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An Integration of Minsky's Theory in the Explanation of Financial Enlargement and Instability in International Economy. An Assessment of the Relevance of the Theory: A Statistical Method for Economies in Transition.

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Η ενσωμάτωση της θεωρίας του Minsky στην εξήγηση της χρηματοπιστωτικής μεγέθυνσης και αστάθειας στην διεθνή οικονομία. Αξιολόγηση της Συνάφειας της Θεωρίας: Μια Στατιστική Μέθοδος για τις Οικονομίες σε Μετάβαση.

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Abstract

This thesis deals with the financial instability under the context of Minsky's theory. The globalized financial system has become an issue with enhanced noteworthiness. The amplification of the financial sector at international level and the high degree of financial integration have rendered the debate of financial instability solemnly significant. The world economy has become unstable and vulnerable to the emergence of unanticipated financial events. The goal of the thesis is to establish Minsky's relevance in the applied economic performance by observing financial instability and providing with unambiguous evidence. Thus, it is structured on subsequent chapters in order to reach to the final contribution.

Firstly, it outlines the post-Keynesian approach as an alternative theory to better comprehend the financial sector and its implications on the real economy. In addition, the development of the concept of the financial cycle is rudimentary, inasmuch they undermine the desired financial stability. They imply fluctuations in the economic performance, booms and busts, where inevitably instability will emerge in a phase of the cycle. Considering ergo their importance of the financial cycles, prudential policies need to be adopted to abate their sway in the stability of financial system and in real economy.

Hence, the financial instability in relation with the international financial system and the crises are introduced. The causes of financial crises had been much useful to identify the relative phenomena that encourage their development. The aim is to indicate that the perils of financial crises for the global economy must be perceptible and considerable beforehand, in order to be successfully confronted.

We mainly thence emphasize on the insights of Hyman Minsky into the global financial crisis. He suggested that the flaws of the current dominant financial status would eventually entail in instability and probably lead to crises with contagion effects at international level. Even though Minsky's theory had not been fully accepted when it was first published, nevertheless, the financial crisis of 2008 consists of a concrete example, for validating his theory. The endogenous financial instability as portrayed by Minsky enables us to realize the roots, even in stability periods.

Furthermore, we incorporate Minsky's financial theory to identify the resemblances of the theory with national financial systems and to reveal the weaknesses and vulnerabilities of their fiscal and financial stance. The pursuit of a rapid accelerating economic growth based solely on the financialisation of the economy does not constitute a panacea policy for the economy. By contrast, there is also the other side of the coin.

Most economies are currently functioning in an interdependent globalized financial system, and consequently, the relevance of Minsky could be examined under the context of an international economy. The size of the financial enlargement with potential threats of

instability is defined by the volume and accessibility in credit. Following the bibliography, we acknowledged that the large financial depth could eventually entail in financial instability. Certainly, there have been some contradictions on whether financial deepening could lead to instability, nevertheless, the distinct literature suggestions, the history of financial crises, and particularly the recent subprime crisis of 2008, have all widely revealed that tendency.

Therefore, we aim at identifying the factors with the greatest impact on the financial enlargement. For this purpose, we focus on statistical analysis with a relative model. First, we provide with empirical evidence of the traits of financial instability, also integrating the financial crisis in 2008. We investigate the macroeconomic determinants of financial depth by using annual time series data for a specific group of countries from the Balkan and the Eastern European region. All selected countries intentionally belong to a homogeneous group of economies in transition. Hence, we construct a model based on panel data over a period from 1990 to 2020. The scope is to identify the factors that stimulate the credit as a key variable of financial enlargement.

Finally, some remedy polices are suggested and all conclusions are provided. Although the international financial system seems phenomenally to operate well, notwithstanding, financial instability could already coexist, as Minsky implied, with no apparent visibility. Therefore, an early detection of this instability mainly via the observation of specific signs could serve as an indication for precautionary measures to prevent an economy from being susceptible to financial distortions. The produced evidence suggests that Minsky is still relevant and according to our findings, current account balances could stimulate financial stability.

Περίληψη

Η παρούσα διατριβή πραγματεύεται την χρηματοοικονομική αστάθεια στο πλαίσιο της θεωρίας του Minsky. Το παγκοσμιοποιημένο χρηματοοικονομικό σύστημα αποτελεί ζήτημα αξιοσημείωτης προσοχής. Η ενίσχυση του χρηματοοικονομικού τομέα σε διεθνές επίπεδο και ο υψηλός βαθμός χρηματοοικονομικής ολοκλήρωσης έχουν καταστήσει την έννοια της χρηματοοικονομικής αστάθειας ιδιαιτέρως σημαντική. Η παγκόσμια οικονομία έχει γίνει ασταθής και ευάλωτη στην εμφάνιση απρόβλεπτων χρηματοπιστωτικών γεγονότων. Ο στόχος της διατριβής είναι η εμπειρική διαπίστωση της συνάφειας της θεωρίας του Minsky, παρατηρώντας την χρηματοοικονομική αστάθεια και παρέχοντας σχετικά στοιχεία. Η διατριβή δομείται στα ακόλουθα κεφάλαια έως την τελική συνεισφορά.

Πρώτον, περιγράφει τη μετακεϋνσιανή προσέγγιση ως εναλλακτική θεωρία για τη κατανόηση του χρηματοοικονομικού τομέα και των επιπτώσεων στην πραγματική οικονομία. Επιπλέον, η ανάπτυξη της έννοιας του χρηματοοικονομικού κύκλου είναι σημαντική καθώς δύνανται να υπονομεύσουν την επιθυμητή χρηματοοικονομική σταθερότητα. Συνεπάγονται διακυμάνσεις στις οικονομικές επιδόσεις (μεγέθυνση-συρρίκνωση), όπου αναπόφευκτα θα εμφανιστεί αστάθεια κατά τη διάρκεια του κύκλου. Λαμβάνοντας υπόψη τη σημασία τους, θα πρέπει να υιοθετηθούν προληπτικές πολιτικές για να μειώσουν την επιρροή τους στη σταθερότητα του χρηματοοικονομικού συστήματος και στην πραγματική οικονομία.

Έπειτα αναφέρεται η σχέση της χρηματοοικονομικής αστάθειας με το διεθνές χρηματοπιστωτικό σύστημα και τις κρίσεις. Τα αίτια των οικονομικών κρίσεων μπορούν να βοηθήσουν στην κατανόηση των σχετικών φαινομένων που ενθαρρύνουν την ανάπτυξή τους. Στόχος είναι η ανάδειξη αυτών των αιτιών προκειμένου να είναι εκ των προτέρων αντιληπτά και να αντιμετωπιστούν επιτυχώς.

Ιδιαίτερη έμφαση δίνεται στη θεωρία του Hyman Minsky σχετικά με παγκόσμια χρηματοοικονομική κρίση. Πρότεινε ότι οι ατέλειες του κυριάρχου χρηματοοικονομικού συστήματος μπορεί να οδηγήσουν σε αστάθεια και πιθανώς σε κρίσεις με μεταδοτικές επιπτώσεις στο διεθνές περιβάλλον. Παρόλο που η θεωρία του Minsky δεν είχε γίνει πλήρως αποδεκτή όταν δημοσιεύτηκε, εντούτοις, η οικονομική κρίση του 2008 αποτελεί ένα συγκεκριμένο παράδειγμα, για την επικύρωση της θεωρίας του. Η ενδογενής χρηματοπιστωτική αστάθεια όπως απεικονίζεται από τον Minsky μας δίνει τη δυνατότητα να συνειδητοποιήσουμε τα αίτια, ακόμη και σε περιόδους ευφορίας και σταθερότητας.

Επιπλέον, ενσωματώνουμε την θεωρία του Minsky για να εντοπίσουμε τις ομοιότητές της με τα εθνικά χρηματοοικονομικά συστήματα και να αποκαλύψουμε τις αδυναμίες και τα τρωτά σημεία της δημοσιονομικής και χρηματοοικονομικής τους θέσης. Η επιδίωξη μιας ταχείας επιταχυνόμενης οικονομικής ανάπτυξης που βασίζεται αποκλειστικά στην

χρηματιστικοποίηση της οικονομίας δεν αποτελεί πανάκεια πολιτική για την οικονομία. Αντίθετα, υπάρχει και η άλλη όψη του νομίσματος.

Στο τρέχον περιβάλλον, οι περισσότερες οικονομίες λειτουργούν σε ένα αλληλεξαρτώμενο παγκοσμιοποιημένο χρηματοοικονομικό σύστημα και, κατά συνέπεια, η συνάφεια του Minsky θα μπορούσε να εξεταστεί στο πλαίσιο της διεθνούς οικονομίας. Το μέγεθος της χρηματοοικονομικής διεύρυνσης με πιθανές τάσεις αστάθειας καθορίζεται από τον όγκο και την προσβασιμότητα των πιστώσεων. Ακολουθώντας τη βιβλιογραφία, αναγνωρίζουμε ότι η χρηματοοικονομική μεγέθυνση θα μπορούσε τελικά να οδηγήσει σε χρηματοπιστωτική αστάθεια. Βεβαίως, υπάρχουν διαφορετικές απόψεις εάν η χρηματοοικονομική μεγέθυνση θα μπορούσε να οδηγήσει σε αστάθεια, ωστόσο, οι ξεχωριστές βιβλιογραφικές προτάσεις, η ιστορία των χρηματοπιστωτικών κρίσεων, και ιδιαίτερα η πρόσφατη παγκόσμια κρίση του 2008, αποκάλυψαν ευρέως αυτήν την τάση.

Ως εκ τούτου, στοχεύουμε στον εντοπισμό των παραγόντων με τον μεγαλύτερο αντίκτυπο στη χρηματοοικονομική διεύρυνση. Για το σκοπό αυτό πραγματοποιείται μια στατιστική ανάλυση με σχετικό υπόδειγμα. Αρχικά αναφέρονται τα χαρακτηριστικά της χρηματοοικονομικής αστάθειας, καθώς και οι επιπτώσεις που επέφερε η παγκόσμια κρίση του 2008. Διερευνώνται οι μακροοικονομικοί καθοριστικοί παράγοντες της χρηματοοικονομικής μεγέθυνσης χρησιμοποιώντας ετήσια δεδομένα για μια συγκεκριμένη ομάδα χωρών από τα Βαλκάνια και την Ανατολική Ευρώπη. Όλες οι επιλεγμένες χώρες ανήκουν στην ομοιογενή ομάδα των οικονομιών σε μετάβαση. Η ανάπτυξη του υποδείγματος βασίζεται σε δεδομένα πάνελ για την περίοδο 1990 - 2020. Σκοπός είναι η ανάδειξη των παραγόντων που συσχετίζονται με την πίστωση ως βασική μεταβλητή της χρηματοοικονομικής μεγέθυνσης συνδεόμενη με το ΑΕΠ.

Τέλος, προτείνονται ορισμένες πολιτικές αντιμετώπισης και παρέχονται τα τελικά συμπεράσματα. Αν και το διεθνές χρηματοοικονομικό σύστημα δύναται να λειτουργεί φαινομενικά ομαλώς, εντούτοις, η υφέρπουσα χρηματοοικονομική αστάθεια θα μπορούσε ήδη να συνυπάρχει, όπως αναφέρει ο Minsky. Ως εκ τούτου, η έγκαιρη ανίχνευση αυτής της αστάθειας, κυρίως μέσω της παρατήρησης συγκεκριμένων δεικτών, θα μπορούσε να χρησιμεύσει ως ένδειξη για υιοθέτηση προληπτικών μέτρων για την αποτροπή λήψης θέσεων που είναι επιρρεπής σε χρηματοοικονομικές στρεβλώσεις. Συνολικά, τα παραγόμενα θεωρητικά και εμπειρικά στοιχεία υπογραμμίζουν τη σημασία του ισοζυγίου τρεχουσών συναλλαγών για την ενίσχυση της χρηματοοικονομικής σταθερότητας, καθώς επίσης και τη καταλληλόλητα και διαχρονικότητα της θεωρίας του Minsky.

Introduction

The recent phenomena of financial distortions and crises have highlighted the insufficiency of the mainstream theory to provide adequate explanations of their causes and frequency. Alternative economic theories could complement with addable insights to the existing traditional theory to result to a more coherent and solid theory. Minsky was an economist who provided with significant insights to this direction. His theory and mainly its application and relevancy consist of the main challenge in this thesis. For this reason, the following chapters provide the structure in a most possible coherent and consistent manner.

Chapter 1 discusses the differences between neoclassical theory and post-Keynesian approach, particularly in the fields of monetary and financial sector. The latter has become a matter of serious consideration among post-Keynesians because they consider that the financial sector and real economy are inextricable intertwined. As soon as we present the main differences between theories, we proceed to an explanation of main Keynesian and Post-Keynesian contributions, regarding the monetary and financial sector within the concepts of expectations, uncertainty, speculative demand, interest, and exchange rates. Thereby, we review post-Keynesian theory in international economy, displaying its monetary targets and finally we deduct the main conclusions and questions about the relevance of the conventional theory and the post-Keynesian approach.

Chapter 2 addresses the issue of the financial cycles and their influence to the function of the economy and stability. Financial cycles have chiefly become an issue of interest among economists. Even though most research on cyclical trends in economy was associated with fluctuations in business cycles, the significance of the financial cycle has recently become more apparent, because of the dominance of the financial sector in the economy and the emergence of financial crises. Recent research implies that financial cycles are less frequent than the traditional business cycle and are related to credit and property prices. However, the existence of the financial cycles is evident and perhaps unavoidable to the economy, but what eventually matters is the extent of their fluctuations and their severe consequences during the contraction period.

