 2008a; Whalen

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172 An important change in monetary policy that contributed to the bursting of the housing bubble was the decision of the Fed to raise the federal funds rate from 1% to 5.25% between June 2004 and July 2006, in order to dampen inflation (Skidelsky 2009).

173 George Soros (2008b) pointed to irresponsible regulators as the primary culprits for this financial debacle. Namely, globalization had enabled the spreading of risk, but with “...the spreading of risks, more risks could be taken. Unfortunately, the risks were passed on from those who were supposed to know them to others who were less familiar with them. What is worse, the newly invented methods and instruments were so sophisticated that the regulatory authorities lost the ability to calculate the risks involved. They came to depend on the risk control methods developed by the institutions themselves. ...Something similar happened to the rating agencies who were supposed to evaluate the creditworthiness of the financial instruments. They came to rely on the calculations provided by the issuers of those instruments. I find this the most shocking abdication of responsibility on the part of regulators. If they could not calculate the risk, they should not have allowed the institutions under their supervision to undertake them.” (Soros 2008b, pp. 116, 117).
Interest rate spreads soared and panic caught the world equity markets. The real economy and export demand collapsed around the globe. Due to the collapse of export demand in developed countries, developing countries faced severe export volume contraction and decline in the terms of trade, especially in the case of commodity exporting countries. Also, investments slumped due to the cessation of previously abundant capital inflows used to finance investment booms. The heightened risk aversion of investors gave rise to an excessive increase in risk premia, which spilled over into steep increases in interest rates charged on loans extended to developing countries’ business entities. The world economy entered an era of Great Recession.

In the midst of the turmoil on financial markets, the clouds of illusion finally dispersed. After all, at least for the majority, the brave new world was not so brave. Suddenly it had become clear that the Great Moderation was a smoke screen raised by greedy Wall Street high rollers and seduced government officials so they could eat their juicy piece of cake in peace, leaving a mess behind them. Finally, widely praised exotic financial innovations and virtual financial products caused deep divergence between production and consumption and enabled fictive economic growth, mainly based on imported savings and global income redistribution. At the same time, the key question of who manages somebody else’s money (banks and corporations), and who really bears the risk of failure, was opened. We have witnessed a colossal process of privatization of gains and socialization of losses. A new money manager class (financial and corporate oligarchy) imposed a system of distribution tailored to increase their incomes and bonuses whereas, at the same time, wages and profits in the real sector declined. Greedy and haughty debtors who financed their real assets with somebody else’s accumulation have been rewarded and, on the other hand, small savers, sucked into the system that completely separated control over resources from their primary owners, have been punished (Radonjić 2009b).

7. Preventing a global debt deflation episode

So far a depression and deflation episode have been avoided thanks to the policy coordinated actions of the governments of developed nations and international financial institutions (Desmedt et al. 2010). In order to stimulate banks to start lending again and to prevent solvency problems of

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174 From autumn to the end of 2008 DJIA and London’s FTSE 100 fell by 30%, Frankfurt’s DAX by 40.4%, Paris’ CAC by 42.7% and Tokyo’s Nikkei by 42%. This fall of stock markets worldwide continued into 2009 (Skidelsky 2009).
big banks, governments in the U.S. and the EU recapitalized their banking systems, i.e. bought shares of troubled banks and, in parallel, accepted responsibility to guarantee, insure and buy exotic assets from potentially insolvent banks. Thus, in September, 2008, the U.S. Government took into public ownership Fannie Mae and Freddie Mac and AIG, the world largest financial insurer. In the same month, Goldman Sachs and Moran Stanley were given permission to change their legal status from investment to holding banks, which made them eligible to borrow from the Fed on more favorable terms. (Skidelsky 2009). At the end of September, 2008, the Treasury announced a 700 billion US$ worth bailout package to buy up illiquid exotic assets. In parallel with an expansive monetary policy, governments of developed countries also implemented fiscal stimulus packages. The U.S. February 2009 fiscal stimulus amounted to 787 billion US$ and was a blend of tax cuts, energy and infrastructure investments, emergency spending for unemployment benefits, health care, etc. Similar actions were undertaken by the British government, the EU, China and so on. So, from this point of view it seems that the worst scenario is remote. However, although cheap money prevented debt-deflation, a factor that needed to be restored as soon as possible was business confidence. This is an important precondition for boosting investment activity. Moreover, huge public spending raised the question of potentially problematic government deficits, since developed countries had already been running sizeable deficits when the stimulus packages were adopted.

8. Financial Fragility and Instability in Eastern Europe: Cross-Country Analysis

The countries of the emerging Europe have achieved significant macroeconomic stability in terms of fiscal deficits, monetary development, inflation, output growth and productivity since they started their transition from centrally planned to market economy two decades ago. However, when financial crises erupted most countries in the emerging Europe faced severe consequences from the sudden reversal of foreign capital inflows. As Minsky would predict, the booming period carried the seeds of its own destruction. Rapid growth caused vulnerabilities to build up massively, much more than in developed countries. Abundant capital inflows created market and real estate price bubbles. Low costs of production prior to 2007 permitted the global economy to continuously achieve high growth and low inflation at the same time. But in 2007, the costs of capital and labor soared because production capacity constraints were reached in many countries, especially in the area of food production and
oil extraction and refinement. During 2007, the U.S. dollar depreciated against other currencies due to twin deficits in the U.S. This depreciation was one of the causes of increased commodity price volatility.

What made EEE very vulnerable to a sudden stop of capital inflows were very large current account deficits financed by massive capital inflows and particularly the considerable share of short-term (close to 30%) and floating-rate debt in total debt (around 90%), as well as widespread credit euroization of the real sector’s balance sheets. In early 2009, most of the EEE were in the midst of a deep output and export contraction. Final consumption, investments and imports were at a far lower level compared to pre-crisis levels, and many enterprises and households struggled with increased credit obligations stemming from the high rate of credit euroization. (Radonjić and Kokotović, 2010). However, due to the coordinated policy response of the governments of developed nations and international financial institutions, the impact of the crisis was milder than expected. There were no fixed exchange rate devaluations, floating currencies depreciated moderately, foreign exchange reserves remained relatively high despite heavy interventions and there were no systemic banking crises.

The purpose of this section is to provide a rigorous analysis of the pre-crisis and post-crisis developments of fundamental economic indicators in a selected number of countries in emergent Europe. We will present an overview of average pre-crisis developments and the crisis impact on 17 countries of the Euro Area175 and 14 transitional countries that have distinct characteristics making them more or less susceptible to the sudden excess liquidity reversal.

Our sample of EEE is limited by the availability of monetary, balance of payments and financial statistical data. It covers 14 countries: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey and Ukraine. The analysis is performed on the quarterly data that provide sufficient details needed to explore changes in trends and relate them to actual events.176

The economic indicators, which will be used in our empirical research of financial crisis in EEE are the following:

1. The external indicators include financial account balance relative to GDP, current account balance relative to GDP, total foreign debt of governments, banks and real sector, exports, imports, foreign exchange reserves, foreign direct investments,

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175 The Euro Area countries: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovenia and Spain. Slovakia joined the EMU in 2009 and Estonia in 2011, but these countries were, for the sake of our analysis, treated as non-EMU countries up to the end of 2008 in the case of Slovakia and up to the end of 2009 in the case of Estonia.

176 Serbia is not included since quarterly data is unavailable.
stock of net foreign debt including net debt securities and subtracting foreign exchange reserves relative to GDP, real exchange rate and nominal exchange rate.

2. The financial liberalization variables include domestic credit to the private sector relative to GDP, the real lending interest rate differential against the Euro Area, loan to deposit ratio and rate of euroization.

3. Other variables include inflation, money growth and share prices.

4. The real sector variables include real GDP growth, the expenditure contribution to GDP growth, the industrial production index and real wage index.

5. The fiscal variables include the general government fiscal deficit relative to GDP, general government revenues and general government expenditure.

8.1. Shaken foundations: The Euro Area

Following the emergence of banking and financial market tensions in advanced countries due to the subprime mortgage market crisis, developed countries in Europe fell into deep recession. This deep downturn was triggered by a global financial crisis and a sharp drop in international trade. This twin shock was particularly hard for developed Europe because of its deep integration into the global economy (Figure 2). Even though the subsequent recovery was moderately strong it is still well below the level of GDP seen before 2009, at least in real terms.

177 The Euro Area debt crisis has been centered in Greece, Portugal, Italy, Ireland and Spain. Most recently, in March 2013, severe banking crisis threatened to ruin the financial system of Cyprus. In fear of a bank run, on the 16th March 2013, the Cypriot authorities ordered closing of its banks. On the 19th March 2013 with 36 votes against, and 19 abstentions, the Cypriot parliament rejected a 10 billion euro emergency loan from its Euro Area partners conditioned on a controversial bail-in plan of a one-off bank deposit levy of 6.7% for deposits up to 100,000 euro and 9.9% on accounts holding sums of 100,000 euro or more, whereby taxed depositors would be compensated with shares in their banks. In the end, on the 25th March 2013, the Cypriot government and the Euro Area partners and the IMF agreed a 10 billion euro emergency loan in return for radically scaling down of the Cypriot oversized banking sector. The new bailout deal focused on the island’s two insolvent major banks. It will wind down the largely state-owned Popular Bank of Cyprus, also known as Laiki, and shift deposits below 100,000 euro to the Bank of Cyprus. Deposits above 100,000 euro in both banks, which are not guaranteed under EU law, will be frozen and used to resolve Laiki’s debts and to recapitalise Bank of Cyprus through a deposit/equity conversion. According to the Washington Post (March 24, 2013), the new economy that the EU should worry about is Slovenia.
After several years of rapid export expansion, exporters have been hit hard by the sharp drop of global spending on capital and durable goods (Figure 3). Fiscal and monetary stimuli that were implemented synchronously by the majority of large countries brought about a recovery in trade but it still has some way to go to return to previous levels.

Not only export volumes, but also unit values declined (worsening terms of trade) and they went down much more than volumes. On top
of that, many European countries had their own, homegrown problems such as real estate bubbles or fiscal deficits. Many of the largest European banks became overleveraged in the run-up to the crisis and invested in doubtful projects with high initial returns but even higher risks, much like their U.S. counterparts. The financial sector was at the heart of developed Europe’s problems and still remains there. Financial woes started in the mid–2007, firstly in the form of evaporating confidence between the banks themselves, which effectively curtailed trading in the interbank money markets. The next step was a steep rise in interest rates, which put pressure on both domestic and foreign borrowers. Finally, a credit crunch ensued after the Lehman Brothers shock and it had not effectively subsided even two years after (Figure 4).

Figure 4. The Euro Area: Growth of Credit to Non-Financial Sector, q-o-q

This, coupled with free falling exports, caused significant adjustments of imports. An even more important effect of this crisis is the massive adjustment of the financial account, especially in the Eurozone, which turned positive after many years (Figure 5).
This financial account adjustment had an impact on all of its constituent items: FDI, portfolio investments and credit. Moreover, financial account adjustments had a particularly severe impact on countries in emerging Europe. Former communist countries had to face the reality of dried up capital inflows, which seriously constrained their ability to continue running current account deficits. They had to abandon their previous patterns of consumption and investment plans, which were financed to a great extent by funds coming from the EU and the Euro Area.

In addition, since ailing banks from the Euro Area were suffering a liquidity crisis due to paralyzed home money markets, they sought rescue from their highly liquid subsidiaries in emerging Europe, from which they drew large amounts of liquidity reserves in order to meet their home country liabilities. The first most obvious effect of sudden and large capital retreat was a massive depreciation of floating foreign exchange rates coupled with an equally massive drop in foreign exchange reserves throughout the EEE. Subsiding credit activity in the Euro Area along with adjusted household consumption dragged down the level of imports in the Eurozone, which was reflected in a rapid slowdown of previously rapid growth of export from the emerging Europe. For those countries in the “new” Europe, as some used to call it, which had floating exchange regimes, depreciation of their currencies did not bring any benefits. Due to subdued demand in developed countries, even this large increase in price competitiveness was not enough to offset curtailed private consumption.
and investments in the developed world (long-term liquidity contraction). This depreciation brought many problems and more so to those East European countries, which had a high rate of loan euroization. Finally, despite a sharp reduction in the Euro Area interest rates enabled by rapid disinflation\(^\text{178}\) (Figure 6), the sudden surge in risk premiums, or interest margins charged to sovereign and private borrowers in EEE, further exacerbated financial difficulties stemming from diminishing sales and profits. The same thing was repeated again in mid–2011 after the second rescue package for Greece proved that the crisis was far from over, and that many European Governments as well as banks have a long way to correct their excessive indebtedness.

\[\text{Figure 6. EMBI spread – Europe}\]

![EMBI spread – Europe](image)

Source: Financial Cbonds Information

Banking sectors in some of the EU member states had, and still do have, a large exposure to their subsidiaries and local banks in many countries in emerging Europe, as well as to the corporate sector. One of the consequences of the worsening of macroeconomic fundamentals in the EEE was a rapid increase in non-performing loans, loan losses and deterioration of banks’ capital bases in the EU advanced countries. This had a sizeable impact on those banking sectors in the EU, the exposure of which to the emerging Europe had substantial share in their overall credit portfolios, notably Austria, Greece and Sweden, and to a lesser extent, Germany, France and Italy.

\(^{178}\) Disinflation denotes deceleration of price increases that still remains above zero.
In order to avoid a large-scale debt-deflation episode in Europe and the possible global contagion effect, the international policy response to crisis has been coordinated and timely, and involves large-scale balance of payments support aiming at securing financial sector stability. This is probably one of the most important differences of the ongoing crisis in comparison with the Asian or Russian crisis. The IMF resources were tripled to 750 billion US$ and the European Commission’s resources for balance of payments support quadrupled to 50 billion euro. The two institutions jointly agreed stabilization programmes with Hungary, Latvia and Romania, to which a number of other EU countries and international financial institutions also contributed. The IMF also agreed programmes with Armenia, Belarus, Bosnia and Herzegovina, Georgia, Serbia and Ukraine. The IMF gave Poland access to 20 billion euro under a new flexible credit line designed for countries with sound macroeconomic fundamentals. (EBRD 2009).

In addition, governments of the aforementioned EU countries recapitalized distressed banking groups, whereas some, notably Austria and Sweden, whose banking sectors had aggregate exposure to the EEE in excess of 70% of their respective GDP, went further and injected capital directly into distressed subsidiaries in emerging Europe. Governments from the EU had strong and direct economic incentives to provide a blanket bailout to former communist countries across the board. However, this is not an exhaustive list of reasons. The EU countries also had a direct mandate to assist ailing fellow member states of the EU such as Romania, Hungary and the Baltic countries. Finally, they were in a position to provide help to the countries outside of the EU, but striving to become members, such as Croatia, Serbia and other countries in the region. In the latter case, assistance did not take the form of direct transfers of EU funds, but rather through bank recapitalization, increased lending activities of national and supranational development banks and through the “Bank Coordination Initiative” arrangements such as the “Vienna Initiative”, arrangement put in place in Romania, Serbia, Hungary, Bosnia and Herzegovina and Latvia.

The Vienna Initiative was designed by the IMF, the EBRD, the European Investment Bank, the World Bank Group, the European Commission and home and host country authorities of the major EU-based bank groups and the bank groups themselves. The aim of this arrangement was to prevent panic, bank runs and capital outflows en masse, and help steer the equilibrium toward a cooperative approach ensuring the best possible outcome for all. Home governments allowed bank groups to access national packages for their whole operations, that is, without restrictions on
funding their subsidiaries. Banking groups with the largest exposures were offered the option to voluntarily maintain their aggregate credit exposure to a distressed country. In return, they were offered some supervisory\textsuperscript{179} and monetary policy benefits\textsuperscript{180} along with the consent and support of their home supervisors to be part of the arrangement. The IMF’s efforts were directed at maintaining the financial stability of the distressed country and performing a series of stress tests in order to evaluate the state of the local banking sectors. The Vienna Initiative effectively helped “bail-in” all these banking groups and the burden sharing of the “rescue operation” was spread over many participants. By preventing uncontrolled currency depreciations, panic and bank runs, which would wreak havoc over the entire region, the “Vienna Initiative” provided strong assurances that any severe problems in banking sectors across the region would be effectively contained, thereby forestalling potential speculative attacks on banks or currencies.

By providing large-scale assistance to its neighbors in the East, the EU demonstrated commitment and willingness to prevent the kind of uncontrollable meltdown, which was seen during the Asian and Russian crisis. It was a credible commitment and a credible threat that effectively attenuated any potential speculative attacks and large scale pull-outs by investors, unlike in the case of previous crises. Naturally, it took a while before these measures were implemented and the gap, which spanned the last quarter of 2008 and first quarter of 2009, was large enough to cause significant local currency depreciations, foreign exchange reserve reduction and financial distress throughout the region. It was a sort of a trial period set by the EU policy makers in order to give them enough room to assess how much assistance was needed.

8.2. Eastern Europe: Boom and Crisis

Liquidity expansion in the most developed economy in the world led in no time to liquidity expansion in other developed countries exposed to the financial markets in the U.S. and beyond, due to increased optimism and consequently the profit appetites of western investors, to massive capital flows towards investment outlets – developing countries. However, it turned out that emerging Europe was an especially attractive destination for foreign capital. In the period between 2000 and 2011 the countries of emerging Europe received close to 1200 billion US$. Total annual capital

\textsuperscript{179} Relaxed loan loss provisioning requirements and relaxed capital requirements (EBRD 2009).

\textsuperscript{180} Relaxed reserve requirements, augmented lender of last resort operations, foreign exchange swaps and other FX liquidity facilities provided by central banks (Ibid).
inflows, both equity and debt, had already surpassed 50 billion US$ in 2002, and stayed above this level through 2011. Including inflows to Russia, the total figure reached as much as 300 billion US$ in 2007 (Figure 7).  

The engine of the cross border credit inflows were high real interest rate differentials between developed and developing European countries, or, in other words, diminished profit opportunities in developed countries that led to capital flow bonanzas (Reinhart and Reinhart, 2008) into developing countries (“carry trade”). The real lending interest rate differential, calculated as the difference between the real lending interest rates on loans denominated in local currencies and the average real lending interest rates in the Euro Area, compressed considerably, starting from 2003 predominantly due to the deepening of the financial integration with Western Europe (Figure 8).

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181 Russia has a large weight when it comes to capital flows to Eastern Europe, therefore we have emphasized flows with and without it.
Figure 8. Real Interest Rate Differential

Notes: Data refers to the difference to the Euro Area in percentage points; average for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.

Rapid and massive capital inflows, especially in the form of cross-border loans to local banks, corporate clients and the subsidiaries of foreign banks, significantly increased the availability of capital. This helped the countries in the region to deal with traditionally scarce capital and a large difference between its demand and supply. Because of this, the country risk premiums moderated as well as local interest rates, at least until the Lehman shock.

Rising inflation differentials between the countries of the region and the Euro Area, following the then differentiated impact of food and oil price surges, and the inability to fully sterilize abundant capital inflows, explain partially the narrowing of the real interest rate differential during the second half of 2007 and early 2008. Central and Eastern European countries suffered significantly higher and accelerating inflation rates in the abovementioned period relative to their western counterparts, whereas the nominal interest rates were largely tied to money market conditions in Western Europe and falling country risk premiums. Taken together, the effect of these two trends was declining real interest rate differentials between developed and developing European economies. Nevertheless, once the crisis hit the region, that differential bounced back, reflecting the drying up of available funds, tightened lending policies and increased risk premiums, along with the abolition of the previous inflation effect.
One of the consequences of protracted credit booms is the overvaluation of asset prices, most often of real estate and share prices. Our data supports this finding, even though there is an observable divergence of the share prices from other prices starting from mid–2007 (Figure 9). This divergence can be attributed to an early withdrawal of portfolio investments, which reacted immediately after the emergence of the U.S. sub-prime mortgages problem.

Figure 9. Share Prices

Nonetheless, the excessive money supply growth, coupled with increased foreign investor demand for high yielding local assets and a faster growth of non-tradable than tradable sectors, caused the share price and real estate bubbles to emerge several years before the Lehman shock. These price bubbles gave rise to an illusionary wealth increase that reinforced the domestic credit and consumption growth, creating a vicious circle: Increased liquidity means that overvalued financial and real estate assets can now perform the function of collateral and a rise in the value of the collateral justifies increased value of loans demanded.

Due to the large capital inflows, local credit demand could be fulfilled without a proportional increase in the supply of deposits, i.e. decoupling of loans growth from deposit growth (Figure 10). Given the relatively shallow financial markets and insufficient public confidence, the level of accumulated domestic deposits and their maturities were constraints to long term lending. The foreign banks, which spread out
their branch networks helped the countries to improve the overall image of the banking business. Long-term borrowings from their parent banks enabled them to provide ample long term lending facilities to local corporate clients and households. This allowed these economies to decouple their huge investment expenditure from domestic savings, where the former grew rapidly while the latter were stagnant. This is well reflected in the ratio of domestic credit to deposit. It is interesting to note that in the most leveraged countries, like Ukraine, Estonia and Lithuania, the ratio of domestic credit to deposit was above 2, while in Latvia it even surpassed 3.

Figure 10. Growth of Domestic Credit to Deposit Ratio

![Growth of Domestic Credit to Deposit Ratio](image)

Note: Data refers to average change for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.

Furthermore, in a period of only 10 years (2000–2010), the ratio of domestic credit to private sector to GDP grew strongly from 20% to 70%, and came much closer to 140%, the level seen in the Euro Area (Figure 11).\textsuperscript{182}

A rapid growth of mortgage lending to households which fueled the real estate bubble in almost all emerging European countries was among several infamous drivers of the dynamic growth of domestic credit to private sector.\textsuperscript{183} The most notorious form of this mortgage lending, which

\textsuperscript{182} Nonetheless, neither of these two ratios provides the full picture of the overall leverage of EEE. Many of these countries have large stocks of direct cross-border corporate sector debt, which in some cases are larger than stocks of domestic loans.

\textsuperscript{183} Share of mortgage lending to households in total domestic credit to the private sector rose from 15.5% in 2003 to 26.1% in 2009 (Average for 13 countries. Czech Republic data miss-
turned out to be extremely risky and most prone to default, were floating rate loans linked to the Swiss franc.

As usually happens, banks flushed with money relaxed lending criteria, which led to an increase in the number of nonperforming loans and thus to increased financial fragility (Figure 12). Bank nonperforming loans are a lagging indicator of developments in the real economy, and in the case of Eastern Europe, these were very high in the early 2000s (above 5%) displaying remnants of the post-privatization restructuring but also of the socialist era inefficiencies. By this time, western banks started entering these markets *en-masse* whether through privatization or greenfield establishments. Along with real sector privatization, debt restructuring efforts as well as flooding liquidity and credit, it seemed that the East European real sector had improved its creditworthiness. This is due to fact that nonperforming loans significantly reduced in relative terms because gross loans in the denominator grew strongly from 2000. Therefore, the situation looked quite encouraging until end–2008, when diminished revenues caused a rapid surge of nonperforming loans. Those countries which had a higher degree of loan euroization and which ran flexible exchange rates that depreciated substantially suffered more, but the most badly hit were those that had predominantly relied on foreign credit inflows before the crisis, such as Latvia and Lithuania.

Note: Data refers to average change for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.
However, another consequence of soaring credit activity was that net foreign debt relative to GDP increased sharply between 2000 and 2008. This variable increased from about 5% of GDP in early 2000, to almost 40% at the beginning of 2009, reaching as high as 60% in the most indebted country in the region, Latvia (Figure 13). However, the Lehman shock broke this trend and the level of net foreign debt has remained stagnant ever since.

Notes: Data refers to the stock of net foreign debt, including debt securities less foreign exchange reserves relative to GDP; average for all 14 countries.

Source: Authors’ calculations based on International Financial Statistics.
If we track the sectoral distribution of foreign debt accumulation, we will see that a substantial increase in foreign debts from 400 billion US$ in 2001 to 1,600 billion US$ in 2009, was primarily driven by banks and real (other) sector whereas governments contributed far less (Figure 14). The later was predominantly held back by Russian government debt, which had dropped by more than 60 billion US$ from 2005, made possible by the exorbitant rise in oil prices. On the other hand, The Hungarian and Turkish governments increased their respective debts by roughly 60 billion US$ each. Relative to GDP, foreign debt rose from 43% of aggregate GDP in 2001 to 71% in 2009 and dropped slightly after that to 69% in 2010. Governments’ foreign debt stayed the same, while the banks’ and the real sector’s increased strongly.

Figure 14. Total Stock of Foreign Debt of Governments, Banks and Real Sector

Countries: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey, Ukraine.
Source: Authors’ calculation based on International Investment Position – IMF’s Balance of Payment Database.

However, the dark side of the process of dynamic increase in foreign debt was the rapid accumulation of vulnerabilities to external shocks, which eventually materialized in late 2008. The vulnerabilities were reflected in high leverage: excess domestic credit over domestic deposits; the dependence on foreign borrowings; high and increasing absolute volume of short-term external debt and proportion of short-term external debt, debt to long-term and total external debt (Figure 15); the high rate of loan euroization, which was a logical consequence of the funding structure (figure 16).
Figure 15. Absolute Short-Term Debt and Relative to Reserves, Exports of Goods, Services and Income, External Long-Term and Total External Debt

Countries: Bulgaria, Lithuania, Romania, Russia, Turkey, Ukraine.
Source: Authors’ calculation based on World Bank’s WDI database.

As we can see from the ratio of short-term external debt to reserves, an indicator of currency risk, i.e. the measure of risk that the domestic currency may collapse under pressure of investors eager to sell their holdings (Grabel 2003) increased from 0.59 in 2000 to 0.93 in 2001, returned to its initial level of 0.59 in 2006 and afterwards reached 0.73 in 2008, the year the crisis broke out. Further, the ratio of short-term debt to exports of goods, services and income, an indicator of the debt repayment capacity of the country in the near future, increased from 0.19 in 2000 to 0.35 in 2009. Also, indicators of fragility risk184, i.e. short-term external debt to long-term and total external debt deteriorated significantly in the observed time span. The maturity mismatch indicator (short-term to long-term external debt) increased from 0.16 in 2000 to 0.40 in 2007 and then decreased to 0.34 in 2008 and 0.27 in 2009 since, after the Lehman shock, short-term funds flew out of this region, causing these funds to fall as a percentage of long-term and total external debt. As Grabel (2003) argues, rising the ratio of short-term to long-term external debt and gross fixed investments over time, indicates the emergence of the practice to “make on

184 Fragility risk denotes risk that private and public debtors will not be able to meet their debts in the event of occurrence of some endogenously or exogenously generated shock (Grabel 2003).
the carry”. As we will see infra (Figure 20), the annual average growth rate of gross fixed investments in the period between 2001 and 2008 was near 16.1%. Another measure of fragility risk is the indicator of locational mismatch, i.e. the ratio of foreign-currency denominated debt to total debt.\footnote{Indicator that Grabel (2003) uses to measure locational mismatch is ratio of foreign-currency denominated debt to domestic-currency denominated debt.} We can see in Figure 16 that this ratio was in most countries above 0.5, implying high risk of widespread and highly contagious illiquidity woes in the event of endogenous or exogenous shock to the system.

Figure 16. Loan Euroization in 2008

![Bar chart showing loan euroization in 2008](image)


Notes: Data for Slovakia and Slovenia is excluded since they are members of the Euro Area; data for Turkey and Russia is not available.

Source: Authors’ calculations based on International Financial Statistics.

No less important, due to the high rate of loan euroization, which limited the efficiency of the monetary policy tools, many central banks had to resort to high reserve requirements on foreign liabilities, but this backfired in the form of exorbitant growth in direct cross-border lending to corporations. Another feature was high dependence on monetary affairs in the Euro Area. This, coupled with the crisis-inflicted currency depreciations, sent many unhedged clients into bankruptcy in the wake of the crisis. Finally, dependence on foreign funds was a limiting factor for domestic credit growth. This materialized after the Lehman collapse.
when the growth of domestic credit relative to GDP decelerated and started stagnating in the first quarter of 2009. Domestic credit stagnation was the consequence of two separate events. The first one was the reversal of cross-border lending from West European parent banks and the drain on liquidity. Reduced foreign capital inflows forced local banks to limit their lending activities because domestic deposits could not meet the domestic credit demand. Another important conclusion is that, aside from the subdued export demand, the inability to finance domestic loans from domestic savings is another important explanation of the severe output contraction. Curtailed credit supply affected all those activities that depend on credits, notably production of durable goods and equipment. The second event occurred in many but not all countries in Eastern Europe. The news about the collapse of several large banks in developing countries caused panic among small depositors. This caused a loss of confidence and withdrawal of a significant portion of household deposits from banks (Ukraine, Hungary, Latvia), notwithstanding the fact that domestic banks were operating quite well. These events called for a reaction from policy makers that included liquidity injections, deposit insurance, coverage increases and even deposit freezes in some specific cases (Ukraine, Latvia). In some countries (Romania) a bad debt resolution framework was put in place along with supervision forbearance (IMF 2009I, p.38).

“Large capital inflows can be too much of good thing.” (Kaminsky and Reinhart 1999, p. 496). This is particularly true when it comes to monetary policy and the challenges that central banks face. One of the immediate consequences of the large capital inflows and the ensuing credit boom was a rapid growth of money supply, which is represented by the ratio of M₉ aggregate relative to GDP (Figure 17). One of the problems stemming from the large capital inflows that is relevant for the countries with fixed exchange rates is that their central banks have to accommodate such capital inflows by proportional increases in the money supply. This led to inflationary pressures that forced central banks to sizeable sterilizations of the excess money supply incurring large interest expenses that in reality turned into heavy quasi-fiscal costs.
On the other hand, the countries that ran floating exchange regimes were by definition not bound to adhere strictly to fixed exchange rate commitments. They had slightly more freedom and were faced with the choice either to accommodate passively to the capital inflows by allowing their currency to appreciate nominally, and suffer an even larger loss of competitiveness relative to the countries with fixed exchange rates, or to engage in sterilization or find some middle way between these two.

The money supply sterilization was based on two instruments – the reference interest rates and a supplementary mechanism, the reserve requirements. The reserve requirements had to be used since undeveloped money markets had no capacity to absorb excess liquidity but also because of the large euroization that limited the efficiency of the reference rates. A strong and long-lasting pre-crisis growth of M₂ relative to GDP implicated strong liquidity spillovers from developed countries as well as a steady increase in the credibility of the financial sector and increased confidence of depositors, which was a specific problem related to EEE history of financial defrauds. Following the Lehman shock and the slowdown of credit activity, both local and foreign, as well as reduced sales, the ratio of the M₂ relative to GDP failed to return to its pre-crisis growth trend until the end of the third quarter, implying that money supply growth was constrained by the sudden stop of capital inflows and the declining confidence in the financial sector observed in some countries. However, it is interesting to note that the ratio of M₂ to GDP has been diverging from...
the ratio of domestic loans to deposits (Figure 10) and domestic credit to GDP (Figure 11) ever since the Lehman shock. This is probably occurring for several reasons. Firstly, the real sector has slowly deleveraged\(^{186}\) and become more reliant on its cash reserves to meet its liquidity needs, rather than the short-term credit facilities of the banks. Secondly, the divergence occurred thanks to the almost two-year period of low real sector investment, that led to an increase in their deposits. Also, it shows that banks are now coupling credit growth with deposit growth as their foreign borrowings are not as abundant as they used to be before the crisis. Finally, a drop in GDP nominal volume also plays a computational role as it appears as a denominator in the equation.

The large capital inflows, both the FDI and the cross-border credits, caused the \(M_2\) multiplier, calculated as the ratio of \(M_2\) monetary aggregate to the monetary base aggregate, to increase steadily over the years leading up to the crisis, despite the central banks’ efforts to contain that growth by sterilization through interest rates and reserve requirements policy (Figure 18). Equally supportive to the \(M_2\) multiplier growth was the large credit demand in many of the countries, which drove banks to extend new loans as much as possible under reserve requirement constraints. Finally, strong cross-border lending was another very supportive factor. However, given that there was no extraordinarily large credit growth in the few quarters preceding the crisis, these increases in \(M_2\) multiplier were probably reflecting a surge in foreign credit inflow rather than domestic credit growth. Subsequent decline of the \(M_2\) multiplier during 2010 reflects an increased liquidity preference, i.e. that cash holdings became much more preferable, especially to households, in the low interest rate environment and perceived riskiness of the financial sector.\(^{187}\)

We mentioned that large capital inflows which fed into a rapidly growing money supply pushed up aggregate demand, thereby keeping inflation at high levels in the pre-crisis period. The transmission mechanism of the monetary policy was constrained due to the insufficiently developed local financial markets and the large euroization rates, even though the central banks incurred large quasi-fiscal costs trying to reduce inflation. Finally, the occasional and autonomous supply side shocks, notably in the agriculture and energy sectors, helped inflationary pressures to remain persistent (Figure 19).

\(^{186}\) Reduction of leverage, i.e. the ratio of liabilities to equity.
\(^{187}\) As Keynes suggested, in times which agents perceive as highly uncertain, their liquidity preference rises sharply and animal spirits diminish.
Figure 18. $M_2$ Multiplier

Notes: The data refers to the average $M_2$ multiplier, which was transformed into an index for comparability purposes; Slovenia is excluded because it adopted the euro.

Source: Authors’ calculations based on International Financial Statistics.

Figure 19. CPI Change q-o-q

Notes: Data refers to % change of CPI q-o-q; average for all 14 countries.

Source: Authors’ calculations based on International Financial Statistics.
However, when the crisis hit, the East European countries experienced significant disinflation driven by the credit crunch and the contraction of domestic demand (Figure 19). The disinflation effect of falling demand was so strong that not even the sizeable real depreciation of the floating currencies that fed into significant import price increases reversed this trend i.e. previously high inflation moderated quickly. After the trough in Q3 2009, inflation resurged again but remained relatively benign owing to a large negative output gap and high unemployment in most countries.

One other consequence of dynamic capital inflow was a rise in the demand price of capital assets in relation to the supply price of investment output. This resulted in increased investment activity and consequently employment, consumption (Figure 20), industrial production (figure 21) and output (figure 22).

Figure 20. Final Consumption, Private Consumption and Gross Fixed Capital Formation Growth and Unemployment Rate in Emerging Europe, 2001–2010 (end-year)

Note: Average for all 14 countries.
Sources: WEO and authors’ calculations based on International Financial Statistics.

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188 Disinflation is deceleration of inflation, which should not be confused with deflation that is a fall of prices.
A steep increase of private consumption and investments lifted the average GDP growth rates to a very high average level of 6% in this period (Figure 22). This facilitated rapid income convergence with the EU, which was the main goal of the East European nations. However, there were large differences among the countries in terms of the quality and the drivers of that growth. The most advanced countries in the region, notably Poland, Czech Republic and Slovakia, managed to achieve large growth rates and yet to contain their current account deficits to a small percentage of GDP, which implied high and roughly equal level of savings and investments as well as externally competitive tradable sectors. Others also enjoyed rapid convergence but were able to do so only by running large current account deficits and accumulating large stocks of gross foreign debts, some even significantly above 100% of GDP. This meant that their investment and consumption needs were financed by foreign savings, which made their outputs very sensitive to any disruption in capital flows.

When the crisis hit, a severe adjustment process started for both groups. However, its structure differed substantially and it had a lasting impact down the road. In the case of countries that ran a sustainable growth model, the adjustment brought a deterioration of net exports and a rapid decline of inventories, while at the same time, sufficiently large domestic savings shielded to some extent investments and household consumption, facilitating their limited decline. Moreover, low rates of euroization and the absence of fiscal austerity, coupled with the favorable funding
structure of their banking sector\textsuperscript{189} and credit to deposit ratio, provided an additional support to household and government expenditure. Given that these countries were relatively free of large net foreign debts, their currencies were permitted to depreciate (except in Slovakia which entered the ERM process that requires maintenance of a stable exchange rate) without major disruptions to the financial and real sectors. These countries weathered the crisis relatively easily despite significant output fall.\textsuperscript{190}


diagram

Note: Growth rates refer to average rate for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.