Chapter 3 provides an overview of the international monetary system and the globalized economy. The global financial stability is determined in a large scale by the international monetary status that had been in force in each period. The international monetary system could be defined as a set of rules for trade, regulations, and restrictions not only in terms of trade but also in liquidity and capital flows. An international monetary system is essential since it coincides with global financial stability. The international monetary system has been evolved and modified during the last centuries. Thus, we briefly outline the gold standard and the Bretton Woods regimes.

Chapter 4 scrutinizes the issue of financial crises. We focus on the causes and implications for the world economy and financial stability. For this reason, we attempt to identify the relative phenomena that encourage the emergence of financial crises. The

amplification of the financial sector and the financial interdependences constitute the factors that are highly related to crises. The world economy has become unstable and vulnerable to the emergence of unanticipated financial events. Such events are not simply limited to a large bank default but also to the inability of multinational firms or agents to validate their debts. Thus, we mainly emphasize that the flaws of the current dominant financial status could eventually entail instability and probably lead to crises with contagion effects at international level. Therefore, the aim of the chapter is to indicate the perils of financial crises for the global economy and to detect their early roots.

Chapter 5 focuses on one of the most influential and important economists of the 20th century, H.P. Minsky. For this reason, we highlight his contribution to financial economics and his main insights, including the financial instability hypothesis, the era of money manager capitalism and its implications. Moreover, we analyze Minsky's employment and social policy proposals in relation to his money manager capitalism and the contemporary financial instability. Despite the fact that his theory became widely popular at the onset of the global financial crisis in 2008, Minsky did not receive the analogous credibility for his work at the time it was released, and thus, we wish to identify the reasons for this disregard. This chapter will facilitate the endeavor to establish Minsky's current relevance, in order to accentuate the significance of his theory in explaining the function of international financial system.

In chapter 6, we wish to extend Minsky's theory in international economy. During the last four decades, oversight and overseas activities have increased in a potentially fragile manner in relation to globally integrated financial markets. The globalization of the economy, the integration of national countries, technological progress and innovation, the enhanced leverage, all have resulted in the amplification of international financial transactions and hence to the externalization of the consequences. For this purpose, we will present some empirical relative work, briefly highlighting the main features of an open economy, to sketch the differences from a closed to an open economy.

The next two chapters provide with some empirical evidence and with the statistical model based on Minsky's theory. Chapter 7 summarizes the fiscal and financial position of European post-socialist countries prior to the Global Financial Crisis (GFC) of 2007-2009 and afterwards. It highlights the impact of the transmission of crisis and the changes that have been ensued in terms of the pattern of economic growth. For this reason, it reviews the relation of higher GDP growth rates and the deepening of financial development, a combined model that had been adopted by most countries until the outbreak of the crisis. More precisely, emphasis is given to Bulgaria, Romania, and the Baltic States because these countries had experienced the most intense effects. Furthermore, we incorporate Minsky's financial theory to identify the resemblances of the theory with their domestic financial systems and to reveal their weaknesses and vulnerabilities. The scope is to indicate that the pursuit of an economic growth based solely on financial deepening could also provoke undesired events, despite some initial exciting performance. Thus, we display relative macroeconomic data in relation with growth GDP rates ex ante and ex post the crisis. Hence, we address the issue that the advent of global financial crisis has induced the countries under examination to moderate their economic policy of credit expansion and high

indebtedness towards more balanced and steady growth pattern at the expense though of lower annual GDP rates.

Chapter 8 portrays the construction of an econometric model linked to Minsky's financial analysis. The attempt is to elude the relevance in the applied economic performance by observing financial instability under the context of Minsky's theory. Therefore, we investigate the macroeconomic determinants of financial enlargement using annual time series data for a specific group of countries. We present the related literature, from both views, those who argue the financial deepening could lead to instability and those supporting the opposite. Following persuasive literature suggestions, the history of financial crises as raised in previous chapters, we recognized beforehand the fact that the large financial depth will eventually entail in financial instability. The process of this course is given by Minsky's analysis. Therefore, we aim at identifying the factors that have the greatest impact on the financial growth. This impact is not restricted only in the positive movement but in the negative too.

In the following chapter, we briefly wish to raise awareness on remedy policies for an efficient and fair global monetary and financial system based on the previous chapters. We mainly focus on the need for regulation and intervention in the scope of a stable economy. For this purpose, we provide suggestions for a new international monetary system, the role of big government, the operation of an efficient big bank, and the significance of the introduction of an international lender of last resort. Additionally, we shed some light to the contribution of dominant economies to the stability and we emphasize on policies centering to avoid crises and financial instability.

Finally, the conclusions are provided with the final chapter. The conclusions are related to the economic theory, the dominance of the financial system and on Minsky's theory. Reform proposals are outlined, but most importantly the overall contribution of the thesis within the context of the Minsky. In addition, the significance of state current account balance is punctuated. We conclude with the view that history could uncover the actual international financial structure, even in periods where main macroeconomic figures are flourishing. However, instability could already be there with no visibility. Therefore, an early detection of this instability via the observation of specific signs could serve as an indication for precautionary measures and policies.

Chapter I

1 Post Keynesian approach to economic theory as an alternative to neoclassical

1.1 Introduction

The aim of this chapter is to provide a post-Keynesian view to economic theory as an alternative to traditional theory. Keynesian economics consists of an approach to economics derived mainly from the work of Keynes. It is grounded on the fields of observations of stylized facts in the economy. It attempts to provide solutions to arising problems, which cannot be adequately explained and resolved by mainstream theory. The point of this chapter is not the contradiction between the conventional with Keynesian-post-Keynesian theory, but instead to provide an alternative and complementary view. However, we highlight the differences between traditional neoclassical economic theory and the post-Keynesian. Therefore, we shall focus on post-Keynesian analysis on the operation of monetary and financial system in the endeavor to fill gaps on the explanation of relative phenomena. The main scope is the explanation of the financial system and the pursuit of financial stability.

1.2 The Neoclassical theory and it overoptimistic stance

We may distinct three main features of neoclassical economics in terms of monetary policy. Firstly, the preference on flexible rate regimes than fixed rates. Secondly, the "efficient market hypothesis", according to which all-best possible information is contained within the price of an asset. Thirdly, the famous Say's Law and the neutrality of money, making the role of effective demand useless. The implication of the above features is that regulation is unnecessary. Traditional theory deems financial system as stable and efficient, and whenever it turns unstable, that is due to an exogenous shock, where only monetary policy will be sufficient to restore its stability. However, there is a strong opposition debate on this view.

Buiter supports that the obsession on efficient market hypothesis has disorientated financial economics where traditional theories "not only did not allow questions about insolvency and illiquidity to be answered, they did not allow such questions to be asked (Buiter, 2009)". The emergence of recent financial crises and the inability to provide the necessary explanations has raised serious questions about the relevance of neoclassical economics. Krugman refers that contemporary economics lose their essence because of "the desire for an all-encompassing, intellectually elegant approach that also gave economists a chance to show off their mathematical prowess (Krugman, 2009)". Stiglitz quotes that economists became "blinded by their faith in free markets (Stiglitz, 2010)". Allen (2009)

states that for financial crises "traditional economists have not just that they missed it, they positively denied it would happen[1]". Neoclassical economics despite their prevalence as the mainstream economy theory in the current era have been insufficient to cope with recent events mainly in the financial sector. Among many defending views of traditional neoclassical theory, one of the most popular is the argument that there is no alternative. This argument implies an overoptimistic and perhaps even a narrow-minded stance, since other theories could at least serve as contributors to an overall effort to resolve major global economic and financial issues such as unemployment, inequalities, and financial crises.

1.3 Differences between Post-Keynesian and Neoclassical approach

The important aspect in post-Keynesian analysis is the role of effective demand where its scarcity and not the scarcity of resources must be faced for increasing total output. On the other hand, traditional theory indicates the perception that the operation of competitive market forces will tend to reduce inequalities and always move towards equilibrium positions, attributed by the efficient allocation of the available resources. That contention of market operation is the key to the potential growth of economy. Keynes mentioned that moneymaking process is the aim of market operations and therefore production is linked with money. It commences with money to result in more money and in that sense, efficient allocation of resources is not consistent with production and investment decisions. Post-Keynesians discard the notion of economic equilibrium, a fundamental axiom of the neoclassical theory. They believe either that the economy is permanently in disequilibrium or that there is no equilibrium at all. There is no empirical proof "the market", as functions, is seeking to equilibrium point. There are arguments raised by some economists (Borio et al. 2016) who suggest that the economy is always in a transition mood, or in a repeated cycle. There is also Minsky's view (1986), which we deal with in this thesis, that instead of equilibrium, economy rather experiences some periods of tranquility.

Another important issue is the introduction of mathematical models to validate a theory. The tendency on mathematics has transformed political economy as a part of social science to the core independent science of economics. Neoclassical economists are obsessed with the use of complex mathematical models, incomprehensible to anyone without relative training, based to questioned assumptions and thus warding off their conclusions from reality. The inclination to mathematics has been criticized by post-Keynesian and other schools of economic thought for not paying the proper attention to relative phenomena. Even Adam Smith argued that the scientific method should be an attempt of the imagination to solve observable problems; the scientist could use mathematical tools or models to propose laws, but they should subordinate to observed phenomena (Fleischacker 2004). Smith was not keen on mathematical models in political economy but rather he preferred common sense. Accordingly, Minsky stated that any theory detached from observations should not be accepted since in "sciences theory is a servant of

[1] Quoted in "Why Economists Failed to Predict the Financial Crisis," Knowledge@Wharton, May 13, 2009. http://knowledge.wharton.upenn.edu/article.cfm?articleid=2234

observations, contrary to neoclassical economics, where "theory determines the acceptability of observations (Minsky 1985)". Hence, this methodological issue is at great significance so it must be cleared under what terms credit must be given to any upcoming theory.

Thirlwall (1993) had distinguished the main aspects of post-Keynesian macroeconomics in six propositions that bring up the arguments against mainstream economics. First, employment depends on the product market rather than labor market. Secondly, post-Keynesian theory in contrary to mainstream economic, argues that involuntary unemployment does exist due to lack of effective demand. Thirdly, as far as the relation between investment and saving is concern, causation flows from investment to saving. Fourthly, money, finance and debt issues are essential part of economy, whereas money is not neutral. Fifthly, post-Keynesian economics discard the quantity theory of money since because money is endogenous[2].

Similarly, macroeconomics is viewed as an aggregate of microeconomics in traditional theory, which also underestimates the role of financial sector into real economy. Post-Keynesians object that view and give equal importance to the financial sector. They also suggest the existing of two pricing systems. The first concerns prices of labour and current output and the second prices of financial and capital assets. The traditional theory pays no attention to the second pricing system, including that simply as a variable to the trade sector.

Finally, modern neoliberal economies are being mobilized by the "animal spirits" of investors. It is important to note that neoclassical economics does not necessarily mean neoliberal economics[3]. The notion of the latter is to protect high finance opportunities, encourage deregulation and to sustain inflation in order to avoid the devaluation of capital. Nevertheless, these policies have provided speculative investment opportunities to money accumulators throughout the world.

1.4 The contribution of Post-Keynesian economics

The essence of post-Keynesian economics is the importance of effective demand. The primary target for the well function of the economy as Keynes (1936) suggested is the maintenance of full employment, which will be attained by an increase in aggregate demand, and in turn entails an increase in total output. The mean to obtain the target, contrary to classical approach, is through intervention. There are market imperfections that cannot be fixed on their own, and hence, intervention is needed to restore the economy back to the track of full employment. A key feature of post-Keynesian economics according

[2] The quantity theory of money equation sets (MV=PT). However, in post-Keynesian view causation runs from right to left, not from left to right; changes in liquidity preference mean that V is not constant

[3] Neo-classical economic theory is based on optimized rational behavior of well-informed individuals trading each other in a barter economy. Apart from the notion of general equilibrium, it also stresses the importance of competition and the optimal allocation of resources. The difference with neoliberals is that neoclassical oppose monopolistic power whether neoliberals seem not to care about it. Neoclassical also accept some government intervention when it is necessary, whilst neoliberals insist only on an absolute laissez-faire stance that not only attempt to bring market as number one priority of the government but also to render public interest the needs of the most powerful financial accumulators.

to Lavoie (2015) is the claim that aggregate demand is the determining variable, both in the short-run and in the long-run, contrary to neoclassical view that in the long-run only supply-side determinants matter. Arestis (1996) states that post-Keynesian economics has moved from the stage of criticizing mainstream theory to the phase of forming a reliable juncture described by endogenous consistence.

Young (1928) also wonders whether equilibrium of costs is meaningful notion in the presence of increasing returns. He attempted to highlight the coexistence of the increasing return with competitions and its implications to the economy. The above coexistence has not been paid much attention by many economists; however, it provides a useful idea to explore recent financial distortions. The Kaldor-Verdoorn[4] effect states relative argument that fast growth produces faster technical progress. Kaldor points out that a self-sustained growth is determined not by exogenous factors but by the growth of demand which will be increased at the simultaneously presence of: a) merchants who will absorb stock in the short run, b) from manufacturers who will respond to an increase of growing sales, c) with a monetary and banking system which allow money supply to grow in automatic response to an increased demand for credit (Kaldor, 1972). The above argument could also be applied on the basis of financial stability. He also believed that economic theory went on wrong path as soon as it focused on the theory of the value and the market allocation operations rather than on creative operations.

1.4.1 Money and Credit

Post-Keynesians disagree with the neoclassical theory in terms of money and credit, issues not fully incorporated by neoclassical school, but they have vital role in economy. Post Keynesians reject the view that money is neutral since money can be hold as a safety asset against uncertainty. Therefore, money plays a significant role in portfolio choices and in financial system since it consists of an option, rather a safe one, with its own implications. It should be reminded that money is the outcome of transforming the value of assets into liquidity and again in an incalculable uncertain world with unpredictable expectations, money or liquidity preference could generate speculative activity. In the financial markets, we can deduct an observation that there is a trade-off between speculation activity and liquidity preference.