On the other side were the majority of the East European countries that relied heavily on foreign savings to finance not only their investments but also their household and government consumption. As a result, the post-Lehman reversal of the capital inflows forced these countries to abruptly adjust these expenditure categories. This came along with banking and private sector deleveraging. Some of these countries were, in addition, exposed to the impact of domestic currency depreciation on the private sector’s euroized liabilities. However, net exports adjustment actually exhibited a positive impact since they turned from negative to positive. This adjustment pattern, which contrasted to the one seen in regional economies that ran sustainable growth models, caused much more social

\textsuperscript{189} Domestic deposits and savings denominated in domestic currencies dominated banks’ liabilities.

\textsuperscript{190} In Poland output only moderately fell, whereas in Slovakia and the Czech Republic, despite the fact that stable sources of financing remained stable, output fell sharply due to the collapse in the export demand of developed countries.
tensions, bankruptcies and slower recovery despite a moderate recovery of the global economy and more than moderate recovery in other emerging economies especially those in East Asia and Latin America. The main impediments to a more robust recovery are the sizeable increase of foreign and public debts relative to GDP, the inability to attract new foreign capital, and most importantly the subdued level of investments and lending activity. Even though GDP growth rates were within positive territory in 2010, there is a long way to reach GDP levels from the pre-crisis period, providing no new disruptions occur and there is a full recovery of export demand from developed countries.

One may conclude that one of the main sources of steep output growth in the EEE was growth of exports, since liquidity expansion in major financial centers entails higher consumption, and increased export demand from developed countries usually leads to higher commodity prices and thus to favorable terms of trade. Another important factor that positively contributed to the exports of the EEE was trade liberalization with the EU. From 2000 to 2008, the export revenues of the EEE increased five-fold (Figure 23).

Figure 23. Quarterly Exports

![Figure 23. Quarterly Exports](image)

Notes: Exports change refers to the average change for all 14 countries; index refers to the average index for all 14 countries whereby 2000 Q1 = 100.

Source: Authors’ calculations based on International Financial Statistics.

However, since the flip side of massive capital inflow is a trade deficit, imports increased faster than exports (Figure 24). Previously compressed consumption and investments, which were constrained by the availability
of financing, started growing rapidly once international trade was liberalized and the availability of credit facilities improved. There were two main causes of the dynamic rise in imports. The first one was the increased consumption of households and the state, and the second one was that regional economies managed to become part of the international production chain, which was observable from an increased level of trade in intermediate goods. However, starting from a different base, similar growth rates of imports and exports caused the trade balances to widen before the crisis.

Figure 24. Quarterly Imports

Notes: Imports change refers to the average change for all 14 countries; index refers to the average index for all 14 countries whereby 2000 Q1 = 100.
Source: Authors’ calculations based on International Financial Statistics.

Consistently, throughout most of the 2000s, the regional current account deficits were, on average, very high by global standards. Or looked at another way around, current account deficits were the result of the gap between national savings, and private and public investments. Namely, national savings, remained constant relative to GDP, implying that neither the real sector nor the East European governments bothered much to increase their savings during the boom phase. They did not adjust much when bust came either. On the other hand, both governments but even more so the real sector ramped up their investments, especially from 2006 to 2008 (Figure 25).

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191 We define national savings as the difference between GDP and consumption (private and public).
Consequently, in that way created current account deficits had to be financed via equity, but even more so via debt inflows.\footnote{This \textit{per se} would not be such a big issue had those inflows been invested in tradable sectors, which would secure their likely repayment. However, based on anecdotal evidence and real estate booms that were present in most of the East European countries, we can conclude that this was not the case. A large chunk of such flows ended up in non-tradable sectors or even consumer spending.} The current account deficits of the EEE, certainly exceeded those seen in other developing countries that experienced sudden stop crises in the past. Although such high current account deficits have been seen in the past as the sign of a looming crisis, calling for a swift exodus of foreign creditors and investors, in this case this did not happen. On the contrary, the current account deficits kept rising uninterruptedly, financed by even larger financial account surpluses (Figure 26) and to a lesser extent by large remittances and unilateral transfers and donations from the European Union. As mentioned before, such large current account deficits were the result of large trade deficits that characterized almost all economies across the region, which reflected the large consumption and investments facilitated by the credit boom, coupled with comparatively weaker tradable sectors and export competitiveness.

Countries: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey, Ukraine.

Source: Authors’ calculation based on IMF’s WEO database.
However, after the Lehman shock the export demand dried up, dragging down with it the total export revenues by 26% on average, with surprisingly small variations between the countries, in the period Q4 2008 to Q3 2009. The most open countries suffered the most due to a larger leverage effect of exports on output. Commodity exporters were also heavily hit by a very steep deterioration of the terms of trade. The fall in export demand hit industrial production especially hard since it, by definition, consists of tradable sectors that depend heavily on export demand. That is why industrial production fell much further than overall output. Even though exports recovered in 2010, they are still well below 2007 and 2008 levels.

In parallel, imports slumped even more than exports, i.e. by 32% on average in the period between 2008Q4 and 2009Q4, with significantly larger variations between the countries. This indicates that the decline in export demand and the fall of domestic demand caused by the credit crunch, undermined consumers’ confidence and investors’ plans, took a heavy toll on imports and overall consumption. Similarly to exports, imports also recovered in 2010 but they still remain below pre-crisis levels.

In contrast to the tradable sector, the decrease in demand for products of non-tradables was much milder since it was to some degree supported by international financial assistance and expansive fiscal and monetary policies, which all provided room for lower than expected contraction of domestic household and government consumption.
In response to the global credit crunch, the financial account reversed first, whereas the current account had to be adjusted subsequently. However, as we see from the figure 26, adjustment of the financial account was sharp, but it did not go deeply into negative territory, despite pessimistic expectations given the depth of the financial crisis in developed countries and fears related to the accumulated financial vulnerabilities in the EEE. The financial accounts bottomed out quickly and even returned to surplus as soon as the end of the third quarter of 2009. The current account deficits, which could no longer be financed as before, adjusted strongly in response to the financial account development and turned into a small surplus. But again, the financial account correction did not require stronger current account adjustment as was suggested by past experiences. Even though both of these adjustments have had a severe impact on the affected countries, they were still relatively mild and differ substantially from theoretical findings and historical experiences. The underlying reason is the depth of the financial integration with Western Europe and the potential terrifying consequences of an Eastern European breakdown for EU stability and, in general, the prospects of its survival.

The fact that capital inflows were considerably larger than the current account deficits explains the stability of nominal exchange rates, the appreciation of real exchange rates and the rapid accumulation of foreign exchange reserves seen in the East European countries.

The impact of large capital inflows to the countries of East Europe was best reflected in the movements of the nominal exchange rate of floating currencies. Even though the period between 2000 and 2005 was marked by a sizeable average depreciation of the East European floating currencies, it was actually driven by the depreciation of only a few currencies of the largest countries like the Turkish lira, the Romanian lei and, to a smaller degree, the Russian ruble (Figure 27). Turkey was undergoing a severe financial crisis at the time, while Romania and Russia experienced persistently high inflation rates, which had a negative impact on the exchange rate. Other floating currencies exhibited relatively stable trends or even slight appreciation throughout the period, owing to FDI and credit inflows. Once these inflows strengthened enough around the mid-2000s the entire group saw a complete stabilization of their exchange rates, and even periods of the considerable appreciation when capital inflows additionally intensified. Those countries that had relatively balanced current accounts saw their currencies nominally appreciating, while those that suffered persistently high current account deficits saw at least stable exchange rate levels.
However, the onset of the global credit crunch and capital flow reversal following the Lehman Brothers collapse caused a swift depreciation of the regional currencies across the board. This depreciation was reinforced by the behavior of households, which rushed to convert their holdings into foreign currencies and to withdraw their savings from banks. The average depreciation against the euro was 24% over the period of six months following the Lehman shock. Meanwhile, these movements in the foreign exchange markets stabilized by mid-2009, indicating the bottoming-out of the private capital outflows and the increased official capital inflows. In the end, the depreciation was far milder than many feared, which was one of the key differences in comparison to past crises and helped the countries to avoid disorderly consumption adjustments and massive bankruptcies related to the unhedged foreign exchange liabilities of the real sector. The situation improved further during 2010, when most floating currencies exhibited moderate appreciation on the back of more balanced current accounts and mildly positive financial account balances.

Like a mirror image to the developments of the floating exchange rates, the foreign exchange reserves constantly increased throughout the 2000s. Large capital inflows in excess of the current account deficits were cleared from the market by central banks, sometimes voluntarily and more often compulsory in order to avoid nominal currency appreciation. The
countries that ran a fixed exchange rate regime were forced to such interventions by definition, but even those that ran flexible exchange rate regimes sought to avoid unnecessarily large nominal appreciations. Most of the central banks in the region accumulated large stocks of foreign exchange reserves before the onset of the crisis (Figure 28). This, however, was more a consequence of the reluctance to accept sustained nominal exchange rate appreciation than of “precautionary” motive to build their reserves and liquidity for bad times.

Figure 28. Foreign Exchange Reserves

![Foreign Exchange Reserves Graph](image)

Notes: Data refers to the average foreign exchange reserve index at the end of quarter; for all 14 countries.

Source: Authors’ calculations based on International Financial Statistics.

But once the crisis hit, the foreign exchange reserves dropped by approximately 21% over the 2008Q4-2009Q3 period. This reflects several events that took place in the last quarter of 2008 and the first quarter of 2009. As mentioned above, in many countries, the households reacted promptly and rushed to get hold of their bank deposits, which were largely denominated in foreign currencies. Local banks had to resort to their foreign reserves held with central banks. In addition, foreign owned banks were under pressure to accumulate foreign exchange liquidity and transfer it to their parent banks, at least during the first few months following the Lehman shock. The problems of the parent banks stemmed from the credit crunch in the mature money markets, and it is in line with the findings of Goldfajn and Valdes (1997) that confirmed the strong

194 However, as we mentioned, this led to inflationary pressures that forced central banks to sizeable sterilizations of the excess money supply incurring large interest expenses that in reality turned into heavy quasi-fiscal costs.
impact that ailing banking sector liquidity exerts on the exchange rate and foreign exchange reserves. Some countries like Russia, Ukraine and Latvia lost almost one third of their pre-crisis reserves. One of the initial actions that moderated the problem of bank liquidity in the advanced countries that helped the East European countries to stabilize their foreign exchange reserves were massive liquidity injections in the Euro Area conducted by the European Central Bank. This provided breathing room for the foreign exchange markets and the central banks in Eastern Europe (Figure 29). On top of that, upon concluding stand-by arrangements with the IMF, the most affected countries replenished their reserves. Finally, several countries benefited strongly from the “Vienna Initiative” that helped to contain the largest portion of the foreign exchange reserves within their financial sectors. Starting from mid–2009, foreign exchange reserves started growing again, indicating that foreign exchange market pressures had abated.

Figure 29. Nominal Exchange Rate Depreciation and Foreign Exchange Reserve Changes Between 2008Q₃ and 2009Q₁

Notes: Data refers to the percentage change of average nominal quarterly exchange rates and quarterly stock of foreign exchange reserves; even though in the case of Estonia, Lithuania and Croatia, such averages imply that there was no currency crisis (i.e. foreign exchange reserves declined by less than 20%), the difference between the minimum daily level of foreign exchange reserves in 2009Q₁ (recorded in February 2009) and the highest level (recorded in July 2008), exceeds significantly the 20% threshold, therefore we also treat them as crisis episodes; positive percentage changes denote currency depreciation and decrease in foreign exchange reserves; the negative datapoint for Hungary denotes a significant reserve increase that was a result of the IMF and EU “bailout” loan.

Source: Authors’ calculations based on International Financial Statistics.
The stable or appreciating nominal exchange rates coupled with relatively high inflation caused the real effective exchange rates to steadily appreciate across the region up until late 2008 (Figure 30). This trend was more pronounced in the case of floating currencies, given that quite a few of them experienced considerable nominal appreciation in the year leading up to the crisis. It is worth mentioning here that the relatively high inflation was driven by supply side shocks in the food and energy market but also by an incomplete sterilization of the money supply that kept expanding due to high capital inflows. Unfortunately, in most countries, massive capital inflows were tilted towards non-tradables which significantly contributed to upward price pressures.

Figure 30. Real Effective Exchange Rate

Notes: Data refers to average quarterly real effective exchange rate indexes, separated for 7 floating (Czech Republic, Hungary, Poland, Romania, Russia, Turkey and Ukraine) and 7 pegged currencies (Bulgaria, Estonia, Latvia, Lithuania, Croatia, Slovakia and Slovenia, whereby Slovakia and Slovenia were moved to this group two years before their respective Euro adoption); increase denotes appreciation.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

This is in line with Reinhart and Reinhart (2008) who found that the real exchange rate tended to be significantly overvalued in previous large capital inflow episodes because of capital flow bonanzas. However, we obtained two additional results that contrast with their findings. The first one is that the degree of real appreciation before the crisis was milder in the case of the current crisis than before, reflecting the fact that most countries in the region put significant efforts into stemming inflation, in which they were more or less successful. The second result is that the real
depreciation after the onset of the crisis was much milder than what they found, especially in the case of the fixed exchange rate regimes. This is because of the coordinated international assistance that helped the East European countries to avoid the large capital account reversals seen in the past, and that helped them to avoid devaluations or larger depreciations. Moreover, Reinhart and Reinhart (2008) found that in previous cases, the real depreciation was the result of nominal exchange rate depreciation, while in our case that is true only for the countries with flexible exchange rate regimes (Czech Republic, Hungary, Poland, Romania, Russia, Ukraine, Turkey) whereas those countries that have fixed exchange rate regimes only recently started experiencing real foreign exchange rate depreciation driven by deflation (Bulgaria, Estonia, Latvia, Lithuania).

The reason why the later group of countries chose to stick to their nominally pegged exchange rates was, they claimed, the important and long-standing anchoring role of the exchange rate in their efforts to bring down the inflation but also its importance for broader financial stability, especially in the context of widespread euroization. They have all reached the broad mainstream-fashioned internal consensus that the painful output contraction necessary to induce deflation was more bearable than abolition of their long-standing pegs. Consequently, in the case of Latvia, this decision resulted in such a heavy cumulative output contraction over the period of two years (–25%) that the country set the infamous world record surpassing the one previously held by the USA in the period of the Great Depression. After several quarters of disinflation, these countries finally entered devastating deflation in the second or third quarter of 2009.

However, as we have already seen, despite the trend of real appreciation, exports kept increasing during this period. This implies that free trade arrangements, geographical proximity to advanced European economies and the increased quality of production, helped the exporters from Eastern Europe to overcome the problems stemming from real appreciation. On the other hand, the data on imports, which were considerably larger than the exports, may imply that aside from excessive domestic consumption driven by the credit boom, the currency overvaluation also added to import growth.

When the crisis hit the region, the real effective exchange rate indexes decreased quickly in the case of the floating currencies, mostly reflecting their nominal exchange rate depreciation. Despite that, the real effective exchange rates did not depreciate below their pre-crisis levels, indicating that the domestic demand contraction and the ensuing output contraction was still not sufficient to overcome the price rigidity in the short run even though the disinflation trend was observed across the region. This implies
that more adjustments (including real sector adjustments) are needed down the road in order to improve external competitiveness.

It is worth mentioning that real wage growth was an additional factor that significantly contributed to increasing trade deficits and real foreign exchange rates (Figure 31). Namely, even though the privatization and foreign investments propelled the productivity increase during the pre-crisis years, it was not rapid enough to justify the excessive wage growth. A large part of the wage growth was driven by rapidly increasing wages in public sectors that caused the surge of household consumption and hampered the competitiveness of tradable sectors. On the other hand, during the 2000s wage growth in key European Union economies was flat-lined. However, after the Lehman collapse, many countries had to resort to fiscal contraction in order to reduce their current account deficits. This explains the steep fall in wages observed after the third quarter of 2008 because they were the first target of fiscal contraction. Since then, real wages appear to be in line with output movements i.e. hovering around zero.

Figure 31. Real Wage Growth

![Real Wage Growth Chart]

Notes: Real wage growth change refers to average % change of wage indexes deflated by % change of CPI indexes; average growth rate for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.

When it comes to fiscal deficits, they were, on average, moderate throughout the region in the years leading up to the crisis (Figure 32). However, it can be argued that the fiscal policies were still partially responsible for the accumulation of vulnerabilities, despite the moderate deficits. This stems from the fact that, in many countries in the region, the
nominally balanced fiscal positions consisted of buoyant fiscal revenues driven by the spending-boom, matched by equally buoyant fiscal expenditure. However, the fiscal expenditure increases were of a structural nature and it turned out that their rigidity caused a large increase of fiscal deficits once the crisis hit. The crisis revealed that even those countries which ran surpluses before the crisis, were not able to do so any more. The cyclically driven high fiscal revenues from import taxes, excises and consumption slumped once consumption contracted. When the crisis hit, many countries had to introduce moderate fiscal austerity measures simply because they could not finance expansive spending any more. However, those countries that had managed their public budgets well, were able to run strong counter-cyclical policies, notably Slovakia, Bulgaria or even Ukraine. Others, like Latvia resorted to major pro-cyclical austerity just to preserve their exchange rate arrangements, and this austerity, as Minsky would predict, caused massive negative side-effects and probably the deepest GDP fall on record. A borderline case was Hungary, whose fiscal policy was extremely expansive throughout the 2000s (for more details see infra).

Figure 32. Quarterly Fiscal Balance

Notes: Data refers to quarterly fiscal balances relative to annual GDP; average for all 14 countries.
Source: Authors’ calculations based on International Financial Statistics.

195 These expenditures include increases of headcount and wages in public institutions and state owned enterprises as well as hefty pension increases, all of which are regulated by laws and therefore very rigid.
Even though emerging Europe has passed the peak of the crisis, fiscal revenues remain deeply subdued, due to a protracted slump in domestic consumption. This, coupled with the debt-driven sensitivity of financial markets, is forcing most countries to consider and implement long-term fiscal adjustment measures beyond those implemented during the initial wave of the crisis. The bottom line is that investors are scared to keep financing large fiscal deficits even though such deficits are fundamentally justified.

We can conclude that once the currencies started depreciating, the unhedged foreign exchange liabilities of the real sector came into play. Owing to the credit boom in the pre-crisis years, the economies in the region experienced rapid output growth, especially of the non-tradable sectors. Given that the credit boom was, to a large extent, financed by the foreign borrowings, one of the natural consequences is the large rate of euroization of the real sector’s debts. The high level of debt and its rate of euroization was the most important factor that caused the “fear of floating” and pushed central banks to intervene heavily in the foreign exchange markets, while governments rushed to secure financial assistance from international institutions. However, the damage was done, at least in the countries with floating exchange rate regimes, and this added to the problems of the banking sectors, whose non-performing loans increased substantially, creating a vicious circle (Figure 12).

Our analysis showed that the crisis in the EEE is an outcome of internally (endogenously) accumulated imbalances and was triggered by an external shock.\(^{196}\) As a great number of past experiences seem to confirm, the deep financial integration with Western Europe was a double-edged sword – it provided steady capital inflow and output growth, but, at the same time, it deepened the capacity for vulnerability build-up. Nevertheless, the crisis and its impact demonstrated again that even if coupled with a deep financial integration, the growth model based on large current account deficits and even larger foreign capital inflows is not sustainable. Not only is it the level of the financial integration that matters, it is also the life-span of the foreign investments that makes the difference. Moreover, the circumstances also make a difference. Had the crisis hit one isolated country in Eastern Europe, it is highly unlikely that there would have been any large scale international public and private coordination to bailout such a country. Creditors and investors would probably flee from such a country in disarray, leaving it to face a downturn alone, as others have, in the past. This justifies the characterization of the growth model

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\(^{196}\) “Financial fragility, which is a prerequisite for financial instability, is, fundamentally, a result of internal market processes.” (Minsky 1986, p. 280).
that relies too much on capital inflows as being unsustainable, despite its positive temporary impact on output.

Extensive and timely spender and lender of last resort actions of governments and international institutions does not, however, imply that the problem is solved, only that the financial fire is temporarily under control. In truth, if the present opportunity to conduct major regulatory changes is missed, the factors that in the first place promoted financial instability are “really lulled, and lie but a little way below the surface.” (Keynes 1937, p. 215). As Minsky rightly warned nearly thirty years ago, the actions of the lender-of-last-resort “...combined with the huge government deficit increases the reserve base and the government debt holdings of the banking system. The banks, in effect, are able to shore up financing ability for a future business expansion during and in the immediate aftermath of a recession. Because the interventions lead to a quick halt to the downturn, financial disturbances, which force lender-of-last-resort intervention by the authorities, no longer lead to sustained price decreases; instead, the actions that are taken to prevent a debt deflation and a depression set a groundwork for a subsequent burst of expansion followed by inflation. Over an expansion, new financial instruments and new ways of financing activity develop. Typically, defects of the new ways and the new institutions are revealed when the crunch comes. The authorities intervene to prevent localized weakness from leading to a broad decline in asset values; this intervention takes the form of the Federal Reserve accepting new types of instruments into its portfolio or acquiescing in refinancing arrangements for new institutions and markets. Since the intervention by the authorities tends to validate the new ways, the central bank sets the stage for a broader acceptance and use of the new financial instruments in subsequent expansions.” (Minsky 1986, p. 281).
Aside from the depth and the breadth, one other feature of the current crisis is a considerable variation in terms of the impact it has had on various developing and emerging economies. What we can see clearly, at the present moment, is that while some of the EEE only have to wait patiently for the crisis resolution in developed countries, others have to reinvent their growth model from scratch if they want to avoid and ameliorate constant “boom and bust” cycles. The purpose of this section is to explore the impact of the crisis on different EEEs and provide an insight into which variables matter the most. Notably, we will analyze why there is a large variability of output decline between the countries in the region, which macroeconomic variables and vulnerabilities have played important

197 This chapter is closely related to chapter Cross-Country Analysis of Individual Determinants of Crisis Impact in the Emerging Europe in Radonjić and Kokotović (2012).
roles and to what extent different countries have been susceptible to the main channels of crisis impact. We will also compare the findings of this analysis with recent findings of other authors on the same topic, which, however, did not have the opportunity to include the actual macroeconomic data spanning over one full year following the Lehman shock, but rather relied on projections and the projection revisions or the actual data covering only two quarters after the shock. By doing this, we actually distinguish between determinants that have really turned out to be relevant for the time being and the ones which were simply adding noise.

The abovementioned recently published research papers that will be used both as a model, in terms of the included variables and research methodology, as well as for comparison of the observed results, are those of Berkmen et al. (2009) and Berglöf et al. (2009). The first paper, analyzes, *inter alia*, the impact of financial and external vulnerabilities, financial and trade links to advanced countries, exchange rate regimes, fiscal positions and a few other variables on the output of developing countries. To measure the strength of the impact, these authors focus on the output growth forecasts in April 2008, before the peak of the crisis, and on the forecast revision in April 2009, after the peak of the crisis. (Berkmen et al. 2009). Both the domestic credit to deposit ratios before the onset of the crisis and the cumulative bank credit growth in the period of 2005–2007, which were used to gauge the level of financial vulnerability were shown to be clearly positively correlated to the size of the downward growth forecast revisions. The impact of trade links with advanced countries was measured by the composition of exports, i.e. the share of food and manufacturing commodities in total exports, and they found a weak correlation between the larger share of manufactured goods and the growth forecast revisions. Borrowings from advanced countries, representing a measure of financial linkages, were shown to be a very important link for crisis transmission. The deleveraging that started with the crisis had a much greater impact on countries in emerging Europe, given that they relied more heavily on these borrowings than other countries. The current account deficit that was taken as a proxy of the external vulnerability had a moderate impact on output forecast revisions. These authors found that the flexibility of the exchange rate regime and a strong fiscal position in the run up to the crisis were positively correlated with milder growth forecast revisions. Finally, the EU accession countries were hit much harder than other countries, due to their stronger linkages with the EU countries.

The second research paper (Berglöf et al. 2009), focuses on the group of developing countries in the emerging Europe. The most important finding of these authors was that although the crisis in advanced countries had been severe, the Central, East and Southeast European region was surprisingly resilient, despite considerable accumulation of vulnerabilities.
in the pre-crisis period, and that the regional crisis failed to exhibit some of the attributes of past crises in developing countries. They reiterated that no country in this region experienced a disorderly depreciation of foreign exchange rates, there were no systemic banking crises and no exchange rate overshooting. They related the resilience to the European integration model, particularly financial integration through banking groups as well as political and institutional integration. The financial integration moderated the impact of the capital flow reversals and helped to avoid twin crises, while the other integration processes explained why there were no destructive and protectionist policy swings, such as capital and trade controls. As in the abovementioned paper, Berglöf et al. (2009) also found a very strong link between pre-crisis debt levels, rapid credit growth and severity of output decline, which they dubbed as the “mixed blessing” in the crisis. Concerning the actual output, which was measured as the cumulative output decline in the fourth quarter of 2008 and the first quarter of 2009, they found that several determinants exhibited a statistically significant association with output decline. These were domestic credit growth during 2005–2008 and foreign bank ownership, whereby the latter had a stabilizing effect. Other variables like the rigid exchange rate regime, the foreign debt to GDP, the cross-border lending and a few others remained statistically insignificant. Extending their analysis to the world-wide sample, they found that the previous positive output gap, GDP per capita as a measure of overall development, the stock of private sector debt to GDP as a measure of the financial development, the loan-to-deposit ratio, the financial integration and the external debt to GDP (the last two only for the emerging Europe) were significantly correlated to output decline, whereby financial integration\(^\text{198}\) had a positive sign, i.e. it was again a stabilizing determinant.

In order to conduct empirical research, we will partially replicate the methodology of these two papers by using some of the variables that they used, notably GDP growth rates, current account deficits, exports, imports, exchange rate regimes, real effective exchange rates, the growth of domestic credit to private sector, the domestic loan-to-deposit ratio, net foreign debt, foreign capital inflows to the banking and non-financial sectors, loan euroization and the fiscal deficit. However, we will extend the research in order to match the actual quarterly data for these variables up to the end of the fourth quarter of 2010 against the actual output decline data, also up to the end of the third quarter. To explore the impact of the abovementioned determinants we will group the countries with similar features and observe the differences between the groups in terms of output decline and other relevant variables. In order to compare different groups of countries we will calculate the average value for the analyzed

\(^{198}\text{Measure of financial integration is ratio of country's foreign assets and liabilities relative to GDP.}\)
variable for every group and compare it to the average values for other groups. The composition of groups will be as coherent as possible, given that some countries exhibit dual features. For example, Bulgaria is in many aspects similar to the Baltic countries but it is very different in some other important respects, notably the behavior of domestic credit and bank foreign borrowings. Therefore, it will frequently change the group to which it is assigned. Another example is Slovakia, which is very similar in many aspects to the Czech Republic and Poland, but it adopted the Euro as of January, 2009, whereas the other two remained on floating exchange rate regimes. Thus, it will also be assigned to different groups, depending on the issue being analyzed.

2. Factual Results and the Analysis of Individual Vulnerabilities

The most obvious impact of the crisis was on output, not only in emerging Europe, but across the globe. However, emerging Europe stands out in terms of the depth of output contraction. As Figure 33 shows, there is considerable variability in the crisis-driven output contraction across the region.

Figure 33. Output Growth Before and After the Crisis

Groupings: CEE includes Poland, the Czech Republic and Slovakia. Baltic includes Estonia, Latvia and Lithuania. Commodity exporters group includes Russia and Ukraine. Other floaters group includes Romania, Turkey and Hungary. Other fixers group includes Bulgaria, Croatia and Slovenia.

Source: Authors’ calculations based on International Financial Statistics.
This variability reflects a link between the rapid pre-crisis growth rates and the deeper contraction following the sudden stop, which is in line with the findings of Berglöf et al. (2009). It is not the growth per se that is responsible but its composition and the drivers behind it. Some countries, notably the Czech Republic, Slovakia and Poland, based their growth model on a balanced development of both tradable and non-tradable sectors. This enabled them to be less dependent on foreign capital inflows to finance their investments and consumption. This implies that their domestic savings and investments were relatively balanced, as were the current accounts, while the stocks of foreign debt were moderate. Most important was the fact that their growth was only constrained by the changes in domestic and export demand and not by the availability of foreign capital.

On the other side were countries which pursued the income convergence model by higher growth rates, but based on the faster growth of the non-tradable than tradable sectors. Such growth was financed by the foreign borrowings, because the domestic savings fell short of investment needs, which led to a steady accumulation of foreign debt. This hampered export competitiveness because of the real foreign exchange appreciation and caused wide current account deficits. Such current account deficits could only be financed by constant foreign capital inflows. In the latter group of countries, all expenditure items including investments, changes in inventories, domestic consumption and imports depended strongly on the availability of foreign capital as well as the cyclicity of domestic and export demand. Following the Lehman shock and a sudden stop of capital inflows, such countries experienced a much deeper output contraction than those which had more balanced growth.

Another group of countries which were heavily affected by the crisis, are the commodity exporters, notably Russia and the Ukraine. Favorable terms of trade and global demand before the crisis caused the “Dutch disease” in Russia and led to underdevelopment of manufacturing tradable sectors, while the Ukraine depended heavily on the cycle in global industries that consume steel. Once the terms of trade reversed due to the global output slump, Russia and the Ukraine experienced a sharp reversal of export revenues, which had a more detrimental effect on their output compared to the other countries.

199 “Dutch disease” signifies the deindustrialization of a nation’s economy that occurs when the discovery of a natural resource raises the value of that nation’s currency, making manufactured goods less competitive with other nations, increasing imports and decreasing exports. The term originates from Holland after the discovery of North Sea gas in 1959.
The subsequent recovery in 2010 is more or less a mirror image of the previous slump, whereby those countries that ran balanced growth models achieved higher growth rates while the rest struggled to post any growth at all. Commodity exports again displayed a different picture as the commodity price surge helped their swift recovery, aided by the favorable base effects of the previous deep slump.

Aside from output growth, another variable that was driven by the chosen growth model was the current account deficit. The current account deficits in the run up to the crisis were closely related to the growth model that the countries were running, excluding the commodity exporters Russia and Ukraine whose current account depends much more on the terms of trade than the differences in development of tradable and non-tradable sectors. This was reflected in the negative association between growth rates and current account deficits (Figure 34).

Figure 34. Output Growth and Current Account Deficits Before the Crisis

Groupings: The export-led growth group includes Poland, the Czech Republic, Slovakia, Turkey, Slovenia, Croatia and Hungary. Consumption-led growth group includes Estonia, Latvia, Lithuania, Romania and Bulgaria. Commodity exporters group includes Russia and Ukraine.

Source: Authors’ calculations based on International Financial Statistics.

Those countries that had sustainable growth based on the balanced development of tradable and non-tradable sectors, as reflected in satisfactory growth rates coupled with the low current account deficits, managed to contain the accumulation of vulnerabilities. The low current account deficits implied low external debts and less reliance on foreign borrowings. Hungary and Slovenia are included in this group, even though they accumulated large stocks of foreign debt, since this accumulation was not
only used to finance fiscal deficits, but also to a great extent, for reinvest-
ments abroad. In a word, the accumulated stock of foreign debt was not
exclusively used for domestic consumption and investments, as in the case
of countries that ran a consumption-led growth model. Croatia is also in-
cluded in this group because it seems that at least a part of its rapidly
accumulating foreign debts were predominantly used for investments in
the tradable sectors, mostly tourism, resulting in much lower current ac-
count deficits compared to consumption-led growth cases. On the other
hand, countries that pursued consumption-led growth, experienced much
deeper current account deficits, reflecting not only growing investments
but also rapidly growing domestic consumption, both of which were faster
than export growth and both facilitated by abundant foreign capital in-
flows, mainly in the form of cross-border loans to banks and the real sec-
tor.

However, once advanced countries underwent a sharp liquidity con-
traction, one of its main results was a steep and prolonged compression
of their consumption and investment expenditures. The immediate con-
sequence was a considerable decline in export demand for the goods and
services produced in emerging Europe (Figure 35).

Figure 35. Cumulative Fall of Exports

Groupings: CEE includes Poland, Slovakia and the Czech Republic. Baltic and
Bulgaria group includes Estonia, Latvia, Lithuania, Bulgaria. Commodity exporters
group includes Russia and Ukraine. Other floaters group includes Romania,
Turkey and Hungary. Other fixers group includes Croatia and Slovenia.

Sources: Authors’ calculations based on International Financial Statistics and
Eurostat.
Notwithstanding a considerable depreciation of almost all floating currencies throughout the region, there is no major difference in terms of export performance between countries with floating and those with fixed exchange rates. This is in line with the conclusion reached by Belka (2009), who suggested that even improved export competitiveness did not help much when the export demand from advanced countries was deeply subdued and did not produce a positive supply response. Berglöf et al. (2009) also failed to find a statistically significant impact of the exchange rate regime on the level of exports. Moreover, numerous depreciations across the globe simultaneously improved competitiveness in many export competing countries, unlike in the case of the short-term collapses in financing during the Mexican, East Asian and other crises in the past. Despite expectations that once the recovery takes hold, those countries that experienced currency depreciation would likely benefit more than those with rigid exchange rate regimes, it ended up not being that simple. The countries whose exports were not exhibiting strong recovery by the end of 2010 are Croatia and Slovenia, the former because of its cyclically-dependent export of tourist services as well as the lack of fresh foreign financing and the latter because of the large stock of corporate debts that pushed several large enterprises and investment holding companies into insolvency. On the other hand, both floaters and other fixers posted significant export growth rates. Last but not least, commodity exporters, in this case Russia and Ukraine, whose respective export structures are dominated by energy and steel, posted significantly deeper export contraction, probably reflecting the depth of the global slump in industrial production and its impact on commodity prices.

When it comes to imports, the crisis was more discriminatory. As shown in Figure 36, the most affected were the countries with rigid exchange rates, which contrasts with expectations that these countries would continue to display elevated import demand.

Moreover, there is not much difference between floaters and fixers. The only other group that stands out are commodity exporters, because of Ukraine's exceptionally large import compression, whereas Russia is in line with the average. This points to the possibility that some other factors underpin the more pronounced import adjustment in some of these countries. One of these factors is the capital inflow sudden stop, which left the recipient countries without inflows of the foreign exchange needed to finance the current account deficits. It implies that those countries that had run a larger current account deficits relied more on foreign capital. Following the Lehman shock, these countries had to sustain a deeper import contraction. This is in line with the findings of Calvo et al. (2004) that the
cessation of the capital inflows forces a country with a larger current account deficit to a sharper reduction in the absorption of tradable goods. But aside from that, countries that relied more on foreign credit to finance domestic investments also suffered a deep demand contraction and therefore deep import contraction, such as Slovenia and Croatia.

Figure 36. Cumulative Fall of Imports

Groupings: CEE includes Poland, Slovakia and the Czech Republic. Baltic and Bulgaria group includes Estonia, Latvia, Lithuania, Bulgaria. Commodity exporters group includes Russia and Ukraine. Other floaters group includes Romania, Turkey and Hungary. Other fixers group includes Croatia and Slovenia.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

Bearing in mind the previous findings about the impact of the crisis on exports and imports, it is logical that the countries with larger trade deficits exhibited a larger trade balance improvement leading to a larger current account improvement (Figure 37).

The level of current account deficits prior to the crisis is one of the most important determinants of the size of its subsequent adjustment. This is related to the fact that after the Lehman shock and the ensuing cessation of foreign financing, emerging economies could no longer afford to run large current account deficits. However, one has to keep in mind that this mechanical improvement in trade and current account deficit does not reflect increasing competitiveness and shifting of demand towards domestic goods, but rather a steep and painful adjustment in personal and investment consumption. One can also notice that the countries with large current account deficits before the crisis even went into surplus in 2010.
This happened because they had to repay a larger portion of their foreign debts which could no longer be perpetuated, and because their imports imploded.