Post-Keynesian economics give equal emphasis on the financial sector and argue that it is often a destabilizer factor of the economy. It is not possible to separate real from monetary factors as neoclassical believe. Credit creation, the nature of money, the role of debt, are among other aspects more concerned by post-Keynesians. They incorporate an explicit monetary approach to economic theory. The stylized facts and observations of real world are needed to be considered, whereas production, money, interest rates, and investment are connected through the financial system. Post Keynesian economists also reject Say's Law, since employment and total output are determined by aggregate demand. A single representative agent and the efficient market hypothesis do not seem to explain the

[4] Kriesler, P. and M. Lavoie, M. 'The New Consensus on Monetary Policy and its Post-Keynesian Critique', Review of Political Economy, 19/3, 2007, pp. 387-404.

complex phenomena we observe in the actual economy. Davidson (1998) states that financial markets cannot be deemed as efficient market theory implies, since expectations are heterogeneous and often irrational that influence financial markets and in reality, are grounded on psychological predictions, which are certainly neither statistically nor mathematically reliable.

1.4.2 The role of uncertainty

Post-Keynesians stress the importance of uncertainty to the function of the economic system. Economic agents deal with uncertainty. There cannot be a reliable prediction on future conditions and perceptions. Thus, probability distributions for the future can only be compiled from past distributions, which are non-stationary. Therefore, uncertainty is there. The present, the past and the future are important determinants of the economic system. Uncertainly influences investment, which in turn affects profits. Profits are the critical link to time in a capitalist economy and the carrot and stick that make capitalism work (Minsky 1982, p.104). Profits will enable firms to validate past debts and to encourage investing for future profits. Notwithstanding, firms with much pessimism and uncertainty firms will be more skeptical and reluctant to invest, putting in risk the forthcoming debt and contraction implications.

Furthermore, money in conditions of uncertainty is non-neutral and is associated with the law of contracts (Davidson, 1978; Minsky, 1975; Kahn, 1958; Robinson, 1970). It consists of one of the main factors for the fluctuation of economic system and financial instability. Uncertainty is viewed as the sufficient condition for the existence of money. Money is not exogenous determined as it is traditionally believed but is an endogenous and demand determined. A rise in demand of credit entails a rise in its supply. The game therefore stems from entrepreneurs who must guess the pattern of effective demand and the required cash flows. Thus, the credit demand is settled and then the central and commercial banks set their discount and interest rate thresholds in order to grant loans to meet entrepreneurs' requirements. Uncertainty is related to insufficient effective demand. Firms and households whenever they decide to acquire assets, they will compare the marginal efficiency of capital with the yield-curve of financial assets. Thus, their decisions depend on expectation and risky perceptions. Whenever negative expectations increase, the demand for money in relation to capital grows, hence shifting economic growth and employment.

1.5 Principle of Circular and Cumulative Causation in the financial sector

Circular and cumulative causation (CCC) has been a critical principle of economy. It explained the continuous endogenous movement of the economy. The concept could be traced at the beginning of the 20th century (Humphrey 1990). Thorstein Veblen (1857-1929) used the principle to examine the evolution of institutions. Gunnar Myrdal (1898-1987) highlighted the conditions of underdevelopment countries by using the CCC, influenced by Knut Wicksell (1851-1926). Certainly, among the most prestigious post-Keynesian economists Nicholas Kaldor (1908-1986) who was also influenced by Adam Smith (1723-

1790) and Allyn Young (1876-1929) studied the manufacturing process in capitalist growth by applying the CCC[5]. Kaldor (1970) developed the principle of cumulative causation at corporate level, as the result of increasing returns by reinvesting the profits. Mydral (1957) took a more social approach at the level of regions, countries, whereas the self-reinforcing of market dynamics will lead to higher income inequalities. Thereby, considering the above approaches we deemed that in the post-Keynesian analysis, economy is regarded as a part of the society. In addition, as Kaldor (1985) cleverly referred it in his famous book as an "Economics without Equilibrium (Kaldor, 1985)".

The model of circular and cumulative causation was developed by Myrdal and later by Kaldor to express the simultaneously endogenously effect of many factors in the economy. If we apply the CCC in the financial sector, it could be reproduced as depicted in the following figure.

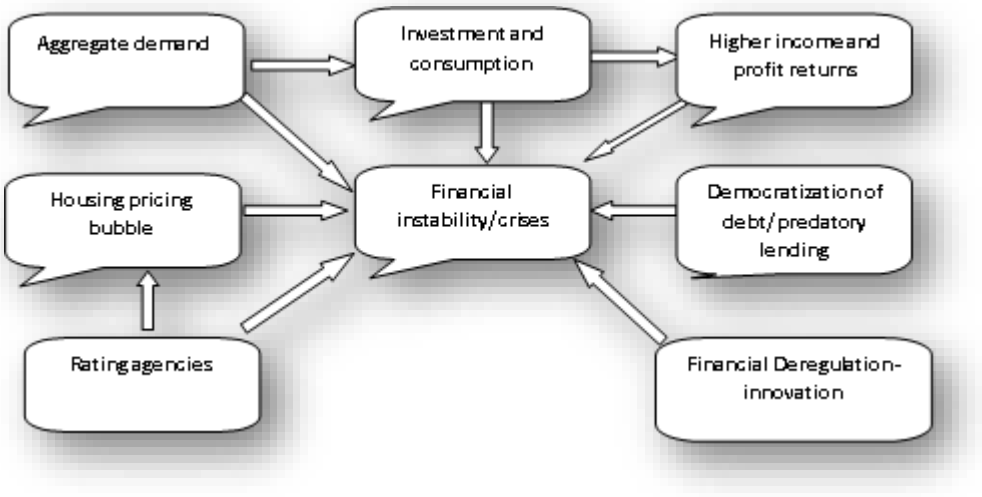


Figure 1: The Financial Circular Cumulative Causation

Source: O'Hara P. International Financial Economics 2008

The above figure highlights the function of the financial circular cumulative causation. Firstly, the initial expansion of aggregate demand leads to an increase in the levels of investment and consumption. Higher investments mean higher profits that demand extra credit to reinvest. Thus, indebtedness rises alongside lending, putting pressure to deregulate further the financial system and to promote innovations. During all the previous stages of the cycle, it should be noted that risk and value perceptions have been modified. This perceptive will be confirmed by rating agencies that mark the value of the financial assets. Therefore, assets pricing bubbles begin to inflate increasing even more the aggregate demand. Thus, the circular flows repeatedly by the appearance of all above factors at the same time. In this way, the market dynamics could also consist of cumulative causation and

[5] There are therefore linkages between Veblen, Myrdal and Kaldor. Firstly, Veblen influenced Allyn Young who in turn influenced Kaldor. Myrdal followed from Knut Wicksell and collaborated with Kaldor at the United Nations. Kaldor himself (1970, 142) adopted the term of CCC from Myrdal.

hysteresis. In practice, this implies that real markets may not be able to fully correct themselves in cases of disequilibria. Young quotes “with increasing returns change becomes progressive and propagates itself in a cumulative way (Young, 1928)”. The circular and cumulative approach indicates that strong and endogenous interaction economic and noneconomic self-reinforcing forces are being cultivated and thus dangerously blossom. The result is the risk of greater instability and enhanced world inequality that induces us to stress the importance of intervention policies.

1.6 The speculative demand for money

Keynes in his liquidity preference theory suggests that money is an asset used as a medium of exchange, store of value and unit of account. It is well known that three motives explain money demand. Firstly, the transactions motive, necessary for transactions where liquidity serves as a medium of exchange. Secondly, the precautionary demand for money motive, which is attributed as a safety net against unpredictable events. The precautionary motive is negatively related to effective money demand since liquidity demand converts money as a store of wealth. Thus, insufficient effective demand emerges when precautionary money demand increases. Thirdly, the speculative motive, where demand for money is increased by the desire of agents to buy financial assets. The first two motives are understandable in the nature of the economy but the third one is crucial for the monetary policy as whole. As Keynes quoted “it is by playing on speculative motive that monetary management is brought to bear on the economic system” (Keynes 1936, p.196). Despite the importance of the speculative motive, the supply and demand for liquidity in financial markets also emanate from the other two motives and to a certain degree by the money supply.

The key factor to explain the speculative money demand is by term of expectations, and conventions prevailing in the financial system. More precisely and with regards in the difference, whereby agents expect differences between actual and future interest rates. The speculative behavior of agents and banks constitutes the supply and demand for liquidity in financial markets. Hereby, it establishes the interest rate paid by an asset as well as the economy’s interest rate, i.e., the yield-curve of the financial system. Thus, the yield-curve determination depends on one hand, on the interaction between the expectations of banks and agents, and on the other hand, on how the central bank accounts for those expectations in its attempt to manage the demand and supply of money in order to influence expectations, and finally, the own yield-curve.

Therefore, we consider the expectations and the uncertainty to assess the speculative motive for money demand. Economic agents derive expectations concerning, for instance, the difference between the current and future interest rates, or various conventions and risk perceptions that dominate in the financial system. In a demand-led economy, investment determines employment and output. Due to the presence of uncertainty, investment decision-making depends on expectations. Thus, in case of positive expectations there is a rise in capital goods, instead of money holding and liquid financial assets, boosting growth and employment or vice versa.

Certainly, among the Post-Keynesians it is believed that the supply of money can be demand- determined up to an extent (Dow and Dow 1989, Wray 1990). Thence, there is a plausible combination of liquidity preference theory and the endogenous money supply theory. Financial institutions are operating a variety of financial products and portfolio choices. That implies that they could also set their liquidity preference, and hence the money stock, according to their limits and margins of safety that new products would allow them to fluctuate. However, the above argument highlights an implicit indication, that supply of money would surely satisfy its demand but not necessarily in equal terms. It might be less credit supply fueled to the economy or even more in certain overoptimistic risk perception periods.

It should not be forgotten that in the actual period, banks through credit and innovations could create money. Indeed, there are profit-maximizing enterprises, meaning that higher effective demand offers greater margins of profits for their services as well. Thus, the banking system will encourage and seek financial innovations to give more flexibility to their balance sheet management and to avoid from regulatory measures.

1.7 The role of central banks

Central banks play a vital role in the design and implementation of monetary policy through discount and interest rates' determination. A more tighten monetary policy will attenuate the balance sheets of firms, contributing to instability. Thus, central banks often intervene in the market by selling and buying bonds, in their effort to keep stable the level of interest rates, also stabilizing the bond and the money market. The central banks need to use with prudency the interest rate instrument.

Therefore, central banks should focus on prevention of the emergence of money-demand for speculative purposes. They also need to assure price stability, stable expectations, and eventually financial stability. Central banks' attitude could be explained by the manner they evaluate the notion of expectations and conventions. The control of money supply and the degree of steady liquidity in the market is therefore essential.

Central banks act as lenders of last resort, which moderates agents' concerns about the overall solvency of the financial system, and it finally refrains from confining investment. Central banks cannot afford to be a passive institution, but also to give equal emphasis to transparency and credibility, transmitting these characteristics to the rest of the financial system. The current operation of the international financial system has shown its limits by implicitly encouraging high-risk positions. Inflation control accompanied by low interest rates policies have indirectly led financial intermediaries to expand their risky activities in an internationalized deregulated free capital movement environment. Therefore, it seems that the only vital remaining role of central banks is the lender of last resort. Nevertheless, central bank is the anchor of financial stability, mainly through surveillance and efficient interventions. A central bank should also deal with a great part of markets where the securities are being traded to minor the entire credit system. Minsky (1990) was concerned that the securitization growth might render central banks incapable of controlling the money supply and some scholars have also agreed with that view (D'Arista 2009, Kregel 2008). The central banks have been incapable in the current era to prevent short-term money markets

from further expanding. Hence, the question is not to assess the well-known role of central banks but to focus on their actions by re-assessing their priorities.

1.8 Interest rates transmission channels

It is interested to develop the function of interest rates through the transmission channel mechanisms. Interest rates are deemed as the most important tool for monetary policy. Keynes considers it as “the governor of the whole system” (1930, pp. 189). Once the interest rate is set, then central bank uses the discount window to provide banks with the necessary liquidity, determining in this way the relative amount of liquidity the financial system needs in that specific rate of interest. The interest rate furnishes to effective demand through portfolio, credit, wealth, exchange rate and expectations. Changes in the interest rates are being forward to real economy by changes in the costs of service of debt. The rise in interest rates will rise the debt burden of firms and thereafter their ability to validate their debts.

Portfolio management alters through interest rates changes, since expected rate of returns will differentiate. Agents respond to a shift in interest rate by reallocating their portfolio choices. The credit channel is highly associated with the interest rate. It serves as the rate that financial institutions will charge on their granted loans. The lower interest rate entails to relative lower credit rate, influencing investment and employment. Credit market rate influences on households and firms through consumption in the first case and the relation between costs and profits of firms. As far as the wealth channel is concern, Keynes recognizes it as “perhaps the most important influence, operating through changes in the interest rate, on the readiness to spend out of a given income” (1936, pp. 94). It is evident that a change in interest rate will result in a shift on the price of assets as well as in households’ consumption. Whenever households consume based on their accumulated wealth, and then the impact of the wealth channel is greater.