Figure 37. Current Account Adjustment After the Crisis

Groupings: Small CA deficits group includes Poland, Slovakia, the Czech Republic, Turkey, Hungary, Croatia and Slovenia. Large CA deficits group includes Estonia, Latvia, Lithuania, Bulgaria and Romania. Commodity exporters group includes Russia and Ukraine.

Notes: CA denotes current account deficit; commodity exporters have recorded approximately zero CA deficit in 2008Q4–2009Q3.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

One seemingly puzzling result of our analysis is the fact the countries with rigid exchange rates, which did not exhibit any real effective exchange rate depreciation, did exhibit the strongest current account improvement (Figure 38).

What is more, some of the countries with fixed exchange rates exhibited considerable real exchange rate appreciation after the Lehman shock, mostly because of persistently higher inflation rates in comparison to their major trading partners, despite a severe output contraction and steep unemployment growth. Data for the last quarter of 2009 shows that only after a full year of strong output contraction did the real effective exchange rate start to depreciate as these countries entered deflation. Even though the countries with currency board arrangements or hard pegs rejected the idea of devaluation, stating that their fixed regimes were the most important nominal anchors and symbols of stability. It seems that their strategies of “internal devaluation” through large deflation would come, as Minsky suggested, at a very high cost in terms of output contrac-
tion, employment, consumption, living standards, and large implementation risks (IMF 2009). One of the main risks is that, once the global recovery takes hold, these countries will suffer a subdued export increase and very slow growth, because some of the competing economies with flexible exchange rates exhibited substantial real foreign exchange depreciations and avoided such harsh production and employment contraction. Looking at other countries in the region, the size of the real effective exchange rate depreciation does not correspond to the size of the current account adjustment. This shows that, so far, compressed imports and other factors have had more influence on the current account than depreciation in the real exchange rate.

Figure 38. Real Effective Exchange Rate and Current Account Adjustment During the Crisis

Groupings: Floating group includes Poland, the Czech Republic, Romania, Turkey and Hungary. Fixed group includes Estonia, Latvia, Lithuania, Bulgaria, Croatia, Slovenia and Slovakia. Commodity exporters group includes Russia and Ukraine.

Notes: Increase of the real effective exchange rate denotes real depreciation relative to 100%; decrease denotes real appreciation relative to 100%; current account displayed relative to GDP; improvement denotes y-o-y change in percentage points relative to the same period of the previous year.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

Given that exports and imports are most affected by the current crisis, it is very logical that the trade openness was an important determinant in the output decline, as shown in the Figure 39.
Figure 39. Trade Openness and Quarterly GDP Decline

Groupings: Open economies includes Czech Republic, Slovakia, Hungary, Bulgaria, Slovenia, Estonia, Latvia, Lithuania. Closed economies include Russia, Ukraine, Poland, Romania, Turkey and Croatia.

Note: Open economies include countries with ratio of exports and imports relative to GDP in excess of 100% in 2007.

Source: Authors’ calculations based on International Financial Statistics and Eurostat.

The magnitude of the global trade contraction and its almost indiscriminate effect on all countries, explains why open countries are more affected than closer economies, in terms of output contraction. This effect is due to a larger leverage of the trade balance on the output of open economies (the greater reliance on exports relative to domestic consumption). However, the open economies will tend to recover faster once global demand recovers, providing that they do not return to their unsustainable growth model based on capital inflows.

Even though the current account balance had an important role when the crisis hit, another set of vulnerabilities was much more important. These are the financial vulnerabilities, which accumulated in most of the countries in the emerging Europe during the 2000s. In order to analyze the impact of the financial vulnerabilities we will use two representative variables, used by other authors as well, the credit to deposit ratio and credit growth.

As we mentioned earlier, the countries which embarked on the consumption-led growth model driven by the credit boom, experienced higher output growth but at the same time suffered from larger current account deficits (Figure 40).
Groupings: Rapid credit growth group includes Estonia, Latvia, Lithuania, Bulgaria and Romania. Moderate credit growth group includes Poland, the Czech Republic, Slovakia, Turkey, Hungary, Croatia and Slovenia. Commodity exporters group includes Russia and Ukraine.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

Leaving aside Russia and Ukraine, which benefited from favorable terms of trade, there was an observable relation between current account deficits and the credit boom, which occurred in many countries in the region in the pre-crisis years. This is in accordance with the findings of Berkmen et al. (2009) and Berglöf et al. (2009). Such a credit boom facilitated the rapid increase of private consumption, investments, inventories and imports, which all spilled over into rapid output growth as well as the rapid current account deficit growth. As we saw in the previous chapter, this credit boom was predominantly financed by foreign borrowings. The countries in the region enjoyed a comfortable position, as low interest rates in the international financial markets and easy access to foreign liquidity provided them with an opportunity to decouple their investments from domestic savings by borrowing heavily from abroad.

Meanwhile, once the crisis hit, the countries in the region were discriminated in terms of the impact of the financial vulnerabilities on output. The capital inflows suddenly stopped and left the countries relying on a consumption-led growth model without the foreign borrowings needed to continue financing their credit booms. This, coupled with a fall in export demand, exerted a much larger pressure on the output of consumption-led countries than on the countries, which financed their
expenditures largely from their domestic savings (Figure 41). Moreover, as the real sector’s solvency deteriorated, the banks’ credit standards tightened and additionally reinforced this downward spiral. Following the peak of the crisis, GDP started growing again despite stagnant credit but the speed of recovery is still far from sufficient to make up for the loss during the trough of the crisis, especially in the case of so severe a credit crunch.

Figure 41. Decline of the Domestic Credit to Non-Financial Sector and of Output During the Crisis

Groupings: Severe credit crunch group includes Estonia, Latvia, Lithuania, Bulgaria and Romania. Moderate credit crunch group includes Poland, the Czech Republic, Slovakia, Turkey, Hungary, Croatia and Slovenia. Commodity exporters group includes Russia and Ukraine.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

The capital inflow sudden stop inflicted a credit crunch and dragged down investments, inventories and domestic consumption. Those countries which relied more on domestic savings tended to exhibit a milder contraction of credit, enabling them to escape with a more moderate consumption and investment decline, resulting less pronounced output contraction. This result concurs with that of Berkmen et al. (2009) and Berglöf et al. (2009).

In line with the previous findings, the credit crunch caused a much stronger current account improvement in those countries that were running larger current account deficits prior to the crisis. This, coupled with the finding of the impact of the credit crunch on output, supports the no-
tion that the large current account deficits in the run-up to the crisis were a byproduct of the unsustainable output growth model, based on excessive investments in the production of non-tradable goods and their consumption. Once the crisis erupted, domestic savings became the only source of financing, but they were far from sufficient to facilitate previous consumption and investment patterns. Financing became the main constraint on output growth and caused a deep contraction of all expenditures. Due to this deep contraction of all expenditure items, imports declined much more than in the case of countries with more balanced growth in terms of the investments-savings balance. Aside from that, the group of countries with rapid credit growth accumulated a larger stock of foreign debts, which raised their foreign debt service outflows to a very high level compared to export revenues, and crowded out the imports. The immediate consequence was significant current account adjustment proportional to credit growth adjustment (Figure 42).

**Figure 42. Decline of the Domestic Credit to Non-Financial Sector and the Current Account Improvement During the Crisis**

Groupings: Severe credit crunch group includes Estonia, Latvia, Lithuania, Bulgaria and Romania. Moderate credit crunch group includes Poland, the Czech Republic, Slovakia, Turkey, Hungary, Croatia and Slovenia. Commodity exporters group includes Russia and Ukraine.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

Furthermore, another determinant of output decline turned out to be important in the wake of the crisis. The leverage of the banking system, measured as the ratio of domestic loans to deposits (Figure 43) was one of
the most important vulnerabilities and this confirms the findings of Berkmen et al. (2009) and Berglöf et al. (2009).

Figure 43. Domestic Credit to Deposit Ratio (Leverage) and the Output Decline During the Crisis

Groupings: More leveraged group includes Romania, Estonia, Latvia, Lithuania, Hungary, Bulgaria and Slovenia. Less leveraged group includes Poland, the Czech Republic, Slovakia, Turkey and Croatia. Commodity exporters group includes Russia and Ukraine.

Sources: Authors’ calculations based on International Financial Statistics and Eurostat.

Those countries that exhibited the largest leverage saw a rapid and deep deleveraging when the crisis hit. The high leverage seen in these countries was an outcome of rapid credit growth, coupled with insufficient domestic savings, which were replaced by foreign borrowing. When foreign capital suddenly stopped flowing in, this resulted in a credit crunch with consequences for the real sector which were more severe than in the less leveraged countries of the region.

Another interesting result from this analysis is that Slovenia and Hungary suffered considerably larger output fall than the Czech Republic, Poland or Slovakia although we also classified them as export-led countries since they both had moderate balance of goods and services deficits and strong exports.\(^{200}\) Even though these five countries are commonly treated as a homogenous group of the most successful developing countries in the emerging Europe because they share many similarities, there are two distinct differences, which explain the different rates of output contrac-

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\(^{200}\) Average balance of goods and services deficit in the period between 2001 and 2008 was 1.8% of GDP in Hungary and 0.6% of GDP in Slovenia. Also, average share of exports of goods and services in GDP in the same period was 71% in Hungary and 62.3% in Slovenia (IMF, International Financial Statistics).
tion between the two subgroups. Slovenia and Hungary had much more leveraged banking systems, with ratios of domestic loans to deposits of around 1.6 whereas for the other three countries this ratio was close to 1. Also, these two countries had much larger stocks of foreign debt (over 100% of GDP) than the other three (around 50% of GDP). The former group exhibited a faster domestic credit growth in the run up to the crisis than the latter. Slovenian banks were much more highly leveraged than the banking sectors in the other Euro Area countries, which reflected the decoupling of rapid domestic and cross-border credit expansion from the growth of domestic deposits which was far slower. One third of the Slovenian banking sector’s liabilities were foreign debts, of which one third was short term. (IMF 2009k). The Slovenian banking sector was deeply engaged in “leveraged management buy-outs” and other forms of asset-backed lending, with largest exposure to a particular group (an investment holding with a significant share of its assets in the Balkan countries) of roughly 800 million US$. When the real estate and share price bubbles burst, many of these loans turned non-performing. Foreign investors considered the large exposure of the Slovenian banking sector compared to other Balkan countries as a possibly strong contagion channel, which caused risk premiums to surge. Additionally, Slovenia suffered from the largest inflation in the Euro Area and recorded the largest wage growth. Because of this, the external competitiveness of Slovenian exporters diminished significantly resulting in a steady increase of the current account deficit in the years leading-up to the crisis. The deleveraging process that spread throughout the global banking sector and the ensuing credit crunch, affected Slovenia and Hungary much more, because their banking sectors were relying more on the “wholesale” credit market, i.e. bond issuance and direct bank borrowing from abroad, rather than domestic deposits. Slovenian enterprises were hit hard because of their heavy reliance on bank credit of almost 80% of GDP, which was greater than in any other Euro Area member country (average 75%) or the new EU member states (less than 50% except in Bulgaria, Latvia and Estonia). One of the consequences was significantly deeper fall of consumption in the case of Hungary and investments in the case of Slovenia, compared to the other three countries. The fall of consumption led to a fall in imports, because of which the current accounts of Slovenia and Hungary improved more than in the other three Central European countries.

The severe problems that continued to plague most European banks in the three subsequent years after the Lehman shock are the most important cause of the debt deleveraging process that hit most CEESEE econo-
mies. Logically, only those countries that relied on foreign borrowing and turned out to be more leveraged continue to suffer and experience output decline.

What made the credit boom in most of the countries in the region unsustainable was the fact that it was decoupled from domestic savings, meaning that it had mainly to be financed by cross-border credit flows, i.e. foreign savings (Figure 44). Once the crisis hit, private foreign capital stopped flowing in, and the credit crunch ensued across the region. Countries that had more leveraged banking systems, as measured by the domestic loan to deposit ratio, tended to accumulate more foreign debts. The logic here is straightforward – banks had to borrow from abroad since the domestic savings, reflected in bank deposits, were not sufficient to finance the credit activity. The Czech Republic is an outlier in this sense, since its ratio of domestic credits to deposits is lower than one, which is reflected in the negative net foreign debt, i.e. the Czech Republic is a net creditor.

**Figure 44. Private Net Foreign Debt and the Domestic Loan to Deposit Ratio**

Groupings: More leveraged group includes Romania, Estonia, Latvia, Lithuania, Hungary, Bulgaria, Croatia and Slovenia. Less leveraged group includes Poland, Czech Republic, Slovakia, Turkey. Commodity exporters group includes Russia and Ukraine.

Notes: Net foreign debt is calculated as the sum of borrowings from abroad (denoted in the IFS as other investment liabilities) and debt securities (portfolio investment liabilities) issued by banks and real sectors, from which we subtracted the sum of loans to foreign entities, debt securities of foreign banks and real sector and currency and deposits held abroad; for consistency, the data for Ukraine was corrected by the exclusion of the foreign currency holdings of households (“mattress money”); for Poland and Estonia we used 2004Q instead of end–2002 which is not available.

Sources: Authors’ calculations based on International Financial Statistics and web sites of central banks.
One more outlier is Hungary. Its stock of net foreign debt was much larger than suggested by its domestic loans to deposits ratio. This was due to a highly developed capital market and the stock of debt security liabilities as well as considerably larger government foreign debt compared to other countries. The country exhibited large general government deficits throughout the 2000s, between 4% of GDP and 9% while general government expenditure stayed close to 50% of GDP and was dominated by current expenditure. The public debt reached 70% prior to the Lehman shock and then jumped to more than 82% of GDP by the end of the first quarter 2009 due to the forint depreciation and the large foreign exchange rate risk exposure of the Hungarian Government. During the pre-crisis years Hungary was able to finance these deficits and debt amortization, totaling 25 billion US$ on average, by issuing new bonds. However, when the crisis hit, foreign creditors changed their sentiment and rushed to sell their stock of government bonds. Portfolio bond investments reversed sharply, reducing the stock of respective liabilities by 20 billion US$ in less than a year from the second quarter 2008. The immediate effect was that the Hungarian Government suddenly faced a financing gap of 54 billion US$ at the end of 2008 (IMF 2009d). Even though the country ran a flexible exchange rate, its high rate of debt euroization significantly constrained tolerance to exchange rate variability. This was confirmed by a sudden jump of public and foreign debt, relative to GDP, from 97% in 2007 to 137% at the end of 2009 (IMF 2010). These debts became unsustainable and the country had to ask for a large bailout loan from the IMF and the EU, even though this did not prevent considerable damage being inflicted on unhedged non-financial debtors that borrowed in euro and Swiss francs.

Finally, Russia is another outlier because it had abundant official foreign exchange reserves that influenced the stock of the net foreign debts, but on the other hand its banking sector was highly leveraged. The strong relation between the domestic loan to deposit ratio and the net foreign debt indicates why the capital inflow sudden stop was an important channel for crisis spillover. It directly affected the lending activity of the local banks. This confirms the findings of Berkmen et al. (2009) and Berglöf et al. (2009). The deleveraging that continued throughout 2009 and 2010 was visible both in domestic loan to deposit ratios and private net foreign debt ratios.

The dependence of the banking sectors in emerging Europe on foreign borrowings took its toll when the crisis hit. Local banks, especially in those countries whose banking sectors were more dependent on foreign borrowings, like the Baltic countries or Slovenia, could no longer increase their loan books and the credit crunch ensued (Figure 45). Even though
bank borrowing recovered somewhat in the second year after the Lehman shock, the real sector continued to deleverage, in all three groups, with a direct negative influence on output.

Figure 45. Reversal of the Foreign Credit Inflows to Banks and Other Non-Financial Sectors

Groupings: More indebted group includes Romania, Estonia, Latvia, Lithuania, Hungary, Bulgaria and Slovenia. Less indebted group includes Poland, Czech Republic, Turkey and Croatia. Commodity exporters group includes Russia and Ukraine. Data for Slovakia is unavailable.

Note: Slovakia is excluded since, due to the Euro adoption in 2009, data is not comparable.

Source: Authors’ calculations based on International Financial Statistics.

These large initial bank capital flow reversals had a strong impact on the level of the foreign exchange reserves of central banks throughout the region, as well as on the exchange rate of the floating currencies. On the other hand, reversal was milder when it comes to the foreign borrowings of other sectors, i.e. direct cross-border loans to enterprises, and this difference stems from the maturity of respective cross-border loans which in the case of other sectors tend to be of longer maturity. The second year exhibits the impact of debt maturity more starkly as banks could access fresh credits more easily given that they generally need shorter maturity loans which provides more flexibility to their lenders relative to longer term credits that would have been provided to enterprises. Finally, the FDI flows rarely turned negative, and in the cases when they did, it reflected changes in the inter-company lending flows that were statistically recorded.
as the FDI. Poland is a special case, as the crisis did not affect bank foreign borrowings as strongly as it did in the other countries but it had a strong impact on the portfolio debts investments, i.e. on bond issuance, therefore hampering the ability of bond issuers to finance their projects.

The credit crunch and ensuing sharp reversal of foreign credit inflows to banks and other non-financial sectors had a very strong impact on output, and those countries that relied more on foreign borrowings before the crisis, as reflected in their net foreign debts, suffered a deeper output decline (Figure 46).

Figure 46. Net Foreign Debt and Output Decline

Groupings: More indebted group includes Romania, Estonia, Latvia, Lithuania, Hungary, Bulgaria and Slovenia. Less indebted group includes Poland, the Czech Republic, Slovakia, Turkey and Croatia. Commodity exporters group includes Russia and Ukraine.

Note: Average quarterly GDP decline y-o-y, for the period 2008Q4-2009Q3, given in reverse order.

Sources: Authors’ calculations based on International Financial Statistics and web sites of central banks.