The exchange rate transmission channel operates in an open economy. In this case, external agents are entering in the concept of the shift of interest rate. International investors are usually on the search of differences between internal and external interest rates in order to decide their investments. However, in an open economy there is an interdependence between domestic interest rate, exchange rate and capital mobility. Consequently, a local interest rate change in an open economy ensues movements in domestic production, due to the cost of inputs, on the imports and exports and thus on the balance of payments. Moreover, the financial status of firms with foreign liabilities is directly affected. Capital flows change in line with the shift of exchange rate and so does the liquidity of money market, since in an open economy conversion of foreign to domestic currency is required. Afterwards, a rise in the level of external flows follows that will change money market liquidity and eventually the financial system’s yield curve. In this case, intervention is required to moderate the impact of the external flows to the stability of the financial system.

The final transmission channel is expectations, which in general terms need to be stable to avoid fluctuations. However, agents interpret differently the future financial stance and decide accordingly. Monetary authorities should promote prudency, solvency and

mainly credibility to encourage positive expectations, keeping therefore liquidity preference to normal levels. Otherwise, if expectations for liquidity rise then the speculative demand for money motive will emerge making it difficult for the authorities to conduct an efficient monetary policy. The expectations channel is the one that precedes the other channels since expectations on forthcoming interest rates will eventually drive interest rates to change, activating then the other channels.

1.9 Post-Keynesian in the international economy

We have seen above the exchange rate transmission channel, and we could stress the significance of the exchange rate stability at global level. In the case of open economies, interest rates are also influenced from main events that occur in a foreign country. Thereby, domestic monetary authorities in line with the foreign monetary authorities set the level of interest rates. There is a mixture combination of the internal and external monetary ambiance. The external factor brings up the importance of balance of payments through the examination of capital and current accounts.

Following the domestic price stability target, the forthcoming goal is the achievement of exchange rate stability, meaning the stability of value money in the international standard. If we wish to proceed to global scale of the financial stability, we need to state that any change in the national interest rate, will eventually entail to at least some difference within its relationship with international interest rate. This shift is globally vital because that may lead to changes in the exchange rates and in capital mobility. Arestis and Sawyer (1998) argue that any policy on interest rates is inevitable delineated by global financial markets.

Changes in the exchanges rates present numerous implications. They affect the effective demand, both domestic and foreign, the expectations of agents as well as their financial status. The latter is at great importance, regarding firms and governments that borrow from foreign financial institutions, where a decrease in the exchange rate entails to burdens in domestic balance sheets and budgets, hence increasing the financial instability. In addition, inflation will probably rise, due to devaluations since domestic prices will start to increase.

1.10 Post-Keynesian monetary policy for financial stability

According to Keynesian approach, monetary policy should aim at the promotion of full employment and economic growth. To this end, investment encouragement policies are required to maintain the level of employment. Post Keynesian economics deem that a successful monetary policy needs price stability, exchange rate stability, good and stable expectations, credibility, and transparency. All the above targets could be achieved through interest rates and regulation. A success of the post-Keynesian monetary policy means an expansion of the effective demand, hence, boosting output and employment. The challenging target for authorities is to ensure price stability on the assets value that will facilitate investment. In other words, inflation must be under surveillance to limit

fluctuations of expectations and to sustain the general wealth. In the post-Keynesian theory (Minsky 1986; Lavoie 1992; Davidson 1994), seven causes of inflation could be traced:

1. Profit or monopolist price-making
2. Wage increases
3. Decreasing returns to scale
4. External factors
5. Supply-shocks
6. Demand-shocks
7. Tax elevations

Arestis and Terra (2017) add two more causes of inflation, the inertia and expectations. The concept of inertia arises when prices are determined on past rates of inflation. Thus, price stability is essential for the well function of economy and could be mainly implemented by precautionary measures on the above causes of inflation.

Price stability generates financial stability and hence a stable financial system. In general, financial stability is the ultimate aim of the post-Keynesian monetary policy. According to Buiter (2008), financial stability is the absence of asset price bubbles, illiquidity, and insolvency, whose occurrence threatens the financial markets and the real economy. Financial stability is the maintenance of a steady-state financial status that produces no significant fluctuations in the real economy. It does not permit radical and sharp changes in asset prices nor does encourage excessive borrowing and lending. It ensures a stable capital flow to sound agents (firms, households, governments), who are in need to finance their investment projects to result in greater output and employment and certainly to be able to validate their debts in due time.

1.11 Questions on the efficiency of conventional theory

It is evident that neoclassical economics have prevailed in the interpretation of economic phenomena and more importantly in the implementation of economic policy. The traditional theory, notwithstanding, has been insufficient to cope with recent events mainly in the financial sector. Among many defending views of traditional school of thought, one of the most popular is the argument that there is no alternative. This argument of no other policy option forms an overoptimistic stance and perhaps implies a narrow-minded perception to overcome the alternative theories or to diminish their credibility. Despite its weaknesses, it continues to be the dominant policy, whilst inner and international inequalities are rising. Nevertheless, alternative theories could at least serve as contributors to an overall effort to resolve major global economic and financial issues such as unemployment, inequalities, and financial crises.

Conventional theory should integrate the aspects of money and finance, apart from preferences, production function, and goods and services. Output and production should be linked with the monetary system. In his theory, Keynes integrated money and finance with total output, employment, and investment. Firms, governments, and households have debts, which are assets to financial institutions, which in turn have liabilities. Consequently,

we observe a price system for capital assets and outputs that is highly determined by expectations and credit conditions. In other words, there are endogenous powers that arise within the monetary system and ergo in the real economy. The endogenous process disequilibrates the economy and, not necessarily always, could lead to crises.

The emergence of recent crises and the general instability of the system postulate the appropriate interpretations and policy acts. The prevailed neoclassical approach to monetary policy has been rather confined during the last thirty years. The main stance of the empirical policies in terms of monetary policy has been the overconfidence to the operation of free financial markets with a slight surveillance by monetary authorities. Central banks have considerably loosened the ropes of monetary control. They seem to have a passive role with limited interventions, unable to keep up with the pace of excessive money supply creation that financial institutions have adopted. Additionally, commercial and investment banks have been the main players of monetary policy since they respond to money demand and can add money supply through credit.

There are some fundamental axioms in economics that have been beyond any doubt during the last century, but notwithstanding, could not fill the gaps in unquestioned matters. Certain concepts such as the equilibrium position need a more refined definition of what really mean in the current era. Is it the description of a constant prosperity of an economy in full employment position or simply a period of economic growth? As far as the financial sector is concern, is the credit expansion process simply a period of robustness that enables investment and reinvestment leading to even more credit? We could not personally dare to provide a sound answer. On the other hand, mathematics and econometrics have always served as an undisputed tool to prove the right or wrong, everything and anything in economics and finance. However, how could this conception avails to discover the reality of what is really going on in the economy? What we seek in the world of business, economics and finance is nothing but the true answers. A method that traditionally, or even from the ancient times, could be applied is the observation of true events.

Counter to the widely held belief, post-Keynesian approach to economic theory provides us an alternative to comprehend how the economy and thereafter the financial system function. In general, we could argue that post-Keynesian economics tend to explain the performance of the economy through time and how it develops and changes under new circumstances. By contrast, traditional economic theory neglects that approach and attempts to explain how markets function at any moment in time. We could not support that post-Keynesian economics offers a panacea and integrated theory in economics. In addition, it does not provide all the answers to the arising economic and financial issues we could recognize. Nevertheless, it asks the right relevant questions and seeks the right answers. Post-Keynesian economics seem to be more relevant to the explanation of global economic and financial issues and to the rising global income inequality.

Chapter II

2 The Financial Cycles and their importance to the economy

2.1 Introduction

The notion of financial cycles has become increasingly important particularly during the last decades. Cyclical movements in the economy have been observed in the past and have been referred as business or economic cycles. Considering the significance of the financial sector to the economy in the recent era though, the examination of the financial cycles constitutes an alternative manner to comprehend various fluctuations in the economy. The concept of financial cycles is linked with the financial instability and consists of an important element of the thesis. For this purpose, we highlight the main literature and research in economic and financial cycles, and hence, we deduct the main conclusions concerning their implications to real economy.

2.2 Literature in economic cycles

As we have noticed, financial cycles compose a cyclical movement of the economy. In general, until the mid-20th century, research on cycles had been pivoted around business cycles or economic cycles. It is interested thus to briefly highlight some historically studies about cyclical movements.

J.S. Mill's (1826) approach to economic cycles sketched more the psychological factor of agents. He stated that speculation is sensitive to price increases and consequently any shock that will lead prices to rise, constitutes a dynamic potential impetus to speculation and instability. He supported that credit[6] and not money is the main cause of cycles. French economist Juglar (1862) identified the relation between credit cycle and the economic cycle. He insisted on the excessive speculative behavior and its contagion effects. When agents turned into more speculative but short-term profitable choices, more capital is accumulated for speculative reasons and not for sound investments. Therefore, the cycle is described as time of investments on machinery, raw materials, equipment and lasts from seven to eleven years. Pigou (1927) argues that cycles depend upon agents' profit expectations, which may be real, psychological, or monetary. Frisch (1933) suggested that economy has deviated from equilibrium because of time accumulation of exogenous shocks, which induced cyclical

[6] This has been quite significant as "credit" is treated as key component in establishing the methodological part of the thesis as it will be analyzed in the following chapter.

moves of the economy. Burns and Mitchell noted that "a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions and revivals which merge into expansion phase of the next cycle (1946, p.3)". They deemed the duration of the cycles varies from one to twelve years and their frequency is recurrent. Joseph Kitchin (1923) had observed a short-term cycle that is linked to investment expenditures for inventory capital or consumer goods. He suggested that the business cycle depends on the production.

Haberler (1946) attempted to explore the causes of cycles by examining most relative theories. He regarded as inadequate the notion of explaining cycles through a single view. Therefore, he conducted a detailed critical analysis of various theories of cyclical movements. He consolidated a table of causes and factors of the cycles with its booms and busts. He concluded that there is a need for integration of financial sector in economy theory in order to comprehend the nature of the cycles.

Simon Kuznets (1930) identified a cycle from sixteen to eighteen years based on his studies on national income and capital formation data. Kuznets distinguished his cycle both in long and short run. He argued that in the short run cycle is related to credit, whilst in the long-term he incorporated the notion of demographic population. In the prosperity period, when employment and wages increase, family sizes will increase too, leading to a higher demand for housing and property. As soon as property prices reach the ceiling, that will be the turning point of the cycle.

Kondratieff (1926) studied a super duration cycle between forty-five and sixty years. In his attempt to prove that capitalism will eventually fail, he studied the aspects of interest rates, foreign trade, prices, and productivity from 1789 of the main Western capitalism countries[7]. From prosperity to recession, his observed cycle had repeated itself almost every fifty-five years but during this period, smaller phases of expansion/contraction had also been distinguished. He stated that the component that launches new expansion is technology or a main innovation that will boost economy again. Unlike his initial intention, he found that capitalism offers the advantage of freedom to agents to innovate in the market providing to the economy a way out of depressions. Schumpeter, Fisher, and Minsky, all of them with common perceptions on financial cycles, were influenced by Kondratieff's framework.

Schumpeter (1939) stressed the significance of innovation in terms of entrepreneurism and technology, without their existence, the economy would hardly shift from its equilibrium. Entrepreneurs' (agents more generic) need for innovation is driven by the highly global competitiveness and profit maximization. They require credit to finance such innovations by banks or other credit institutions. Eventually economy is urged to move from its equilibrium position. Schumpeter states that cycles are created only by innovation and the cycle "seems to be the statistical and historical form in which what is usually referred to as 'economic progress' comes about" (Schumpeter 1944, p. 7). Thus, there is a mobilization of resources and when new products make their appearance in the market, economy's equilibrium has been changed and it will return to its original position, or perhaps to a different one, in the phase of recession. Schumpeter distinguishes four stages of a cycle:

[7] He examined USA, Great Britain, Germany and France.

prosperity, recession, depression, and recovery. In Schumpeter's view, cyclical fluctuations do not necessarily have a negative meaning, but they are being induced by innovation, which is the driving force of economic growth.

2.3 The financial cycle

The concept of financial cycle constitutes a matter of debate by economists who were not included in the mainstream economic theory (e.g. Minsky 1982 and Kindleberger 2000). A definition of financial cycle is closely related to the well-known connotation of the "procyclicality" of the financial system (e.g., Borio et al 2001; Danielson et al 2004; Brunnermeier et al 2009; Adrian and Shin 2010). The financial cycle is less frequent than the traditional business cycle, with an approximate duration of sixteen years with much larger amplitude, by contrast to business cycles lasting from one to eight years (Borio et al 2001). However, the length of the financial cycle could never be accurately reckoned since it depends upon government's policy regulations. Other factors need to be taken into account are the financial, monetary and real-economy regimes (Borio and Lowe 2002). Financial cycles encapsulate the booms and the busts, prosperity, and crisis, where one precedes the other. In other words, it is argued that the main cause of crisis is the previous prospered period (Borio et al 2001). The most common description of the financial cycle is in terms of credit and property prices, where the top of the financial cycle is closely associated with financial crises (Drehmann et al. 2012).

Irving Fisher with his Debt Deflation Theory (1933) had described financial cycles to be contingent on the ability/inability of agents to pay off their debts. He recognized that debts could not always be paid off and that market is seldom in equilibrium. Equilibrium is a stable period of the economy but once it departs away, then instability ensues. By enhancing debt rates, that entails a serious threat of financial crises. If many debtors break down then a crisis emerges and what follows is a deflation spiral process, which also means a fall in aggregate demand. That is when debt deflation begins. Therefore, he argued that financial cyclical movements trigger the booms and the busts of the economy.