The leverage of the banking sector acted as an intermediary here, since it is related to the output decline, on one side, and to the net foreign debt on the other side which reflected previous reliance on foreign capital inflows. This is the most important crisis transmission channel. It explains the causal relationship between the stock of net foreign debt, and an output decline following a sudden stop of capital inflows. Driven by a credit boom financed by foreign borrowing, the countries that had larger stocks of net foreign debt experienced larger output growth in the run-up to the
crisis. Once the foreign borrowings were cut, the credit crunch ensued and these countries suffered a deeper downturn. Another interesting finding from this analysis is that most of countries that concluded arrangements with the IMF (Hungary, Ukraine, Latvia, Poland – precautionary arrangement) had a stock of net foreign debt close to or above 20% of GDP, with four exceptions. One exception is Romania whose stock was considerably below this threshold, while Turkey, Croatia and Bulgaria, economies that experienced strong tensions in their foreign exchange markets, refrained from seeking IMF assistance even though their respective stocks of net foreign debt relative to GDP were above or at the threshold. Turkey did not seek IMF assistance and tried to weather the crisis on its own. Croatia and Bulgaria did experience a severe impact on their foreign currency reserves, but they opted to wait and see how the crisis would unfold given that they still had ample foreign currency reserves while their currencies were pegged to the Euro. On the other side, Romania quickly sought an arrangement with the IMF since its freely floating currency depreciated swiftly hurting unhedged corporate and household borrowers.

As a corollary to the output decline caused by the credit crunch, more leveraged countries experienced a larger current account improvement (Figure 47). The drastic fall in export demand from advanced countries caused an indiscriminate and roughly equal fall in exports, of approximately 30%, in all countries in the region, except Russia and Ukraine, which suffered a more pronounced fall. On the other hand, decline of imports exhibited larger variability across the countries. Those economies that financed their consumption and investment growth by foreign borrowings suffered a much deeper contraction of all expenditure items, which was reflected in a stronger current account improvement compared to export-led countries. Moreover, even subsequently in a more stable period (2009Q4–2010Q4) countries that were more leveraged had to improve their current accounts additionally unlike the less leveraged ones that did not have to adjust anymore.

Additionally, once foreign financing stopped, more leveraged countries had to cut their expenditures more than the less indebted economies, in order to be able to service their foreign debts that could no longer be refinanced by fresh foreign borrowings (speculative and Ponzi financial units).
Groupings: More indebted group includes Romania, Estonia, Latvia, Lithuania, Hungary, Bulgaria and Slovenia. Less indebted group includes Poland, the Czech Republic, Slovakia, Turkey and Croatia. Commodity exporters group includes Russia and Ukraine.

Sources: Authors’ calculations based on International Financial Statistics and web sites of central banks.

The euroization of bank credits is frequently cited as one of the most important determinants of a sudden stop crisis. Even though the data presented in the Figure 48 suggests that there is a link, we believe that this could be a misleading relation. This is because only three countries in this dataset, which had a large rate of credit euroization, suffered currency depreciation – Romania, Hungary and Ukraine. Other countries with large output contraction did not suffer any changes in the exchange rate. We can infer that this seeming relation should actually be attributed to the domestic credit to deposit ratios, which were higher for those countries that relied more on foreign borrowings. Subsequent stabilization of bank borrowings helped to reduce further output decline (2009Q4–2010Q4) but certain other factors also came into play, like the strong recovery of commodity prices that helped Ukraine and the strong domestic demand that helped Poland. The credit euroization will take its toll over the medium run in those countries whose currencies depreciated significantly, as it will put pressure on the real sector’s cash flows, which will, in turn, impact investments and consumption.

In most countries we have analyzed, the credit euroization was above 50%, and would be much higher if we included direct cross-border loans to the real sector. Given such a high rate of credit euroization, any larger depreciation or devaluation would lead to heavy balance sheet effects and large financial losses in the real sector. This would certainly wreck havoc
in the affected economies, cause widespread bankruptcies and decimate output. Depreciation of local currencies would not exert a positive influence on exports, since indebted units would have not enough breathing space to save production or jobs. In addition, even if we make the unrealistic assumption that the majority of producers would survive a drastic increase in the real value of debt, weak export demand would certainly strongly constrain the positive effects of the declining value of local currency.

Figure 48. Loan Euroization in 2008 and the GDP Decline


Notes: Data for Slovakia and Slovenia is excluded since they are members of the Euro Area; data for Turkey and Russia is not available.
Source: Authors’ calculations based on International Financial Statistics.

The “fear of floating” was clearly visible in some of the countries like Romania and Hungary that quickly turned to the IMF and the EU for rescue. Romania had a relatively low level of net foreign debt relative to the GDP, while Hungary had a large stock of debt but well balanced foreign trade. Although it could be argued that both countries had no apparent reason to fear foreign exchange depreciation, based on the stock of net foreign debt or the current account deficit, it is most likely that the high rate of credit euroization spooked policy makers and compelled them to ask for international assistance. On the other hand, countries with fixed exchange regimes but a high rate of credit euroization, fearing the serious consequences of a potential real foreign exchange rate devaluation
for their unhedged real sector, opted for the harsh and counterproductive measure of “internal devaluation” through deflation, which they saw as the only remaining option to improve their external competitiveness (Bulgaria, Latvia, Lithuania, Estonia).

Concerning the fiscal position before the crisis, Berkmen et al. (2009) found that the fiscal balance was positively associated with better output performance, but our analysis of the general government fiscal balance does not support such a conclusion (Figure 49). This can probably be attributed to two facts. First, prior to the crisis, most countries had acceptable fiscal deficits or even small surpluses. While some of them owed this to prudent fiscal policy, however, in others it was the result of a consumption and import boom, which had temporarily increased fiscal revenues. Secondly, the impact of the credit crunch on final consumption, investments and exports was much stronger than the effect of the fiscal expansion. All the analyzed countries pursued fiscal expansion, beyond the automatic stabilizers. However, since most of these are small open economies, aggregate demand is relatively less responsive compared to advanced countries, because the impulse from fiscal expansion tends to spill over into more imports instead of greater consumption of domestically produced goods and services. Finally, only one country returned to surplus in late 2009 and 2010 – Estonia, while all the others continued to incur deficits, as they retained a fiscally expansive stance but also because output and employment remained below previous levels, which significantly constrained public revenues. On the other hand, fiscal expansions together with slightly better export demand helped the EEEs to prevent even deeper output slumps that would further have eroded public revenues, thus creating a vicious circle.

Summarizing the analysis presented in this section, we can conclude that the liquidity contraction in advanced countries that led to a severe credit crunch and consumption slump, had a very strong impact on export demand for products from developing countries. The impact was strongest on durable consumption and investment goods, the purchase of which was usually financed by bank credits. Countries in emerging Europe experienced a large and indiscriminate fall in their exports, close to 30%, in the wake of the crisis, and this had a very strong impact on output. However, in the relatively short period of one year following the spillover of the crisis into the region, there was no strong evidence that the export demand slump had had a differentiated impact on different East European countries. Put differently, the impact of the trade link on output was relatively equally dispersed throughout the region.

201 Which means more than simply maintaining existing levels of current expenditure mainly wages in the public sector, pensions, procurement of goods and services.
Financial vulnerabilities, on the other hand, were a much more important determinant since they exerted strong discriminatory power in explaining the cross-country differences in output decline. Based on the analysis presented in this section, we found that vulnerable countries in the region exhibited rapid growth of loans to the non-financial sector throughout most of the 2000s, financed by foreign borrowings. This was reflected in the domestic credit to deposit ratio, which grew rapidly in the period. Moreover, such a rapid credit growth was used to finance investments as well as household and, indirectly, government consumption. Countries that pursued a sustainable export-led growth model managed to keep the domestic credit to deposit ratio close to one, and used foreign borrowings only to finance long-term projects and mortgage lending. The financial turmoil that struck the banks in advanced countries delivered a shock to regional banking systems, through abrupt credit inflow reversal. This reversal left domestic banks, including the subsidiaries of foreign banks without the financial means to continue rapid credit expan-
sion. The credit crunch that ensued had a greater impact on the more vulnerable countries through a deep contraction of household consumption and investments. We find that those countries that exhibited a faster credit growth in the run up to the crisis, exhibited larger output growth, wider current account deficits and larger net foreign debts. Once the capital stopped flowing in, these countries experienced a much deeper output contraction and more pronounced current account improvement. The depth of the output contraction was moderated to some degree by large import contractions, and the import contraction was also caused by the credit crunch.

Other variables like the rigidity of the exchange rate regime, the real effective exchange rate, the level of credit euroization and the fiscal balance before the crisis did not exert a discriminatory effect. Nominal exchange rates depreciated significantly in countries with flexible exchange rate regimes. The same is true for foreign exchange reserves, which declined rapidly following the capital inflow reversal. Nevertheless, no country with a fixed exchange rate regime was forced to devalue, indicating that the loss of foreign exchange reserves was not large enough to deplete the entire stock. Real effective exchange rates depreciated significantly only in those countries that suffered a nominal foreign exchange rate depreciation as well. In the countries with fixed exchange rate regimes, the real effective exchange rate did not change much, indicating that the “internal devaluation” through deflation was either not working or was a very slow process. (Weisbrot and Ray 2010). The level of credit euroization did not exhibit a discriminatory effect when it comes to output decline, since national governments and international financial organizations, in concert, injected significant doses of liquidity and successfully coordinated agreements aiming at rolling over debts in order to prevent a massive debt deflation episode. Nonetheless, there is no doubt that the level of credit euroization has been a very important factor when it comes to the expected output impact and the expedience for the authorities of reaching for international assistance. In that sense, countries with a high rate of credit euroization and flexible exchange rate regimes suffered more than those with fixed regimes, because they were forced to strongly increase their external debts, both nominally and relative to GDP, by borrowing from the IMF and other institutions\(^\text{202}\) while finding themselves unable to offset gains from

\(^{202}\) As we said, depreciation of domestic currency in relation to hard currency leads to increases in the value of debt in local currency terms. Therefore, in order to gain a psychological advantage over speculators, domestic authorities rushed to increase their foreign exchange reserves.
improved competitiveness. Providing there is a major change in the existing growth model and share of foreign currency-denominated debt in total debt, the foreign exchange depreciation that occurred could turn out to be an advantage in the long run, as it may shift demand towards tradable sectors and facilitate more balanced current accounts.

203 Because export demand of developed countries was eroded severely.
The current crisis in Eastern Europe can be characterized as a Minskyan open-economy crisis, triggered by financial disruption in the major financial markets. It was preceded by a long period of capital inflows, both equity and debt flows, which fed the substantial investment and consumption needs of the recipient countries. These countries were unable to match their investment needs with domestic savings, therefore had to resort to foreign borrowings. Given the large real interest rates and significant interest rate differential caused by excess credit demand over credit supply, foreign capital was pouring in. This scenario is very similar to the numerous financial crises that hit developing countries in the late 1990s and early 2000s. However, the triggering event of the crisis and the consequences differ significantly. While the previous crises were set in motion by short-term flights to safety, the current crisis was ignited by a long-term liquidity contraction, which led to the global credit crunch and recession. Also, due to globally coordinated and timely policy interventions and de-
spite the severity of the contemporaneous crisis in developed countries, the impact of the current crisis was milder than on previous occasions.

The intention in this section is to compare the pre-crisis and subsequent post-crisis developments in fundamental economic indicators, the accumulation of vulnerabilities and the impact of the current crisis with previous cases. We will then contrast our findings with two papers published recently, one prepared by a group of IMF researchers (IMF 2009l) and the other prepared by Abiad et al. (2009).

The findings of the IMF researchers (IMF 2009l) can be summarized as follows. The crisis exerted a strong impact on output, especially in countries with large external vulnerabilities. However, many of the previous harsh consequences, like excessive devaluations or depreciations and systemic bank failures, have been avoided. The response of international financial institutions was tailored to the actual consequences, it included the lessons learned from previous crises, especially about the avoidance of policy mistakes. The main result has been faster stabilization, despite a negative global economic environment. One should note that during the past crises, the global economic environment was relatively positive and it provided the necessary conditions for a recovery led by export growth. Owing it to domestic demand, which was more resilient than before, output losses were not on average worse than before. The adjustment of external imbalances has been less painful on this occasion, reflecting timely, more supportive and more substantial assistance from international financial organizations more focused on the initial stages of the programs than in past crises. This has helped countries in the region to avoid the disorderly currency overshooting and interest rate surges seen so many times before. As a result, the real exchange rate adjustment needed for the adjustment of current account deficits was achieved in a smoother fashion. Initial program conditionality was more focused than in the past, which resulted in better compliance. The fiscal stance in most cases is accommodative and flexible, and deficits were allowed to rise in response to falling revenues. Automatic stabilizers are left to operate to the extent possible given the debt sustainability. Finally, banking sectors across the region remained viable despite their large external debts, owing to the avoidance of exchange rate and interest rate overshooting enabled by the debt rescheduling and international financial assistance, as well as liquidity and deposit insurance boosts.

Abiad et al. (2009) found that, unlike other parts of the globe, the deep European financial integration helped capital to flow downhill from rich to poor countries204 which facilitated the convergence of their per

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204 In other parts of the world, growing stock of foreign exchange reserves, free capital and savings (Russia, China, oil exporters), has been converted into foreign currency and invested in the U.S., EU, Japan and the like. Those capital flows dominate over
capita income. Such flows correspond more to intra-national flows within the United States, than to standard international capital flows. The most important consequence of this is that increased diversification driven by European financial integration reduces the incentives for countries to self-insure against sudden stops to capital inflow, by maintaining high savings rates and postponing consumption. Most countries in Eastern Europe relied heavily on foreign borrowings to finance their investment-savings gap. The most relevant findings of these authors is in line with ours: consumption-led countries turned out to be more vulnerable to sudden stops while the countries that relied more on domestic savings were more resilient. Another relevant outcome of the deep financial integration is the policy and the commitment of developed West European countries and their financial institutions to the stability of the East European developing countries. These policies and commitments resulted in a resumption of capital inflows and coordinated efforts to increase the availability of foreign exchange funds aside from the usual IMF stand-by arrangements. This helped the East European countries to manage their external imbalances and avoid the large exchange rate adjustments that characterized previous crises.

The main goal of this chapter is to examine the economic indicators relevant for a Minskyan open-economy type of crisis, as they developed during the present and previous periods of disruption. We will look at the periods which preceded the crises, and investigate what happened after the crises peaked. In this we will apply the methodology used by the authors of the abovementioned papers (IMF 2009; Abiad et al. 2009). The indicators that will be analyzed are those used in these papers and suggested by the literature, namely, pre-crisis output growth, inflation, the current account balance, gross foreign debt, net private capital flows, the nominal and the real exchange rates and finally the fiscal position. The countries will be grouped into two groups, the current crisis and the past crises group. The current crisis group will consist of the same 14 countries analyzed in the previous section, while the past crises group consists of those countries that experienced a sudden stop crisis during the 1990s and 2000s. These are: Mexico (1994), Indonesia (1997), South Korea (1997), Philippines (1997), Thailand (1997), Russia (1997), Brazil (1998–1999), Ecuador (1999), Turkey (2000), Argentina (2001–2002) and Uruguay (2002). To measure the central tendency of the indicators for these two groups we will use average values. However, where more appropriate we will resort to median values in order to exclude the effects of several outli-
ers that could obscure our findings, as in the case of several high inflation episodes in the mid 1990s, which were accompanied by large currency devaluations. We will use annual data given that, for the most previous cases, either the quarterly data is missing or it was collected and presented in an incomparable manner. The time period that will be covered starts from the 5th year before the onset of the crisis until the end of the second year following the peak of the crisis.

1. Factual Results

The countries in Eastern Europe share many features with other countries that have suffered a currency crisis in the past. Both groups saw their income levels rapidly converging with that of developed countries. Although in the early stages of the boom, four and five years before the onset of the crisis, the growth rates were similar for the current and past crises groups, the subsequent dynamics differs substantially. The East European countries continued to experience rapid growth while in the past crises, countries saw their growth abating as the crises came closer (Figure 50).

Figure 50. Real GDP Growth Dynamics, Current and Previous Financial Crises

Notes for this and subsequent figures: Data in the figure refers to the average annual values for the two groups; past financial crises are Mexico (1994), Indonesia (1997), Korea (1997), Philippines (1997), Thailand (1997), Brazil (1998), Ecuador (1998), Russia (1998), Turkey (2000), Argentina (2001), and Uruguay (2001); current financial crisis includes Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey, Ukraine; t for the current crisis refers to 2008, while for the previous crises it refers to the year when the crisis started.

Source: Authors’ calculation based on IMF’s WEO database.
Once the crisis hit, both groups experienced a large output decline, while the East European countries exhibited somewhat deeper decline, and also weaker recovery in the second year after the crisis shock. Regarding the expenditure contribution to the decline, it was significantly different between the two groups.

Compared to the past crises, the East European countries experienced a more pronounced export growth contribution in the period leading up to the crises. At the same time, this group experienced a deeper import contribution (negative). Both contributing indicators reflected deeper trade integration with developed countries, compared to the past crises, as well as a more pronounced domestic demand contribution driven by a more pronounced credit boom (Figure 51), an issue we will address later. We find that the current crisis came abruptly i.e. without a prior abating trend, while in the previous crises there was a marked slowdown driven by lower exports.

**Figure 51. Real GDP Growth Contribution per Type of Expenditure, Current and Previous Financial Crises**

Sources: Authors’ calculation based on World Bank – World Development Indicators (WDI database) and IMF (2009l).

Source: Authors’ calculations based on International Financial Statistics.

One important finding of the IMF researchers, (IMF 2009l) about the current crisis is that the year following the crisis is still marked by subdued export demand i.e. a deep negative export contribution, unlike in the previous crises. This reflects the fact that developed countries are also
experiencing a recession (long-term liquidity contraction), while in the past that was not the case. On the other hand, the import adjustment is more pronounced this time, reflecting the larger current account deficits prior to the crisis that can no longer be financed by previously abundant capital inflows as well as the negative export influence operating through the lower exporters’ investments and the imports of intermediary goods.