Like Schumpeter, Keynes, and Fisher, Minsky also saw cycles as the outcome of an endogenously process in an inherently unstable capitalist economic system, where self-interest behavior prevails in complicated financial relations. He argued that "in order to understand the short-term dynamics of business cycles and the longer-term evolution of economies it is necessary to understand the financing relations that govern, and how the profit seeking activities of businessmen, and portfolio managers lead to the evolution of financial structures" (Minsky 1993, p.106). He focused more on financial cycles or credit/debit cycles where the main idea is the enhanced power of banks and other financial institutions to cyclical movements. For Minsky (1986), financial instability and cycles are congenital in a capitalist economy. However, he recognized that cycles are not simply fluctuations within a fixed economic structure but represent both a cause and consequence of changes to that structure. As long as financial agents' expectations become overoptimistic and the financial system constraints are smooth, then credit and investment expand. The

emergence of a fragile financial system could be the outcome following the high levels of indebtedness.

2.4 Contemporary research in financial cycles

The concept of financial cycle has been an interesting way in our attempt to comprehend financial fluctuations. Claessens et al. (2011) examined the financial cycle and their relationship with business cycles. They used a database of 44 countries over the period 1960-2007. They reached to the conclusion that recessions linked with financial distortions, particularly in housing market, are more severe and last longer than other recessions. On the other hand, they found out that growth is augmented mostly with a rise in credit supply and in house prices. In the upswing phase of the cycle, credit is available and relatively in attractive rates. As a result, households are encouraged to borrow, driving up property and collateral prices and eventually tax revenues. In the downward phase though, when credit is expensive and unaffordable house prices are being reduced, past loans are not easily met, then there is a contraction in the construction sector and all the relative business sectors, leading eventually to a fall in consumption, investment, employment, and tax revenues. A fall in aggregate demand and a recession is remarked. All the above factors depict a positive correlation between the financial and business cycles, entailing fluctuations in the GDP. Regarding the global dimension of the financial cycles, they stressed the fact that cross-country bank lending is a major contributor to the rise in domestic credit.

Drehmann et al. (2012) studied seven advanced economies over the period 1960-2011. They deduced that financial cycle lasts between fifteen and twenty years, much longer than the traditional business cycle that lasts approximately eight years. As long as the cycle reaches the top, it verges to concur with financial turbulences periods, due to households and firms' inability to pay off their debts. Another interesting finding was that some economically dominant countries lead the financial cycle at global level, which frequently coincides among other countries.

Stremmel (2015) suggests that an efficient measure of the financial cycle should include the credit-to GDP ratio, credit growth and house prices. Runstler and Vekkle (2016) have also gathered the same results, noting the significance of cycles in credit and house prices. They mostly gave emphasis in Germany showing again that the financial cycle has longer duration and larger amplitude in comparison to the business cycle. Kalemli et al. (2013) pointed out the role of international factor income. They suggested that in cross-country transactions the international income contributes more to financial shocks during the crisis, rather than in risk sharing between countries.

Borio et al. (2016) endeavored to discover the relation between financial cycle and public debt. They include credit and house prices, excluding equity prices and aggregate asset prices, which usually tend to move in line with credit and asset prices[8]. They commenced by gathering the empirical evidence that linked financial crises with a large increase in public debt. According to the research, fiscal expansion is inevitable during the

[8] Other important variables that could provide supplementary insights in terms of risk perception and distortions are the spreads of credit, default rates, but their available data is not adequate for an empirically sufficient time period.

bust of the cycles for a numerous of reasons, such as the sustainability of the aggregate demand and employment, the bailout rescue programs for problematic financial institutions and so on. As a result, the study proffers the calculation of a finance-neutral gap in order for a country to assess accordingly its proper financial position in the financial cycle.

Alcidi (2017) conducted an analysis on financial cycles for European Union member states over a period of forty-one years. The inference is that each cycle lasts about fifteen to seventeen years. In addition, the main financial cycle coincides almost perfectly with the introduction of the euro. The ascending part matches with the euro adoption in 1999 and the descending part approximately with the year of 2016. Member States highlight vast differences in the size of their financial cycle, and this is a characteristic of the periods both before and after the introduction of the euro. Alcidi advocates for the role of fiscal policy at a more central level despite the insistence of conventional policies on monetary action. The bottom line of the analysis is that financial cycle fluctuated more before the introduction of the euro than afterwards. An important argument of the research is that within a monetary union, the differences between countries are less in terms of financial cycle's characteristics.

2.5 Super cycles

Kondratieff (1926) and Schumpeter (1939) were the first to develop the notion of super cycles. The financial cycle is labeled as basic cycle. In the long run, though, it consists of a super-cycle that ultimately leads to financial crisis. Dafermos et al. (2020) suggest that the super cycles are much influenced by a change in the efficiency of the institutional thwarting function. A thwarting institution could normally intervene in an uprising financial instability, but a less efficient institution will not be able to cope with the threat of a distortion that could lead to financial crisis. Thereafter, a new role for the institution will be required starting up the process of a new super cycle.

Although Minsky's most famous work is associated with the financial instability hypothesis, his thinking of the super-cycle was also articulated (Ferri & Minsky, 1992)[9]. According to this view, all business cycles belong to a super-cycle, which operates at a system level for a long period of basic cycles. The super-cycle usually begins after the end of a crisis and ends up to a crisis. During this period, it transforms market practices, risk perceptions, conventions, businesses and agents' attitudes, authorities' policies, towards a fragile trend prone to financial crises. The super cycle is not as evident as the basic cycle. It lasts over a "generation time" as long as usually takes to languish authorities' regulatory institutions. Minsky's super-cycle encapsulates the stages of systemic stability, systemic exuberance, and systemic vulnerability. A super cycle includes many ups/downs, booms and busts of the basic cycles. The Minsky super-cycle describes the economy "as passing through stages in which thwarting institutions are eroded and the process eventually ends in crisis (Palley, 2011)".

[9] Ferri, P. & Minsky, H. P. (1992) Market Processes and Thwarting Systems. Working Paper No.64, The Jerome Levy Economics Institute, Bard College, Annadale-0n-Hudson, NY and published in Structural Change and Economic Dynamics, 3, 79–91.

2.6 Remarks on financial cycles

The debate of the financial cycle has been emerged since the second half of the 20th century and particularly by non-mainstream economists. However, the outburst of financial crises gave ground for further analysis. The key issue is not the acceptance or rejection of the presence of financial cycles in our economy. Certainly, financial cycles could be traced, and they do exist. They include ups/downs and are also related to sovereign debt. The size of their expansion/contraction side, notwithstanding, is hard to be predicted and thus the implications that might have in real economy.

Furthermore, large financial cycles do not coincide with financial stability. A world financial crisis is likely to be emerged from the downfall of a cycle in a dominant world economy. Literature suggests that fluctuations in financial cycles influence aggregate demand, employment, tax revenues and GDP growth. A matter of great consideration though is the limitation of the financial cycle's size to a minimum point at which no significant effect in real economy could be spread. The upshot is that financial cycles, apart from public debt, financial turbulences, and distortions, are also associated with the financial instability even at the global level and that is the most unquiet issue.

The purpose to examine and, most importantly, to detect the financial cycle is notable, in order to propose necessary policies to prevent the cycle from excessive fluctuations, causing serious distortions to the financial stability and hence to real economy. Financial cycles cannot be totally avoided, but the major challenge remains the reduction of the probability in their large oscillations. Thus, prudential macroeconomic policies at national level are required. Indeed, in cases of prolonged financial instability, national fiscal policy is inadequate, and a centralized fiscal insurance mechanism delegated with the power to transfer the necessary resources is essential. As Borio (2012) stressed the importance of credit and property prices, we could empirically notice that when there is an increase in credit[10], there would also be a rise in property and asset prices and overall, an increment in private sector credit. Thus, collateral values rise in line with borrowing, tax revenues, and overall, the economy grows. Nevertheless, is this growth real and long lasting?

From the EU lesson, we infer that the financial cycle could upwardly expand through cross-border bank lending at national level for countries exposed to some financial integration. However, this financial integration will accordingly start to decompose during the bust phase of the cycle as soon as international credit starts to withdraw. Therefore, there is a positive correlation between financial integration and financial cycle. However, in European Union, the introduction of the euro seems to have moderated the fluctuations of financial cycles that member states had experienced before the common currency.

Finally, the function of the financial sector is well known. It serves to provide with the required liquidity to finance investment and buying on real assets and commodities. Industries, entrepreneurs are seeking to finance their activities and all of them, including financial institutions, are targeting in future profits. Speaking on numbers, the majority of capital inflows is managed and often generated by financial institutions. The traditional

[10] By credit, we mean the provision of credit in all the possible sectors, but mainly we concentrate on mortgage credit since it is the most commonly granted by institutions.

examinations of economic cycles had been concentrated on business cycles, but it seems that in the current era, cyclical movements in economy have been mostly related to financial cycles. It is evident that the financial sector has already prevailed in other branches of the economy such as agricultural, industrial, commerce, trade, services, in terms of capital accumulation. Hence, it could be contended that in the 21st century, the circular flow of the economy depends on the financial sector. Consequently, the stability and the proper function of the financial system are essential. There are financial innovations that accelerate the speed of financial cycle and increase the size of the financial sector. It could be argued that the role of an international agency to assess, regulate, test the implications of financial innovations is necessary considering the dominance of the financial sector and most of all the consequences that financial crises have over the lives of millions of people. Besides, these authorization agencies do exist in other sectors[11], why not then in the financial sector as well? Observing all the implications, we therefore see that global financial stability is not simple an anchor of refraining from having distortions and crises but also a perquisite of peoples' lives. It is a right of people.

[11] Pharmaceuticals, energy, aeronautics, nuclear, chemical etc.

Chapter III

3 The International Monetary System and the Globalized Financial Economy

3.1 Introduction

The global financial stability is determined in a large scale by the international monetary status that has been prevailed in each period. The international monetary system (IMS) could be defined as the evolution of the payment transactions and the debt validation between countries, depending upon international trade, capital flows and economic growth (Petria, 2003). Another approach portrays the IMS either as a "set of conventions, rules and tools, or as an economic, institutional and political environment, which determines the delivery of two fundamental global public goods: an international currency and external stability (Dorrucci & McKay, 2011)."

Although it is difficult to adopt an accurate definition, a comprehensive definition of the international monetary system comprises the set of rules for trade, regulations, and restrictions. This set of rules is not related only in terms of trade, but also in liquidity and capital flows as well as on the interdependence among developed and developing countries. The bottom line though is that a sound and solid international monetary system is essential since it coincides with world financial stability. The international monetary system has been evolved during the last century due to the characteristics and needs of each period. To this end, we briefly outline the gold standard and the Bretton Woods regimes.

3.2 The gold standard

The late nineteenth-century gold standard period (1890-1914) constitutes an interesting example with pros and cons. The gold standard's main advantage was the acceptance of this regime by most countries, classified as the most considerable international traders at that time. Moreover, it provided with a credible fixed exchange rate mechanism for national price levels. The gold-exchange standard included central bank holdings of liquid securities denominated in British sterling, the US dollar, and the German mark as assets of reserve along with gold holdings.

Great Britain[12] had been the dominant economy during the gold standard and played the role of "hegemon" country at the international financial system. Britain had trade deficits that had put pressure in domestic employment and profits and an adverse effect to the rest of the world countries. According to Sayers, "accounts were arranged to show that

[12] More properly attributed as British Empire at that time.

Britain's long-term investment abroad was financed from capital income from overseas investments and short-term borrowings (Sayers, 1936)". However, Great Britain had benefited through income that came from investment accounts and asset holdings. Thus, cash flows to the rest of the world had been financed from Britain's investment income accounts.

It is evident that domestic actions taken by the dominant internationally country might have implications to the rest of the world. What is essential for a dominant country may not necessarily be bad for other countries. The gold standard era is being attributed as Britain's world financial dominance but responsibility too, in the strive to sustain the stability of the international financial system. Additionally, in Bretton woods era this responsibility had passed to the US economy. Both countries had fiscal independence and played the role of world investor with trade deficit. The above system ensured the stability of the financial linkages since all countries could equally gained. However, the main problem was the frequent liquidity crises from runs on gold. The outset of the war period marked the collapse of the gold-standard regime.

3.3 The Bretton Woods and the pillars for stability

The Bretton Woods monetary system (1945-1975) had been the upshot of a mixture between British and US project[13]. The Bretton Woods system established the US dollar convertibility into gold to ensure exchange rate stability, and the rest of currencies' convertibility to gold were assured by US dollar[14]. Bretton Woods has been attributed as a Golden Age[15] of Western economies since unemployment was low, economic growth was in a steady-state rise, and inflation rates were low. Therefore, financial stability and a viable financial system had been established mainly due to the fixed exchange regime and the repressed international capital flows.

The reasons of that prosperity were a scheme of high productivity combined with high average wages and high consumption. Thus, there was an expansion in international trade after the end of the war, and as a result, countries were experiencing the so-called catching-up growth, by exploiting the introduction of new technologies. It should not be forgotten that in the period from 1948 to 1952 through the Marshall Plan, many European countries were benefited from the program. International solidarity promoted the development and reconstruction. In addition, the exchange rate stability mainly through Bretton Woods agreement aligned in this direction.

However, in this period there was an equal development of social benefits in association with high employment rates. The economy had been driven by investment and

[13] Keynes himself elaborated the British project, whereas the US project was put forward by Harry Dexter White. Even though Keynes elaborated an efficient and more radical project, it was the US proposals that mainly adopted.

[14] The national currency of a state member needed to have a parity value established in gold / dollar. The exchange rate of national currencies could range in the interval ±1%.

[15] Some have also attributed as the age of Keynes or the thirty glorious years, mainly in French bibliography, or 30 years of robustness and stability.

consumption (high and growing wages that created demand), a heavily regulated financial sector, with the government and the central bank ready to intervene on any occasion. The latter aspect consisted of an important factor for the glorious years' success. In this way, regulation and intervention from authorities kept under control tendencies that would jeopardize the stability of the economy. Regulation was indeed a characteristic of that era contributing to the stability of the financial system both internally and internationally.