Disregarding the hyperinflation episodes that Brazil and Russia experienced several years before the onset of their financial crisis, we see clear disinflationary trends in both groups, reflecting more sustainable fiscal policies as well as tightened monetary policies, which partially reinforced capital inflows. However, the overheated economies and the large capital inflows spilling over into rapid money supply growth caused inflation rates to stay significantly above those in developed countries (Figure 52).

**Figure 52. Inflation, Current and Previous Financial Crises**

Note: Inflation measured as a percentage change of average annual CPI index over previous year average, median values for both groups.

Source: Authors’ calculation based on IMF’s WEO database.

Coupled with stable exchange rates, inflation caused a significant real exchange rate appreciation which certainly did not help to address the issue of large current account deficits. Avoidance of the large nominal exchange rate devaluations and depreciations, which did occur in the previous crises, helped the countries in Eastern Europe to avoid inflation spikes.

In line with the faster output and domestic demand growth, the current account deficits were significantly higher in the years leading up to the
current crisis compared to the previous cases (Figure 53). These current account deficits reflected the decoupling of investments and consumption from domestic savings, whereby such decoupling was made possible i.e. financed by abundant capital inflows which translated into unsustainable credit booms. Countries in Eastern Europe consumed more than other countries that suffered a financial crisis in the past, leaving less available savings, but at the same time tried to keep their investments at high levels. Once the capital inflows reversed, both groups could no longer continue to run such large deficits and experienced similarly steep current account adjustment. Looking back at our two groups, we can notice that there is one more important difference. At least some of the East European countries could still run moderate current account deficits, with only a few outliers, which saw their current accounts reversed into surplus. This was enabled by the debt roll-over and additional international financial assistance, all of which enabled them to finance their current account deficits. On the other hand, in past cases, most countries saw their current accounts reversing into considerable surpluses because capital accounts were also negative thereby preventing them from running current account deficits.

Figure 53. Current Account Balance Relative to GDP, Current and Previous Financial Crises

Note: Data in the figure refers to average values.
Sources: Authors’ calculations based on International Financial Statistics and the World Bank – World Development Indicators (WDI database).
Such reversals in the past were (calamitously\textsuperscript{205}) facilitated by much deeper currency depreciations and devaluations as well as stronger export demand and weaker import demand due to imposed fiscal austerity, whereas in the current crisis, the export demand remained subdued two years following the crisis. Moreover, several countries in East Europe received very important financial assistance from developed countries in the form of the “Vienna Initiative” as well as official financial assistance, mostly from the EU and its institutions. Those that did not receive such aid, still benefited from the expansive lending policies of certain international financial institutions like the European Bank for Reconstruction and Development and a few others.

Against the backdrop of rapid output growth and the current account deficits, the countries in the East European region accumulated much more foreign debt than the countries in the previous crises (Figure 54). This was made possible by deep financial integration with Western Europe. On the other side, creditors from Western Europe accumulated large stocks of claims against their subsidiaries and real sector companies in Eastern Europe, which enabled them to achieve better yields and record larger profits. Following the Lehman Brothers collapse, this debt burden became more transparent and markets began differentiating the countries according to the assumed capacity to service their debts. Many analysts predicted a “doom and gloom” scenario for most of the countries in the region (Evans-Pritchard 2008, 2009; Harrison 2008; Reinhart and Rogoff 2009; Roubini 2009). It all resulted in an exorbitant rise of interest rates and risk premiums for more vulnerable countries, thereby aggravating their external liquidity. However, given that banking sectors in some of the countries from the EU were heavily exposed to Eastern Europe, any potential default would have wreaked havoc in their own domestic banking sectors that were already suffering because of the U.S. subprime crisis and the Lehman shock. Realizing this, self-interested institutions and international financial institutions launched a coordinated campaign to persuade parent banks and their home supervisors that it would be best for both sides to roll-over maturing credits and to abstain from liquidity draining the East European bank subsidiaries. It was a very successful campaign that resulted in almost complete roll-over of matured debts, and in the most vulnerable countries it was formalized in the Vienna Initiative. Most countries experienced a relatively mild increase of foreign debt relative to GDP, unlike in past crises.

\textsuperscript{205} Calamitously due to the high share of foreign currency-denominated debt in total debts.
During the previous crises, short-term capital dominated the inflows during the boom phase. Once these countries experienced declining trends and potential currency devaluation, foreign investors and creditors tried to protect the value of their investments by a swift sale of their portfolios and conversion of the resulting proceeds to a foreign currency. This inflicted even more foreign exchange market pressure and created a vicious circle that did not end until domestic currencies were devalued severely. Growth of foreign debts in those cases, reflected a more a steep decline of output in terms of US dollars than a continuing trend of debt increase.

In the current crisis, private credit flows, i.e. cross-border long-term lending to banks and private non-financial enterprises dominated the capital inflows in the run up to the crisis. The EU perspective provided an assurance to the creditors that their credits are relatively sure while at the same time they achieved large profits from their investment in Eastern Europe. Seemingly stable currencies and large foreign exchange reserves created the illusion that these countries had grown out of their vulnerabilities. Despite the much larger stock of foreign debts and the current account deficits compared to the previous sudden stops, which were usually considered to be among the best indicators of a looming currency crisis, creditors kept providing credits to the East European countries without hesitation. Notwithstanding the impressive policy improvements compared to the countries that had undergone similar crises in the past, notably bank supervision and foreign exchange reserve accumulation, once
the capital stopped flowing in, the vulnerabilities emerged. Ailing creditor banks desperately pulled out liquidity from the region undermining the local banking and real sectors. During the early phase of the crisis banks throughout Western Europe were on the verge of a large scale systemic bankruptcy. One thing the banking sectors in developed countries could not sustain was a banking crisis in their neighborhood. Therefore they voluntarily agreed to postpone the collection of the maturing credits and to roll them over. They also agreed to refrain from profit repatriation in order to strengthen their local subsidiaries in Eastern Europe. As expected, both sides benefited from this arrangement.

Figure 55. Net Private Credit Flows Relative to Gross Foreign Debt, Current and Previous Financial Crises

As a result, the net private capital inflows reversed, but in a moderate fashion compared to the previous crises (Figure 55). The final result is that the private capital outflow was short-lived and it did not exhaust the foreign exchange reserves in any of the countries as it had in the past. Consistently, no country experienced exchange rate overshooting or massive bankruptcies.

The rapid output growth and income convergence before the current crisis in Eastern Europe were facilitated by large credit growth, as in the case of countries which previously suffered from sudden liquidity contraction (Figure 56). Such credit growth fed the final consumption and invest-
ments above sustainable levels, and spilled-over into large trade deficits. On the other side, given the inadequate level of domestic savings, credit growth was increasingly dependent on foreign borrowings. On the basis of the ensuing inflow of foreign exchange, the exchange rates remained stable for a long period of time. Against the backdrop of the increasing money supply, inflation surged and forced the monetary authorities to pursue a tight monetary stance with high interest rates. This created a self-reinforcing vicious circle that resulted in even more capital inflows. It is interesting to note that the credit boom was more pronounced in the run-up to the current crisis than in previous cases, probably reflecting deeper financial integration, the introduction of sufficient credit supply, larger output growth rates and current account deficits, which reinforced the credit demand. Once the capital inflows suddenly stopped, the banks could no longer continue with their credit expansion. However, the Vienna Initiative and other measures implemented by the national and international authorities, such as subsidized lending and liquidity injections, in the case of the current crisis, eased the credit crunch somewhat, making it less severe relative to the previous crisis.

Figure 56. Domestic Credit to Private Sector Relative to GDP, Current and Previous Financial Crises

Notes: For past sudden stop crises, data on domestic credit to private sector available only for Argentina, South Korea and the Philippines; data refers to average values. Source: Authors’ calculations based on International Financial Statistics.

Aside from that, one of the main positive outcomes from the current crisis is that the massive bank bankruptcies that marked the previous crises were avoided, owing to the contained currency deprecation and capi-
tal outflows, as well as significantly better capital adequacy management by banks, guided and supervised by the supervisors. Given how deeply the level of exports fell, this partially explains why output decline was no deeper than it is.

The nominal exchange rates, in the case of floating exchange rates, started depreciating once the capital inflows reversed following the Lehman shock in September 2008. The capital outflows were caused by the liquidity problems of parent banks from Western Europe and the U.S., which pulled out liquidity from their East European subsidiaries. Moreover, in quite a few countries, that have a history of high inflation episodes, blocked savings accounts and other kinds of poor financial sector track record, households rushed to withdraw their savings (Hungary, Ukraine and Latvia in the case of one bank), which were predominantly deposited in foreign currencies. This caused strains in local foreign exchange markets, drained the foreign exchange reserves from commercial banks and depreciated floating currencies. In response, central banks intervened heavily in order to stem the potential overshooting. This was made possible because the ECB and other central banks in the EU decisively injected liquidity into their own financial sectors, thereby stemming the liquidity drainage from the East European banks. Finally, the IMF and the EU promptly arranged several arrangements with the most affected countries (Ukraine, Hungary, Latvia) and, by providing sufficient funds to make up for the emerging capital outflows and deteriorating fiscal balances, facilitated escape from unnecessary austerity requirements that made the whole process more expedient and helped to avoid aggravation of the financial problems. All this helped to ease the foreign exchange market tensions and the depreciation trend abated by the end of the year.

On the other hand, in most of the previous sudden stop crises, policy interventions were inappropriate, inefficient and slow. In a word, the international assistance was burdened by excessive austerity that aggravated the problems. The maturity structure and the ratio of reserves to short-term debts were far less favorable than in the current crisis (IMF 2009l). This resulted in much larger capital outflows in the past that caused severe currency devaluations, given that in most cases, the currencies were pegged to the dollar (Figure 57).

As we mentioned before, aside from the timely and properly designed financial assistance, from the EU, the international financial institutions and the IMF, without the unnecessary austerity, there is another equally important factor why exchange rate adjustments were milder in the current crisis. This factor is the Vienna Initiative, which effectively stemmed
the capital outflows (Berglöf et al. 2009). Furthermore, the capacity for speculative attacks on the regional currencies was reduced, given the poor financial condition of hedge funds and speculators from developed countries. This helped to keep the foreign exchange market pressures at a lower level than in the previous crises (IMF 2009).

Figure 57. Nominal Exchange Rate Change, Current and Previous Financial Crises

Notes: Increase denotes depreciation; for the current crisis, only floating currencies included because there were no devaluations of pegged currencies; data in the figure refers to the median values.
Source: Authors’ calculations based on International Financial Statistics.

An interesting finding about the current crisis is the obvious “fear of floating” that induced many countries to ask for the IMF and EU assistance quickly. The cause of this “fear” were large rates of credit euroization, which threatened to cause unsustainable surges of debt service for real sectors, especially enterprises producing non-tradable goods. Even exporting companies would have been hurt given the subdued export demand and diminished sales. In such circumstances, the authorities were forced to contain the damage by sticking to their pegs or limiting the depreciation of the floating currencies by intervening heavily and augmenting their foreign exchange reserves. Only the Czech Republic, which managed to keep the euroization at very low levels, experienced no such “fear” and allowed its currency to depreciate.

In line with nominal exchange rates, the real exchange rates also suffered relatively mild depreciations and only in the case of floating currencies. Moreover, pegged currencies continued to exhibit the real appreciation driven by a positive inflation differential relative to their trading
partners with floating currencies and the euro. This is in stark contrast with the previous crises when the steep nominal devaluations caused large real foreign exchange rate depreciations (Figure 58). This finding confirms that of the IMF researchers (IMF 2009I). Such a development of the real exchange rate is probably not sufficient to improve competitiveness, which deteriorated in the years preceding the crisis due to the large inflation rates coupled with the stable or even nominally appreciating exchange rates. As noted in the abovementioned IMF paper, this might call for an additional real depreciation once the export demand increases, if countries in Eastern Europe want to take back their export market shares from other competing countries.

Figure 58. Real Effective Exchange Rate, Current and Previous Financial Crises

![Graph showing real effective exchange rate index for previous crises and current crisis with floating and pegged exchange rates.](image)

Notes: Increase denotes appreciation; for the past crises, data available for Argentina (from 1995), Brazil (from 1995), Ecuador (from 1995), Indonesia (from 1995), Korea (from 1992), Mexico (from 1994), Philippines (from 1992), Russia (from 1995), Thailand (from 1995) and Turkey (from 1995); data in the figure refers to the median values.

Sources: Authors’ calculations based on International Financial Statistics and World Bank – World Development Indicators (WDI database).

The large positive output gap experienced in the current and the previous crises, facilitated low budget deficits (Figure 59) and even public debt reduction in many cases. Strong domestic demand and growing imports increased general government revenues by increasing VAT revenues and customs duties, more so in the case of the current crisis due to the larger imports and household consumption than before. Nevertheless, policy makers in both cases ran pro-cyclical policies seduced by the belief that the capital inflows would never dry-up, as described by the liquidity
model of capital flows.\textsuperscript{206} This resulted in severe reversals once the crisis hit, and large structural fiscal deficits emerged (IMF 2009l), with the notable exception of several countries, which did manage to build strong fiscal reserves and pursue stronger counter-cyclical fiscal policies, like Bulgaria, Estonia or even the Ukraine. Nevertheless, both policy makers and the IMF, in the case of program countries, well understood that in an environment of sharply reduced global demand, countries in Eastern Europe would experience a disorderly demand adjustment if they pursued strong fiscal improvement as was the case in the past. Therefore, even those countries that ran considerable fiscal deficits decided to leave their automatic stabilizers to work, pursuing only modest spending cuts (IMF 2009l).

![Figure 59. General Government Balance Relative to GDP, Current and Previous Financial Crises](image)

What made all this rapid output growth possible, along with wide current account deficits but steady credit inflows, is the financial integration of the countries in Eastern Europe with their developed counterparts in Western Europe. The income increase was coupled with larger current account deficits that were financed by increased borrowings from richer nations. The findings from our analysis presented in this section concur with the findings of Reinhart and Reinhart (2008). Developing countries in Eastern Europe exhibited larger output growth rates at the expense of the larger current account deficits and the growing foreign debts, compared to other developing countries that suffered sudden stop crises in the

\textsuperscript{206} This pattern is confirmed by Reinhart and Reinhart (2008).
past. We compared the level of financial integration between these two groups and it turned out that it is significantly higher for the East European countries (Figure 60).

![Figure 60. Financial Integration Relative to GDP, Current and Previous Financial Crises](image)

Notes: For the past crises, data available for Argentina (from 1996), Ecuador (from 1993), Korea (up to 1993), Russia (from 1995), Turkey (from 2000) and Uruguay (from 2000); for the current crisis data available up to 2008; data in the figure refers to the average values.

Sources: Authors’ calculations based on International Financial Statistics and World Bank – World Development Indicators (WDI database).

In summary, we can conclude that developing countries in Eastern Europe, even though much more vulnerable by previous standards, experienced a milder crisis compared to other developing countries that experienced capital inflow sudden stop crises in the past. Given that the global environment is much worse now than it was in previous sudden stop crises, such a conclusion is even more appealing. The impact of the current crisis is reflected in less damaging exchange rate depreciations, the absence of pegged currency devaluations, limited capital outflows and foreign exchange reserve losses and, finally, orderly current account adjustment. On the other side, one should bear in mind that the output growth in the years leading up to the crisis was significantly larger than in the past. Finally, once the crisis hit, the West European policymakers and banking groups, in their own best interest, helped developing counterparts in Eastern Europe to manage the crisis, which is in stark contrast to previous experience. The reason behind this is the deep financial inte-

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207 Apart from Argentina.
gration that caused the vulnerabilities to climb to a very high level but also enabled rapid income convergence. Nevertheless, one should also note that the momentum in developed countries was such that they were practically forced to bailout the East European countries and their own bank subsidiaries since the high level of financial integration, which reflects the stock of foreign debt of the East European countries, makes them very vulnerable to sudden stops. One can conclude that in a different situation, in which developed countries did not have such a strong incentive to provide large-scale and unprecedented financial assistance to developing countries, it would lead to a less orderly adjustment and probably a full-blown twin crises, as was the case in the past.
Conclusion

Accumulated imbalances at the global level led to the latest recession that would have had unprecedented consequences if national governments and international financial institutions had not intervened on a massive scale. However, the sources of the problem have not been removed. World politicians have only dealt with the consequences, or in other words, they have put out a fire, but the embers are still smoldering. Developed economies experienced a serious blow, while developing countries are struggling to stay afloat. As Keynes insists, we do not know what the future holds, but we certainly do know that the prospects of the world economy are grim if major policy changes do not take place. In order to move in the right direction, the mainstream economic paradigm must be rejected and replaced with theoretical approaches more concerned with relevance than with elegance. As our study has shown, the theoretical approaches of Keynes and Minsky are a better guide to reality and therefore should be embraced and developed further since policy measures are grounded in theories accepted as valid.

As reality has demonstrated, we live in a world of complex financial ties which continually strive towards instability. Self-regulated markets are not an optimal tool for rational and productive allocation of scant resources, and in the event of instability, mechanisms that will restore equilibrium, at least in the long run, will not be activated automatically. The mainstream recommendation of zealously enforced market-led policies as a universal prescription for macroeconomic stability and an essential tool in amortization of exogenous shocks has proved wrong. Foreign capital does not respond to properly implemented macroeconomic market-oriented policies, i.e. improved economic conditions do not precede investment inflows as we have been taught to believe. In truth, a better approximation of reality is offered by the liquidity model, which emphasizes the
source and not the destination. Namely, as real world experience suggests, liquidity expansion in rich countries launches massive capital movements towards the developing world. Therefore, movements of capital towards developing countries are exogenous, i.e. the actions of developing countries do not influence the movements of international capital, which are the result of liquidity changes in the developed world.

What we have actually learned from the latest global credit crunch, once again, is that, contrary to the conventional wisdom, free decentralized markets, if let alone, inherently, i.e. endogenously generate instability. According to Keynes and Minsky, boom-bust episodes are a natural product of unregulated free markets. The future is uncertain, money is not neutral and the financial sector does not dance to the rhythm played by the real sector. On the contrary, the financial sector, in contrast to textbook theories, lives its own life, thus bringing considerable instability into the system. Disappointed expectations overloaded by debt lead in no time to panic and debt-deflation if timely and coordinated Big Government and Big Bank intervention does not take place.