However, the Bretton Woods system had been abandoned during the 1970s due to the emerged oil crises, which national governments could not cope with. Inflation begun to rise and so did unemployment. Moreover, each state pursued to summon up its international reserves by accumulating dollars in order to be converted afterwards to gold, since the Bretton Woods system was pegged to the dollar. Consequently, there was a vast decrease in US' gold reserves. In 1971, the US decided not to sustain the parity for the US dollar of $35 an ounce of gold that served as the main agreement of the Bretton Woods. Hence, member states of the Bretton Woods repudiated with the exchange rate parity and national currencies became convertible to one another[16]. The exchange rates became floating from 1973 and hence in 1978, the monetary system was not linked to gold anymore.

As far as Bretton Woods period is concern, we could overall argue that there were surely some distorted periods and crises too, emanating though from fraud events rather than failures of the system. Thereby, crises and recessions were successfully restrained either by central bank's intervention or by budget deficits to prevent private institutions from failing. The application of the lender of last resort was tantamount effective in that period. The role of big government was valid too, with budget deficits sustaining the level of corporate profits and the aggregate demand in times of recession.

The US economy was perhaps the economy that functioned as a world central banker of the international financial system during the post war period assisting in the recovery of both Western Europe and Japan. However, as the level of international indebtedness begun to rise then it became clear that US could no longer sustain this role. After the collapse of the Bretton Woods, we have experienced the introduction of flexible exchange rates and the liberalization of global capital mobility. Some scholars attribute the instability of the financial system in the last decades, to some extent, on the abolishment of the Bretton Woods system.

[16] The dollar remained the reference currency of the system, but the fluctuation margin increased to ± 2.25%.

3.4 The actual international monetary system

After the Bretton Woods era, there has been no other agreement for a systematic and official international monetary system. Countries could voluntarily adopt a fixed/flexible exchange rate according to their preferences. Certainly, the European Monetary Union (EMU) or Eurozone is the new dominant monetary area but only applies for European countries, and more precisely for Eurozone member states.

Currently, the optional monetary system provides, from one hand, the advantage to every country to adopt its appropriate exchange rate and capital account regimes. On the other hand, it is considered as a problematic systemic feature that the free choice of capital account and exchange rate regimes, in conjunction with lack of surveillance and regulation, has redounded to increased deficits[17] and hence to greater instability.

The actual international monetary system could be considered as ineffective for various reasons. Firstly, the fluctuations of the exchange rates are large since capital mobility from one country to another could be induced by international portfolio diversification, causing distortions to effective division of labor. Secondly, the capital inflows from rich to poor countries are not taking place in normal terms but in most cases are the results of speculative unconstrained actions. Hence, the function of the actual international monetary system abuts to high indebtedness of many countries, making extremely difficult for them to boost economic growth stunted by payment commitments. Whenever a country produces a current account deficit, then another country will inevitably run a surplus. However, surpluses countries do not necessarily finance deficit countries as it was noticed during in gold standard period with Great Britain's stance.

The international monetary system, as actually operating, adds an extra foreign source that encourages domestic financial expansions. These include international capital mobility and the interplay of national monetary policies and decisions making. The perception of risk and behavior are transferred across assets, by means of international arbitrage and the carry trade. Foreign lending could be derived either directly from foreign banks to non-financial domestic borrowers or indirectly through domestic banks intermediation[18].

In the currency market, the US dollar amounts to the world dominant currency. Many domestic currencies, in particular some Latin countries, are still pegged to the dollar. The difference though since the Bretton Woods era is that euro currency has gained a significant share, alongside with the Chinese yuan and the Japanese yen. The crucial point remains the exchange rate of domestic currency and how is being affected. One factor is trade balance or the balance of payments of the borrower, and certainly, the amounts of asset holding that could be used for collateral. The strongest the currency one country poses in exchange market, the greater the advantage in international indebtedness. Since most of international debts are denominated mainly in dollar, euro or yen, entities that issue loans in these currencies have the perspective that the exchange market favors them. Debtor countries need trade balance surpluses or foreign asset holdings. This condition could be

[17] We observe a rise in public deficit from the post-Bretton Woods era and on.

[18] This expansion should be reflected in banks' loan-to-deposit ratios.

met whenever creditor countries run a trade deficit and their assets and monetary reserves increase.

By 1996 and onwards, current account imbalances have also been emerged for most of countries. These could be regarded as the outcome of capital mobility, financial deregulation, and financial innovations that encouraged the finance of current account deficits. The trend of capital flows has favored the advanced countries rather than developing countries. “Advanced countries have invested their surplus capital mainly in each other’s economies, instead of looking for profitable opportunities in emerging markets; while developing countries, too, have tended to invest in the developed world (EC, p.21)”.

In brief, an international monetary system does not exist nowadays in the form of an established status of fixed regimes but rather it relies on international monetary relations and agreements among nations at bilateral or multilateral level. Notwithstanding, the lack of consolidated international monetary agreement has issued deregulation. The introduction of new updated rules and restrictions concerning international monetary relations are necessary to sustain the global financial stability.

3.5 The globalized financial economy

Financial globalization is a contemporary feature of our time. We have remarked an integrated, liberal, and perhaps unregulated, global financial market open for investment opportunities. Finance and globalization are two concepts interlinked in current era. A quite interesting definition of financialisation stems from Epstein and “means the increasing role of financial motives, financial markets, financial actors, and financial institutions in the operation of the domestic and international economies (Epstein, 2005)”. The implication though of the financialisation is that its development occurred at the expense of the real economy and industry. That also implies that relative capital amounts have been transferred from real economy to financial sector.

During the last three decades, we have been noticing a policy convergence around the world. Countries have opened their boundaries for trade and capital mobility. This convergence had to be associated with relative deregulation. This environment of free capital mobility and new information communication technologies facilitates transfers of vast amounts of capital from one country to another in zero time. In this way, the financial sector of a nation becomes part of the international financial sector rather than a part of the domestic economy and it serves the interests of global financial institutions rather than the interests of the local people or national governments (Beder 2006, 47-52). Likewise, the financial markets could be regarded as decentralized economies which comprise many agents interacting each another in a heterogeneous, autonomous and competitiveness environment with no superior surveillance. The official target was the convergence among institutions and nations so middle or low-income countries to catch-up with rich ones. On the contrary, the result was rather divergence since rich countries, large financial institutions and corporates became richer, and the poor poorer.

Most capital inflows are often managed and by financial institutions. By the term institutions, we mean not only the concept of banks but also the markets of stocks, bonds, equities, derivatives, and all other financial products offered not only by banks, but also from any kind of money managers. Therefore, we observe a shift from commercial banks to markets as main players in the financial system. Banks are in smaller importance than fund managers of stocks and bonds, trusts, insurance reserves, funds, and other financial instruments. Nevertheless, some banks act as fund managers as well.

Thus, financial sector has already become dominant in terms of capital accumulation, which inevitably gives power in current circumstances. The size of the financial sector augments over time with the relevant consequences to the economy. Wray quotes for US economy that "finance simply became too big and at the peak (2009) it captured 40% of all corporate profits and about a fifth of value-added to GDP. Interestingly, we find the same phenomenon in 1929, when finance received 40% of the nation's profits (2011, p.16)". Considering only the US economy the household debt from 48% to GDP in 1980 grew to 100% to GDP in 2008, private sector debt from 123% to 290% and overall, the financial sector debt augmented from 22% of GDP in 1981 to 117% in 2008 (Crotty 2008). International financial transactions, including derivatives on exchange rates and interest rates, have increased 281 times from 1977 to 2007 (Panico et al. 2012; Haldane et al. 2007). Similarly, big banks have further increased their size where "the total assets of the top 25 global banks in 1990 estimated approximately to USD 7,000 billion, which accounted for about 30% of the worldwide GDP and just before 2007, their total assets rose up to almost USD 40,000 billion, 70% of the worldwide (Dombret and Lucius, 2013)".

In the current era of highly globalized economy, the most serious economic issues stem from financial system breakdowns and financial crises. The reasons are the strong linkage between finance and real economy and from the exceedingly global integration of financial markets. Households, firms, governments, banks, all of them have liabilities. These liabilities to be satisfied need cash flows that could be derived ether from income, sales of goods and services, taxes, profits from investments or financial instruments. The latter implies credit or loans but that could be only issued in case creditors are conceived of the repayments. At international level, the same logic is applied but the difference is that loans are made in foreign currency and the cash flow that will be used to repay the loan is denominated in domestic currency. Thus, when exchange rates are floating, excessive overvaluation and devaluation could be emerged leading to asset pricing fluctuations. The result is even greater global dependence on financial fluctuations because of the amplification of the financial sector in economy and consequently financial crises and instability amount to serious peril for global economy.

3.5.1 Income inequalities in globalized financial economy

Bearing in mind the magnitude of the financial sector at global level, in this section, we wish to focus on the relation between the globalization of the economy and income inequalities. The increment of income inequality and insecurity is mixture of numerous factors such as the movement of overall labour from secondary-productivity sector to the third service sector, the reduction of public sector in terms of employment, investments, and consumptions. The growth of outsourcing method, the erosion of unions and minimum wage guarantees, the immigration issue. In addition, the new economic stances of financial instability and liberalization, free international capital mobility, budget deficits and enhanced global competition. All the above factors contributed to some extent, but we give emphasis on the evolution of the international financial structure. The issue of income inequality was already apparent and further escalated after the global crisis.

Keynes (1936) described the failure to establish full employment conditions and the arbitrary and unequal distribution of wealth and income as the main flaws of the capitalism system. Stiglitz (2018) states that the free globalized market economy never implied an income distribution in social terms, but rather the efficiency and stability. Inequality reduces aggregate demand, in spite of the growth of high-income levels, since low- and average-income levels are forced to reduce consumption. Thus, aggregate consumption falls although aggregate saving rises due to high saving ratios of top incomes. The strive to increase aggregate demand by means of credit supply to average and low-income levels had succeeded only in short term but with large relative negative consequences in long term.

Polanyi (1944) in "The Great Transformation" outlined that the function of market economy has produced destabilized effects in the society, but the society usually counteracts through initiatives emanate from the community, or the government. Thus, Polanyi deems as double movement with conflict interests, from one side the free market economy, and from the other side, the intuitive need to enforce social norms and values on the process of production, income distribution and equality[19]. According to Polanyi "market economy implies a self-regulating system of markets it is an economy directed by market prices (1944, p.43)". That contention made it clear that economic agents and the economy as a whole is driven by the free-market price mechanism, which contains and provides all the information concerning the products to agents. The market economy is underpinned by the *laissez faire* flag, which dissociates the market from the state influence. That dissociation is enforced by the international market structure with free international trade and the legal framework it imposes. The international operation of market is also expressed by fixed exchange rate regimes and the monetary unions whereby we remark that the role of states or sovereigns have become ancillary. Furthermore, in the financial sector the scope is even bigger where the international financial transactions and interdependence has led to large capital accumulation to very few financial institutions.

[19] Polanyi implied the welfare state function including social benefits, transfers payments, general health insurance, minimum wage laws, and minimum income guarantee to secure poverty aversion.

Polanyi has also developed the motives imposed by the market, being much inspired by Aristotle[20]. He focuses on the valid motive of survival that turn individuals to selfish beings who offer labor[21] in order to gain income for buying other commodities. Even though human's nature is socially motivated, the market economy pushed them to turn to egoism through an unstoppable working competition process, which implicitly carries the threat of starvation and poverty. However, that contradicts human social nature that every single action must be prescribed by social rules to safeguard the society and individual's position[22]. The reason is that individuals are totally depended upon the society, not only on economic terms, but also on terms of self-assurance, welfare, and happiness. Therefore, any activity should be socially regulated, unofficially in terms of honor and must follow social values[23]. Distribution policies, thus, must encounter social rights.

In Polanyi terms, we would say that market antagonizes society. Currently the integrated globalized financial model has prevailed, which separates financial/market interests with political protection and liberty assurance. It contradicts though the principle of income distribution equality and perhaps the general welfare.

Minsky was equally concerned with the issues of income inequality, unemployment, and poverty. He stressed the fact that economy faces a trade-off such as the efficiency and equity or the Phillips curve's inflation and unemployment (Minsky 1968). The growth rate target should also be considered as a mean to promote allocation, distribution, and employment, rather than being the unique target. The pursuit of social issues of poverty aversion and employment could enhance the economic growth overall. Minsky's insights, nevertheless, will be developed in detail in a following chapter.

Galbraith (2012) conducted an analysis stating that inequality stems profits from financial sector and not by technological changes. He based his conclusion on the examination of world economy inequalities over a forty-year period, linked with relative movement in the stock market. Income inequalities lessen demand and if interest rates decrease, then individuals and firms will tend to borrow more eventually increasing the debt levels. That would be inevitable because the disposable income to spend will be lower and lower, whilst high-income levels will turn to investments in high return assets. Thus, consumption spending will be compensated by borrowing. In addition, Stiglitz (2011) and Fitoussi (2009) had made similar deductions, stating that the increase in income and wealth inequalities constitute the basis of financial crisis. Fitoussi interestingly names that process as a "reverse redistribution of income" that took place mainly in the developed countries.

Alvaredo et al. (2013) state that income inequality is the outcome of fiscal policies that favored the high-income levels and labor market deregulation (also Dombret and Lucius 2013). The downward wage and pension pressure has also contributed to income inequality.

[20] Polanyi in his "Aristotle Discovers the Economy" (1957) shares his view with Aristotle's critique of the market.

[21] It is important to note that in market economy labor, capital, land, are not treated as fundamental right of people but as another commodity tradable in the free market. It became a motive of survival. An empirical example that he provides is the colonization on indigenous communities in Africa.

[22] The concept contrasts neoclassical fundamental axiom that individuals are self-interest, isolated and profit maximizers

[23] It should be noted that Polanyi's views do not imply a medium path between market economy and socialism. He deems inefficient the intervention and regulation imposed on a free-market economy or an economy being functioned partly by free market and partly by governmental regulations. He also finds no distinction between market economy and liberalism.

Besides, individual debt cannot be easily validated as long as wages are low which in turn reduces saving. Household consumption can be sustained either by wage increases or by financial leverage. The latter entails indebtedness and more fragility. All these elements nurture financial instability.

Furthermore, the consolidation of the financial system and the concentration of capital to few big financial institutions deteriorate income equality. Minsky refers that "a highly centralized system with a few big banks is not desirable if the aim is to achieve a wide distribution of wealth and a multiplicity of independent economic agents (Minsky, 1990)". Concentration, globalization, and deregulation have brought closer international interdependence among countries and financial institutions. These interconnections have resulted in an international financial network that renders the comprehension of the financial system more complex. It is not a coincidence that we observe identical policies to be applied by most countries, in terms of interest rates, trade, fiscal and monetary policy. Unfortunately, most of these policies do not favor equality but encourage international trade and finance investment. Nevertheless, the main concern inevitably remains contagion during a period of financial distortion as the outcome of adoption of similar practices.

Thus, the financial bailout packages in 2009 "which involved capital injections, guarantees and the issuance of banking securities, bank asset purchases, swaps and other guarantees amounted to a total government commitment of 22 % of GDP for the European Union and 29 % of GDP for the United States (EC 2014, p.30)". Therefore, the implications of financial crisis, or even a recession, are associated with a redistribution of wealth via the state. Furthermore, financial innovations have been used by institutions to attract more capital to invest also in assets with higher returns and super profits. That capital to invest in portfolio choices emanates primarily from investors' surplus cash. Notwithstanding, the plausible question is where does this surplus cash come from?

The financial globalization has been connected to income concentration and therefore must be similar policies to restore equality. Panico et al. state "since the expansion of financial lending can influence the income shares, a society that is committed to the stability of the distributive shares should be interested in the introduction of forms of regulations that make the loans of the financial industry grow in line with total wages (Panico et al. 2012)".

3.5.2 Generic review of globalized financial economy

Overall, the Achilles heel of the globalized system remains the low economic growth rates, high fiscal deficits, and the low employment levels. The financialised globalization and income distribution constitute two terms inseparable intertwined. Despite recent financial crises and the instability, still the core theoretical and ideological consensus centers on government reduction and free market efficient operation rather than coping with unemployment and income equality. Nevertheless, the government must be the promoter of a sound full employment policy because this policy comprises the only antidote to poverty

and extreme inequality we currently observe. Monetary and fiscal policy measures can boost the main goals of the economy. Whilst monetary policy has solely the target of price stability, fiscal policy could stimulate the growth, employment, consumption and investment increase, stabilization policy, income redistribution. Some of them are not complementary but conflict each other, even providing with trade-off dilemmas. Nevertheless, the employment, income and wealth distribution equalities, poverty aversion, all of them constitute social and democratic rights rather than simple variables or desired targets.

Chapter IV

4 Financial Crises and Instability

4.1 Introduction

The concept of financial crisis and instability has been a matter of controversy. The financial and economic crises are nowadays regarded as a crisis of the economic theory too. The conventional wisdom postulates that the financial system is naturally stable, whereas short-term exogenous shocks might appear, but market forces will push the system back to equilibrium path. Mainstream economic theory has not proved much adequate to predict the crisis and to give answers on the questions of the causes of crises and their frequency. Post Keynesian economics have better anticipated the global financial crisis. Their contentions made it clear that the flaws of the current dominant financial status will eventually entail to instability and probable to crises and recessions.

World economy has become instable and vulnerable to the emergence of unanticipated financial events. Such events are not simply limited to a large bank default but also to the inability of a multinational firm to validate its debts, a general disruption of payments or a sovereign debt crisis, equities or derivatives markets collapse, accumulation of stocks and products, international trade freezing. High growth rates and low unemployment are additionally being jeopardized by the instability of the financial system. In this chapter, we empirically refer to the events of two recent financial crises, the East Asian financial crisis in 1997 and the US subprime crisis in 2008. We highlight the main causes of financial crises and their implications to the global economy. Thereby, we address the role of banks, the aspects of innovation, speculation, and crisis contagion. Hence, we gather the arguments and conclusions.

4.2 History of financial crises

The examination of the history of main financial crises constitutes a useful lesson to comprehend the whole issue. Peterson states that, “leaving history and its uncertain movement out of the analysis imparts a false sense of determinacy and predictability to the economic process” (1977, p.213-214). History and financial crises proffer an interesting learning method. However, history customarily describes unprecedented events. In case of financial crises though, their history is often repeated. Besides, we cannot neglect the trajectory of financial cycles. The expansion in credit supply and the increment in investment and consumption could lead to economic booms.

Major financial crises emerged when the system was highly deregulated. There are empirical examples such as the East-Asian crisis in 1997, the stock market crashes in 1987

and 2001-03, the European sovereign crises, and certainly the subprime 2007 US crisis. Similar characteristics could be found in the Great Depression in 1929–33, but the difference consists of the time of international transmission, which was sooner due to advanced information technologies. However, the status of then and now is much alike in terms of financial instability.

Shortly before the great depression, there was stock market speculation and global overproduction in some commodities such as wheat, rubber, coffee, sugar, silver, zinc, and cotton. There was the stock crash in 1929 precipitated firms' stock values. There were many bank failures and bankruptcies, increasing unemployment to the highest levels. Deflationary process had commenced. In addition, deflation in the United States came from appreciation of the US dollar and from the decline in bank reserves. The gold standard made ultimately vulnerable the international financial system. In 1931, Great Britain broke the link between sterling and gold. The world economy reached the bottom in March 1933 with the eventual devaluation of US dollar.

4.2.1 The East-Asian financial crisis

As mentioned above, we wish to provide brief empirical evidence from two financial crises that resemble with the arguments raised so far and the financial cycles. The East Asian crisis encapsulates all the characteristics of an unstable international financial system. The crisis originated in 1997, when Thailand announced that it could not meet its foreign debt obligations. Thailand, Malaysia, and Indonesia presented a magnificent increment in stock and real estate prices in industrial activity, whilst trade deficits enhanced. There was a rapid economic growth resulting from outsourcing by US, Japanese, European firms and certainly by foreign capital inflows (World Bank, 1997). In addition, Japanese and European bank loans were granted to East-Asian countries, contributing to current account deficits growth. The outsourcing process was obvious in East-Asian markets since major multinational enterprises were seeking to abridge their labour costs. In the case of Thailand, Indonesia, Malaysia, and South Korea, they had all experienced a deregulation process, whereas financial institutions at the same time lent in foreign currencies, and all the sudden, they stopped.

By the end of 1996, the new emerging financial firms in Thailand started to incur large losses on their loans. Then, foreign lenders were worried about the value of their loans to domestic borrowers and capital outflows ensued. Initially, the central bank of Thailand defended the domestic currency, but as soon as reserves could no longer be available, then a sharp devaluation began. Within six months, the devaluation process initiated a contagion effect to foreign exchange values of each of the currencies of East Asian countries, except for the Japanese, Chinese and the Hong Kong dollar. In that period, it was estimated that equity losses accounted for 700 billion$ (Greenspan, 1998), whilst equity markets in Thailand, Indonesia, Malaysia, the Philippines, and South Korea underwent an abatement, in local currency terms, by 53% to 76% from their 1996 and 1997 ceilings (Chote, 1998). The forthcoming result was a reduction in prices of stocks, real estate, and bank failures. The IMF intervened to stabilize the financial crisis by inducing East-Asian governments to balance the current accounts by cutting expenditures. The East-Asian crisis influenced the global financial system. Spillover contagion effects of the financial disturbance across countries

ensued, due to export trade links and financial interdependence, also fueled by the fact that the region's currencies were pegged to the US dollar.

The empirical lesson from East-Asian financial crisis is the fact that whenever a currency value rises because of capital inflows expansion in association with current account deficits, then this combination renders the country vulnerable, since the economies are overheated. As soon as this euphoria climate of capital inflows can turn into a liquidity shortage, that would result in a sharp currency depreciation. That was exactly what happened. As soon as liquidity originated initially from capital inflows had stopped, then psychology changed, and the financial crisis started to unfold.

4.2.2 The US subprime crisis

The global financial crisis of 2007–09 initiated from the US subprime crisis and spread to the rest of world by means of capital flows, and certainly through expectations. The financial cycle was apparent in the US subprime crisis, where the boom phase commenced with an enhanced securitization of mortgages, mainly debts, because of the introduction of financial innovations and the bubbles in the real estate sector. However, here again financial deregulation had advanced in the US economic environment during the 2000s, also including capital inflows to the US economy. All these factors had facilitated the boom period. However, the flame was initiated by an unstoppable mania of securitization that financial institutions had put forward, without reassuring relative hedge positions. When more and more agents engaged in easy credit, then only a match was the missing element to light up the flame of a financial crisis. In order to cope with the crisis, the US government had decided to move towards expansionary fiscal policy that restrained the negative effects. The expansion of the fiscal policy, in this case, offsets the reduction in consumption and investment and improves the overall economic activity. The US subprime crisis also brought up the issue of the contagion effect, coming from a dominant financially country, which would inevitably affect the global financial system.

4.2.3 Some Remarks of financial crises paradigms

We have outlined two recent financial crises, which turned out to be international, the East-Asian crisis originated from developing countries, and the US subprime crisis from an advanced country. A common feature of these crises is that the expansion period had started with the adoption of macroeconomic policies that facilitated a profitable ambiance between domestic and foreign assets for financial arbitrage. These policies contained the liberalization of the domestic financial market, the deregulation of the capital account and the overall financial system, and some 'credible' rule of nominal exchange rate predetermination (Frenkel, 2003). The crises have highlighted the weaknesses, inefficiencies, and insufficiencies of the domestic financial systems and in international level, the inadequacy of the international monetary and financial system.

It should be noted that the emergence of a crisis does not have the same implications in every country. When a financial crisis occurs in advanced economy, such as the US, agents could seek on public bonds and treasuries, contributing indirectly to the country's fiscal expansion. Instead, in developing countries, such as the East-Asian case, a

crisis will result in capital outflows, rendering the remedy more complex. Most of the developing countries do not have the option, in times of distortions, to expand their fiscal policy either because of their large government debts or from markets' unwillingness to lend them. In developing countries, unfortunately, financial crises have the additional effects of exchange rate devaluations due to balance of payments adjustment and a fiscal contraction. The above combination makes difficult for developing countries the application of fiscal expansion as crisis counteractive policy.

The same view applies for countries that run deficits. As Keynes (1941) pointed out, these countries will eventually need to make adjustments whenever markets consider their deficit unsustainable to be further financed. The outcome will be a crisis and a reduction to domestic aggregate demand. By contrast, surpluses countries could overvalue their currency or raise their domestic demand in order to offset international imbalances and help the deficit country to improve their balance of payments.

Generally, some crises emerged from banks' failure, others from a country's inability to sustain the parity for its domestic currency. Many of them occurred due to capital inflows and outflows and others initiated from stock markets or real estate markets when bubbles begun to implode. Credit supply expansion and over optimism were the same characteristics during the boom phase. In many cases, financial crises were the forthcoming event of the boom period. Consequently, it is a common sense to support that the financial cycles with booms and busts periods, are connected to instability and crises.

4.3 Causes of financial crises and instability

The actual function of the financial system could be attributed as a dynamic system that endogenously generates instability and cyclical movements. Instability and fragility of the financial system may result in a financial crisis. Even if the financial crisis is not associated with a general economic crisis or recession, notwithstanding, the consequences to economic activity are significant.

Financial crises are the outcome of globalization, free capital mobility, increased interdependence in international financial relations, and deregulation. During periods of credit expansion, similar phenomena were observed. Irrational exuberance, extreme laxity in financial regulation and too much available credit, altogether put at risk the international financial system. McKinnon and Pill (1997) have named this tendency as 'The Over-borrowing Syndrome'. Krugman (1998) suggests that over-lending and over-borrowing produce a moral hazard issue. Sau (2013) states that the financial system is a complex one and that renders it unstable where "group dynamics can fuel speculative bubbles in asset markets and attitudes toward risk, which in turn can lead to financial fragility and instability" (2013, p.14). Borio and Disyatat (2011) associate financial distortions with what they call the 'excess elasticity' of the system. By the term excess elasticity, Borio and Disyatat imply the incapability to limit credit and asset prices expansions, which lead to the creation of financial instabilities and crises. Borio and Disyatat also raised the issue of 'excess saving' view, where global current account surpluses could generate a financial crisis by financing the credit

boom in deficit countries. Hence, the excess of saving over investment puts downward pressure on world interest rates. As a result, characteristics of an upcoming global financial crisis are observed, such as credit expansion even in more risky assets. Furthermore, Eichengreen and Arteta (2000) in the credit expansion analysis found out that a growth by 1% in the domestic credit rate would raise the likelihood of a banking crisis by 0.056% in the following year.

Financial instability is currently established by the behavior of the players. The danger of financial instability risk comes from the creditors' side and not from debtors. It is the fear that creditors cannot cope without the expected payments. Therefore, the leverage of the creditor creates the crisis and not the leverage of the debtor (Mayer 1999). Minsky wondered himself "where is the cash flow? (Minsky, 1986)" in his strive to describe money circulars for payment commitments made in past with implications to the present and the future. The economic and financial system had currently been developed in a more complex manner combined with new technological and financial innovations, all of them in a new globalized economy. New products and innovations in finance provide numerous options for investments, attracting more and more capital.