The Keynes-Minsky theory of speculative markets and financial instability, although devised to study the economic behavior of closed advanced capitalistic economies, is, with certain amendments, also applicable to the case of open emerging markets, as was shown in the cases of the Mexican, Asian and late Eastern European financial crisis. In all three cases, a period of financial robustness and optimism led to fragile finance and instability. In the case of the Mexican and Asian crisis, austerity measures imposed by the IMF in the aftermath of the crisis resulted, as Keynes and Minsky would predict, in further deterioration of macroeconomic stability with long-lasting negative effects on the host economies. On the contrary, amid the global credit crunch, in the case of Eastern Europe it seems that the governments of developed nations and international financial institutions learned this lesson or were simply too frightened for their own well-being and massively intervened in order to avoid the potentially devastating consequences of debt-deflation. Thus, despite being more financially vulnerable, the EEE exhibited a milder crisis compared to other developing countries that experienced capital inflow sudden stop crises in the past. So far, a global debt deflation episode has been prevented. However, as history teaches us, bailing-out economic units on the verge of bankruptcy, if not followed by major regulatory changes will bring forth only misery. In the future, crises will be more frequent and more severe. Ordinary people will suffer the most. So, what should we do about it?

The first thing to do is to identify the causes of global financial imbalances. Davidson (1999, 2009) reminds us that the theoretical implications of Keynes’ *General theory of employment interest and money* are just as
applicable to an international context. Keynes argued that in a situation when governments are not willing to increase domestic employment and income through expansive fiscal spending for fear of inflation, the only alternatives left are to decrease interest rates or to engage in an aggressive export-led strategy relying on reducing local nominal wages and/or devaluing domestic currency.

However, in a laissez-faire context, independent management of interest rate policy is not achievable, since a decrease in local interest rates will result in capital outflow towards countries with higher interest rates, leading towards equalization of interest rates at the global level whereby the highest interest rate country calls the tune: “Indeed, the transformation of society, which I preferably envisage, may require a reduction in the rate of interest towards vanishing point within the next thirty years. But under a system by which the rate of interest finds a uniform level, after allowing for risk and the like, throughout the world under the operation of normal financial forces, this is most unlikely to occur.” (Keynes 1933). On the other hand, an export-led strategy grounded in achieving cost advantage over competing countries is a double-edged sword. As we saw, the reduction of local nominal wages will tend to decrease the living standards of local inhabitants since, although there might be some increase in employment due to the improved trade balance, on average, workers real wages will be lower due to worsened terms of trade: “If we are dealing with an unclosed system, and the reduction of money-wages is a reduction relatively to money-wages abroad when both are reduced to a common unit, it is evident that the change will be favourable to investment, since it will tend to increase the balance of trade. ...In the case of an unclosed system, a reduction of money-wages, though it increases the favourable balance of trade, is likely to worsen the terms of trade. Thus there will be a reduction in real incomes, except in the case of the newly employed, which may tend to increase the propensity to consume.” (Keynes 1936, pp. 291, 292). Meanwhile, as Davidson (2009) notices, strong trade unions make this strategy hard to implement. The only option left is to devalue the domestic currency, making imports more expensive in local currency terms and exports cheaper in foreign currency terms. But in this way, more competitive countries export stagnation and unemployment to their trading partners since now their exports fall and domestic import-competing producers lose part of the domestic market to the benefit of exporters. One country’s external surplus is another’s external deficit and the sustainability of external deficits limits the external surpluses of exporting countries.208

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208 In his speech to the 18th Congress of the Communist Party of China at the beginning of November 2012, Chinese President Hu Jintao said that China had to find a new model of economic growth since the current model based on exports and invest-
During the Breton Woods era of tamed private capital flows, sustainability of deficits was determined by the amount of international reserves. An unfavourable trade balance leads to spending international reserves up to the level of sustainability of the foreign exchange rate. If a country prefers to sustain the exchange rate then it is forced to implement austerity measures aiming at reducing demand and employment in order to constrain imports and income, or this will be done by the IMF if a conditional-support loan is granted. Furthermore, in the case of severe and persistent imbalances, a deficit country may devalue the exchange rate (Kregel 2008). Therefore, the onus of adjustment is on deficit country. In this kind of arrangement, surplus countries are not obliged to increase demand for the goods, services and assets of deficit countries, i.e. they are allowed to hoard international liquid assets. Still, surplus countries are not entirely protected since the deflationary pressures that produce deficit countries during the process of adjustment spread to surplus countries through contraction in export demand, thus creating a stagnating global economic environment.

In time, along with the oil shocks of the 1970s and the parallel flourishing of the Eurodollar market mainly used to recycle petrodollars, private capital flows emerged again. Financing external deficits by resort to private capital opened the possibility of avoiding IMF imposed adjustment of domestic absorption and the foreign exchange rate. In this way, the IMF lost control over management of imbalances, since private capital enabled both the financing of large and persistent external deficits but also, paradoxically, the appreciation of the nominal and real exchange rate of deficit country’s currency. As Kregel (2008) argues, this does not mean that there are no limits to the accumulation of deficits anymore, only that there are no more institutional or economic limits imposed on individual countries, which is reflected in more globally integrated markets. In this new situation, an external deficit is sustainable only if the interest rate is lower than the rate of increase in new debt, which is the definition of a Ponzi scheme, paying out interest rate obligations from new deposits. However, no Ponzi scheme ever succeeded, since with the increase in the stock of net debt lender’s risk also increases and thus the interest rate. Such schemes collapse through financial crisis and capital reversals. Therefore, nowadays,

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209 For more details on Keynes’ proposition of the Currency Union, international institution that would have imposed negotiated symmetric adjustment mechanism see Crotty (1983) and Davidson (1999, 2009).
the adjustment of external imbalances operates through financial crises (Ibid). So the question is what, in a global economic system thus ordered, can an emerging economy do in order to prevent or mitigate crises?

In the first place, sustainable economic growth is no doubt the most efficient means to offset future external shocks in the long run. In the world payment system constituted as it is now, the economic growth of small economies is sustainable if it is based on expansion of exports, income, employment and, at the same time, steady and decreasing external debt and, on average, continuous generation of trade and current account surpluses, i.e. domestic savings. Keynes doubts that the classical model of comparative advantages can lead the process of building a domestic productive base in right direction: “But I am not persuaded that the economic advantages of the international division of labor today are at all comparable with what they were. I must not be understood to carry my argument beyond a certain point. A considerable degree of international specialization is necessary in a rational world in all cases where it is dictated by wide differences of climate, natural resources, native aptitudes, level of culture and density of population. But over an increasingly wide range of industrial products, and perhaps of agricultural products also, I have become doubtful whether the economic loss of national self-sufficiency is great enough to outweigh the other advantages of gradually bringing the product and the consumer within the ambit of the same national, economic, and financial organization. Experience accumulates to prove that most modem processes of mass production can be performed in most countries and climates with almost equal efficiency.” (Keynes 1933). Akin to Keynes, in his insightful book, Reinert (2006) recommends that developing countries should reject the classical model of comparative advantages, of specializing in the production of products in which they are relatively less cost inefficient, and to specialize in industries producing goods and services with high-added value, which generate economies of scale, technological innovation and synergies. Economies of scale emerge in industries with high fixed costs where entrance barriers are high. On the other hand, specialization in production of goods which are subject to the law of diminishing returns leads to poverty and perpetual debt slavery (agriculture, mining, fishing...). Industries subject to dynamic technological innovation lead to economies of scale and thus accumulation of new knowledge, higher income and employment. Synergies refer to the spilling-over of positive effects of economies of scale, technological innovation and the accumulation of new knowledge to a wider community, thereby stimulating employment, income and technological advances in complementing and competing industries. No less important, a trade and industrial policy thus oriented must be supported by an appropriate fiscal and monetary
policy, development of infrastructure, education and science, rule of law and law enforcement, level of corruption, etc.

However, what our analysis has shown is that a strong economy and macroeconomic fundamentals are certainly more important in determining the future long-term development path of an economy than is the debt structure. Still, recent financial crises in emerging markets erupted not because of weak macroeconomic fundamentals or political uncertainty but because of persistent and severe external deficits, i.e. excessive indebtedness and unfavourable structure of the debt (Pettis 2003). As Keynes put it, the long run “...is a misleading guide to current affairs. In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean is flat again.” (Keynes 1923, p. 65). Excessive indebtedness and unstable and unfavourable debt structures have the potential to undermine economic fundamentals in the event of a negative shock (local currency depreciation or increase in real interest rates). In Minsky’s opinion it is at exactly this point that the key difference between Keynes’ and neoclassical economic theory lies: “In The General Theory the speculative nature of asset holding and financing choices dominates production-function characteristics in determining investment output. A fundamental theme of The General Theory is that the asset-valuation process is a proximate determinant of investment; Keynes argues that assets, in addition to having characteristics of annuities, may also provide protection by being salable in the event that an uninsurable unfavorable contingency occurs. This marks a fundamental shift of perspective and apparatus from those of the neoclassical view of investment.” (Minsky 1975, p. 9). In other words, robust economic fundamentals and credible macroeconomic policy are efficient means to improve the balance sheet asset side in the long run. On the other hand, if the country faces a risk of bankruptcy in the short run, long run considerations are of secondary importance. When the crisis hits, what is important is to stay afloat in the near future. If investors dread default, falling asset prices lead to a fall in investments and an increase in interest rates and credit spreads which, in the case of an inverted capital structure, end in collapse of investment and economic activity. As Pettis argues: “In the end, an optimal capital structure is not enough to ensure that an economically backward country will develop rapidly. The wrong

210 Similarly, the IMF austerity measures imposed in the midst of the crisis aiming at restoring foreign investors confidence have the opposite effect from that intended, since policies constructed for improving the asset side of the balance sheet in the long-run have a strong, far-reaching negative effect on the liability side of the balance sheet in the short run (Pettis 2003).
capital structure, however will guarantee that, no matter what policy mix, its economy will break before it can achieve its goals.” (Pettis 2001a, p. 199). It is not enough that the engine of the automobile works (macro-economic fundamentals), but also that its running gear is sound (the debt structure). (Pettis 2003).

Therefore, it is of crucial importance to control the increase in external debt in the first place and in the second to minimize the share of short-term debt or floating-rate debt and debt denominated in hard currency in the total debt as far as possible. There is no universal recommendation for the level of sustainable sovereign indebtedness. It depends on the earning power of the economy which is determined by its economic diversity (economies of scale, technological innovations, synergies) and the sensitivity of its economy to global business cycles. More productive, efficient industrialized economies with developed labour division have greater potential for leverage than less diversified economies specialized in low-added value products, sensitive to changes in the global business climate. What also matters is the debt structure. An inverted capital structure amplifies the intensity of external shock so that debt obligations balloon in the short run, whereas, in parallel, due to the dramatic increase in uncertainty, the revenues of business units enter free fall. If local private business and government debt is short-term debt denominated in foreign or local currency, local currency depreciation and increase in interest rates will sharply increase the burden of debt in the short run and local business units will, in an attempt to meet their debt obligations, push strongly to exchange revenues and proceeds by selling assets for foreign currency thereby causing further decreases in the price of assets and the value of local currency. This situation leads indebted units into bankruptcy in the short run. On the other hand, in the event of a correlated capital structure, i.e. medium and long-term debt, denominated in local currency, sharp depreciations of the foreign exchange rate and ensuing inflation work to the benefit of the indebted unit, since inflation simultaneously erodes the burden of debt and nominally, in local currency terms, increases the revenues of non-tradable and tradable sectors. No less important, a weaker currency increases the competitiveness of the tradable sector in international markets. Also, a sharp rise in interest rates will not increase the debt burden, since interest rates in long-term contracts are locked in for several years (Ibid).

In this sense, one of the options for minimizing the negative impacts of external shocks can be a return to capital controls. Keynes himself em-

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211 The country is excessively indebted when its debt trades at high credit spread which hampers new investments and the potential for rising new debt (Ibid).
phrased the potential adverse affects of the free mobility of capital between nations: “Advisable domestic policies might often be easier to compass, if the phenomenon known as, “the flight of capital” could be ruled out. ... Thus for a complexity of reasons, which I cannot elaborate in this place, economic internationalism embracing the free movement of capital and of loanable funds as well as of traded goods may condemn my own country for a generation to come to a much lower degree of material prosperity than could be attained under a different system.” (Keynes 1933).

Capital controls put in place during the 1960s successfully prevented massive inflows or outflows of short-term foreign currency investments. They might prove to be an efficient policy option in fighting liquidity mismatch – financing of local assets with hot money.212 213 Also, capital controls are capable of preventing financial contagion which is the consequence of mechanically implementing trading strategies of buying in rising and selling in declining markets.214

Measures of capital controls include reserve requirements on banks’ liabilities, the Tobin tax such as the taxes on short-term foreign exchange operations that were recently implemented by Brazil and Taiwan, and the outright prohibition or limitation of capital flows.215 Recently, even the IMF, known as a fierce enemy of capital controls in the past, recognized that developing countries have to stand ready and use all available tools and even keep an open mind concerning capital controls, in order to stem unproductive and disruptive capital inflows, which exacerbate boom and bust cycles (Belka 2010). Kalantzis (2004) believes that the productivity gains stemming from capital inflows are the most important predictor of a future balance of payment crisis in an economy suffering from a surge in capital inflows. This implies that policy makers should assess most carefully the productivity gains to be had from any investments, especially in the non-tradable sector, and approve or support the foreign financed investment only if the productivity gain is large.

Necessary measures to reduce the credit denominated in foreign currency encompass long-standing and credible long-term policies such as the preference of public borrowing in local currencies, encouragement of

212 Hot money flows across national boundaries in search for speculative gains, precautionary purposes, shield from tax collectors and laundering illegal earnings (Davidson 1999).

213 On the other hand, Edwards (2004) finds very little proof of its efficacy since agents find ways to circumvent the restrictions, while the authorities might become too confident about restrictions and implement riskier policies than justified.

214 Margin buying, portfolio insurance, derivative contracts (Pettis 2003).

215 For the opposite opinion on potential effectiveness of the Tobin tax see Davidson (1999).
foreign owned banks to borrow and lend in the local currency, deepening of the local capital market with the focus on bonds and strict bank supervision regarding foreign currency exposure and foreign currency lending to the non-tradable sector.216

It is also desirable to encourage large multinational corporations and international financial institutions to borrow or issue bonds denominated in emerging and developing market currencies in order to enlarge international holdings of such currencies. Borrowings or bond issues of this kind are not unheard off, and do occur from time to time.

Stronger banking sectors, which can be achieved through stronger bank supervision, would certainly enable policy makers to conduct more aggressive measures when speculations against the local currency arise. Tight bank supervision is very important before the onset of crisis, since it will help reduce the vulnerability of the country in terms of risk management, balance sheet mismatches and high levels of liability euroization and excessive credit growth. High capital adequacy requirements, high risk weights for foreign currency denominated loans, a high provisioning requirement and debt-to-service ratios are probably the best choices for building a relatively safe and sound banking system.

A high risk-weight for foreign currency denominated loans especially to unhedged corporate and household clients and those from the non-tradable sectors seems to be insufficient, on their own, to mitigate the vulnerability of a country. East European banks did obey this requirement, but that does not seem to have slowed down or discouraged them from providing such loans. Most likely, this vulnerability has to be treated with much stricter measures such as very high provisioning requirements up-front or straightforward limitation of such loans coupled with increased transparency in reporting these balance sheet mismatches and currency exposures. Co-operation and co-ordination with home country supervisors in the case of foreign banks operating in developing countries could bring some benefits. The idea is to impose strict standards on direct cross-border lending in terms of the foreign exchange risk, which can only be

216 However, some authors claim that credible policies are not sufficient. Eichengreen et al. (2003) describe the phenomenon of “original sin”, i.e. the inability of emerging and developing countries, but also developed but small economies to borrow in their own currency either on domestic or international financial markets. The main reason why they cannot borrow in their own currency, at least in the sufficiently large amounts and with long maturities, is their small economic size, which fundamentally diminishes their attractiveness as a means of diversification. By comparing countries like South Korea and Chile with Indonesia or Venezuela, these authors find that credible and sustainable fiscal and monetary policies, the quality of institutions and the rule of law, have little, if any explanatory power of this phenomenon.
enforced by the home country supervisors. The benefit would be lower levels of foreign debt, while the cost would imply limited financing opportunities and higher domestic interest rates.

Improvements in transparency and credible financial reporting would expose currency mismatches in the private sector’s balance sheets. Greater transparency of the developing economy in question would certainly lead to much more cautious investments and capital inflows during the good times, and therefore, much less capital flight when the economy experiences a recession.

Emergency credit lines or foreign exchange swap facilities should be established between central banks or large commercial banks in order to scare off speculators and assure investors that a developing country facing difficulties has substantial resources, which can be drawn in order to defend the currency. Probably, the mere existence of these lines would suffice to avert any speculative attack, as in the case of Poland and its unused flexible credit line arranged with the IMF.

Accumulation of foreign exchange reserves and their maintenance at the optimal level is an additional (but not sufficient) tool, which might discourage weaker and probably milder speculative attacks. An additional benefit from a large stock of foreign exchange reserves is the smoothening of sudden stops and capital inflow reversals. The cost of holding a large stock of foreign exchange reserves implies large opportunity costs from unrealized investments. There are no strict rules on how high reserves should be, but two most often used rules of thumb are coverage of short-term maturing debt and coverage of monetary aggregate M₂ (Calvo 2006).

Reliance on equity and direct investments instead of borrowing from abroad is one of the most important tools for policy makers in a developing country, provided they want to secure sustainable capital movements. In this case, the probability of a default is much lower, as investors accept their share of the burden in bearing whatever problems the economy is facing. Since dividends certainly do depend on the profitability of the investments, unlike interest and principle payments, capital outflows during the economic downturn will be much lower than in the case of foreign borrowings. The best reference for investors to engage in foreign direct investments and purchasing of stocks is a stable and growing economy with low interest rates and consequently high present value of corporate profits and a strong and stable currency.
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c) Кејнзијанска економија

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