In that environment, firms, households, governments were indebted whilst financial institutions were leveraged. As far as liquidity is concern, it is evident that in certain assets it could easily dry out when an incident emerges. The liquidity shortage ensue insolvency. As soon as the system moves towards bust, households and firms face repayments issues, and the financial system cuts the credit. Central banks become the shelter of commercial banks in order to provide them with required liquidity, not to be used for credit and loans ratios maintenance, but to help them remain financially viable and to avoid bankruptcy. Therefore, domino and contagion effects follow through a global financial crisis in an interdependent international financial system. Thus, the global crisis raised from liquidity and solvency, sometimes unveils the real value of the underlying assets. Additionally, it may depreciate the real asset value more than its actual worth.

In the equities markets, there is a quite interesting debate if asymmetric information exists. The prices of shares could be highly depreciated in the stock market to be acquired by insiders with information given. Those insiders will then sell the shares at a rapid rising in the value. When asymmetric information between creditors and debtors exists, it will affect the operation of financial markets and the atomistic behavior. Thus, the information for the appropriate time is vital not only for buying but also and most importantly for selling. This is the value extraction method. In other words, it is the time of selling in the highest peak of prices when profits are certain without danger to hold on to stocks after prices begin to decrease. The issue of asymmetric information was ignored by conventional economic theory.

At international level, countries are distinguished between developed or developing, or large economies, medium or small. Therefore, there is asymmetry among them, which is also identified in terms of markets and institutions. Bearing in mind their global interaction we deduct to the argument that every, even small, fluctuation in the monetary policy or portfolio choices that stem from a large country will produce significant impact to other

countries and markets in relation to their size. The implication is that smaller economies and markets in the integrated financial system will meet difficulties to cope with only by themselves any adjustment made by large economy[24].

Kindleberger and Aliber state that "the failures of banks, the overshooting and the undershooting of exchange rates around their long-run equilibrium values, and the bubbles in real estate and stock markets were systematically related and resulted from various shocks that led to large changes in the scope and direction of cross-border money flows (Kindleberger and Aliber 2005)". The carry-trade and arbitrage strategies are best examples in the scope of taking advantage the forward premium. Furthermore, when a country's foreign exchange currency has increased, that may entail in the loss of competitiveness, possible capital outflows, and demand for domestic currency assets. In this case, wealth effects are also being applied by inducing debtors to engage in more risky investments because the value of their liabilities in foreign currency has decreased.

Therefore, in a globalized financial system with huge capital movements, the examination of capital account balances is at equal importance with the current account. Borio suggests that "changes in the value of assets and liabilities dwarf the changes in current accounts in driving the net transfer of wealth across countries. In such a world it is mainly the value of gross stocks of assets and liabilities, and the imbalances that they hide, that represent the major source of vulnerability (Borio, 2014)". There are shifts in capital flows, arising from financial assets' trade that are not fully reported. However, there is little information about international lending and borrowing not reported in the current account that could officially be used to draw solid conclusions.

The main issue is the transmission of each country financial problem to the international financial system. As soon as the bust phase enters then a sharp devaluation as resulting to capital outflows entails as well as a decline in assets prices, rendering the liquidity short. These crises could be attributed as monetary and contained unexpected shifts in the supply of money and in the expected shifts in interest rates and inflation. The positive side is the spread of positive externalities but in case of recent crisis, we can clearly observe that a financial distortion of a country may become an overall and complex financial issue at international level. Thus, troubled countries seemed to be unable to resolve domestically their problems because of highly interdependence in terms of trade and financial transactions with other countries. We have experienced more evident this phenomenon in the European sovereign crisis but also in the US subprime crisis. Despite the mutual benefits in prosperous periods at global scale, the other side of the coin is a global crisis.

[24] That brings up to Keynes argument about the enhanced responsibility of dominant countries in international financial system and the term "fiscal independent" attributed for big economies

4.3.1 The role of banks in financial instability

The financial cycle contributes to banks' failure, whereas the capital inflows during an economic expansion lead to increases in prices of assets, stocks, real estate and thus to currency overvaluation. In general, financial crises reduce agents' confidence in the banking system that has been engaged in excessive risk-taking activities. Banks usually tend to refinance their liabilities by issuing credits and loans, rendering themselves vulnerable in cases of adverse financial circumstances. Banks do not simply record the loans they grant in their balance sheets, but furthermore, they trade them in the open market. Thus, they sell loans in order to acquire more funds and tend to gain profits from any new transaction. Additionally, they are also involved in liquidity or money creation by lending their own IOUs to borrowers. The main issue is whether that liquidity is feasible and visible only during boom phases. As soon as a crisis is near, then liquidity disappears at once. Consequently, this illusionary liquidity would be transformed into debt burden to the shoulders of some agents, central banks or even governments.

Financial instability arises when there is no explicit distinction of roles between the operation of commercial and investment banks[25]. Commercial banks could provide short-term and low-risk loans to firms and households taking all the precautions for repayments. Investment banks usually tend to finance positions in capital assets for future earnings and they could be allowed to have a riskier attitude for a longer period. However, commercial banks should not be allowed to take on risky positions, since they assist firms and households' activities. It should not be forgotten, the possibility to resort to the central bank in case of a liquidity shortage. Commercial banking is a vital function of the domestic economy, which develops an active financial role abroad too, contributing to the public-private purposes they were supposed to serve.

4.3.2 Securitization

Another important aspect of world's financial instability is securitization, which comprises the process of pooling loans, mortgages and issuing securities. Stiglitz quotes that "securitization had the purpose to insure by diversifying risk, so each investor would bear little risk, but instead, securitization, as designed and practiced, ended up being just one more amplifier of the crisis (2018, p. 9). Securitization, in association with globalization, has contributed to financializing the global economy by throwing numerous new financial products in the global market.

Narrowly defined, securitization consists of the convertibility of loans into securities, tradable to open markets often via off-balance sheet. Minsky argued that "whatever can be securitized, it will be securitized (1990, p. 64), implicitly highlighting the magnitude and prospects of the amplification of securitization. In the context of large securitization, the

[25] Glass-Steagall Act in 1933 introduced that distinction in response to the 1929 crash. It established a regulatory distinction between commercial and investment bank activities and prohibited proprietary trading by retail banks. The Act was abolished and replaced by the Gramm-Leach Bliley Act, which removed these constraints, with the justification that banks should be allowed to mottle their activities. However, the US subprime crisis of 2007 portrayed the ineffectiveness of the new Act and afterwards a new role, the Volcker rule, was established, separating investment banking from consumer lending. Nevertheless, the Volcker rule is not similar to the Glass-Steagall Act because it permits various exceptions.

success of monetary policy to cope with a crisis is rather doubtful. Many non-bank financial institutions constrain the range of policy implementation by monetary authorities. Thus, central banks can protect only one part of the financial system lessening its efficiency. That facilitates the endogenous money supply growth. The financial system becomes vulnerable and unstable. The issue is that during contraction (wage contraction, private consumption, saving, or aggregate demand), the promised increased money could not be easily validated, also producing a potential domino effect. Therefore, securitization deepens the problem of financial instability and renders its remedy more complex.

4.3.3 Asset pricing bubbles

There is also a strong link between asset price bubbles[26] and economic euphoria. Hence, speculation, asset price bubbles, in conjunction with economic prosperity and credit and expansion seems to be interconnected. Kindleberger and Aliber define a bubble as "a non-sustainable pattern of price changes or cash flows leading to an upward price movement over an extended period of fifteen to forty months that then implodes (Kindleberger and Aliber 2005)". Therefore, an unexpected event, such as a default of an institution could lead to a panic ensued by crisis.

During the expansion phase, entrepreneurs and firms increase their borrowing in response to the rise in their net worth. Additionally, financial institutions ease their loan requirements and expand lending. When asset prices begun to implode, nevertheless, firms' net worth values diminish and banks suffer from loan repayments loses. Some of them are even forced to bankruptcy, merging, or entering a state recapitalization status. It is interesting to realize if asset prices increment precedes the economic expansion or vice versa. Many asset bubbles are related to shares value in the stock market. In addition, the real estate sector is vulnerable to bubble pricing. The US subprime crisis was linked with property sales. Investing in the housing sector has always been considered as a sound option due to the sustainable demand for property. Property acquisition particularly in large cities has always attracted potential investors, who wish to buy a property or just to diversify their wealth.

During prosperity periods, we have been experiencing a rise in property sales in line with the augmentation of their price. Financial institutions have always granted mortgage loans because of their high demand. If the price of "bubbles" increases, then the greater the volume of loans needed to be issued. Notwithstanding, if anyone had paid sober attention on banks' balance sheets prior to housing bubble crisis in 2008, he would have been alarmed. When a bubble implodes then the decline in the price drifts the general price level and thus reduces the aggregate demand. The loans remain undiminished, though, which entails to the freeze of repayments.

[26] An earliest recorded bubble was the Dutch tulip bubble in 1630s. The price of tulip increased because potential buyers received credit from tulip sellers. The sale of tulip, as one of most important products of the economy, flourished and therefore the whole economy boomed. Eventually as the bulb prices decreased then general price reduction ensued aggravating the growth rates. The tulip bubble had disappeared, but the levels of indebtedness remained. In 1720, the South Sea Bubble in London and the Mississippi Bubble in Paris occurred in 1720. The reason was again the growth in credit supply induced by a new financial institution.

4.3.4 Rational expectations

The term expectations are the proper one to summarize the fragility of the system. Positive expectations induce agents to invest more and to run additional debts whilst negative expectations result in contraction[27]. That shift in expectations increases the likelihood of a crisis. The neoclassical model of rational expectations does not seem to be relevant to the emergence of financial crises. The continuous instability and the financial cycles indicate the individuals' choices are often beyond rationality. The assumptions that the theory of rational expectations imply are that individuals possess the same information about a product and act accordingly in a rational way. There is no asymmetry information and therefore the game is on equal terms. Nevertheless, reality has shown different attitudes from agents. Many agents adopt the herd behavior following a group of thinking or other individuals' choices. Some of them behave in rational terms in the beginning but their views change as the market develops and then loose contact with reality. Therefore, rationality might be perceived as a unique common view but may vary among different investors, speculators, and traders.

4.3.5 Innovations

At first glance, the term innovation entails a positive sense and there could be little or no connection with financial instability. Schumpeter (1934) stressed the mechanism of innovation as a means of growth and structural change. Economic growth is the outcome of innovation, which specifically means the adoption of new combinations of materials and productive methods or the introduction of a new product or a market. Innovation may lead to super-profits, or to a breakdown of a firm or of an entire sector. Schumpeter named innovations as 'creative destruction of the system', since innovation rewards profits on the one side, but also destroys competitors on the other side.

In the financial sector, innovations offer the opportunity to financial institutions to increase their profits and to decrease costs. By innovations in finance, we mean the introduction of new financial products and instruments such as futures contracts, derivatives, interest rate swaps, credit default swaps, etc. They are driven by international competition that contributes to increasing leverage and liquidity of financial instruments. However, when a crisis is forthcoming, this liquidity appears to be fictitious. Minsky (1992) refers that during prosperity periods of expansion, innovations in finance will grow endogenously urged by success. Brock et al. (2009) have demonstrated that financial innovation may destabilize the financial system. Additional research has shown that innovations increase price fluctuations, resulting in destabilization and a reduction of the average welfare (Hart, 1975; Citanna and Schmedders, 2005). Mastromatteo and Esposito underline that "more innovations yield more profits but also more instability because the longer the bubble is allowed to grow, the higher financial leverage becomes, and thus innovation, investment, uncertainty, and financial bubbles are one and the same thing (2016, p. 30)". On the contrary, the financial system is more stable at periods with low financial innovation.

[27] Negative expectations imply less investment and hence reduced profits and therefore higher probability for agents not to meet their debt past obligations.

Financial innovations have increased credit expansion and risk. Certainly, they are important for investment and reproduction of economic growth. It could be argued, though, that most of recent financial innovations were related to financing positions in financial assets, and even, speculating on the fluctuations of prices of those assets. The above process had little to do with investment production and economic growth. The stability and the proper function of the financial system are essential, and therefore, the main concern is that innovations may produce instabilities. Since they are innovative, then we are unaware of their implications to the economy. Unambiguously, there is a shortage of knowledge and experience on how they will operate in the market. They tend to modify the structure of the financial system because they accelerate the speed of the financial cycle and increase the size of the financial sector.

Furthermore, innovation could be linked with regulation. It enables financial institutions to escape from regulatory controls. Additionally, institutional rehabilitations have always been left behind with innovations, providing the scope to take full advantage of these steady retards. In the absence of constraints, the financial system will inevitably lead to innovation in search of profits. Some innovations were also passed to non-banking institutions, or even to the shadow banking system, which is not subject to the banking regulatory context. The degree of regulation, thus, accelerates or decelerates the process of innovation.

However, we need to reiterate that the term innovation is not associated with distortions and undesired events. By contrast, it is more than desirable when innovation brings more quality, customer service, technological progress, and sound economic prosperity, contributing to general welfare. In the current era, though, innovation has been linked with the outsourcing of labour activities, wage and benefits reduction, inflated bubbles, financial amplification, and instability.

4.4 Financial integration, exchange rate regimes and financial crises

It has been a common argument that during the Bretton Woods (BW) system, financial integration among countries was rather low and financial institutions were heavily regulated. By contrast, when BW was no longer applied, greater financial integration and under-regulated financial intermediation enhanced the risk and the cost of maintaining the fixed exchange-rate regimes. History has also demonstrated that the new financial status increased the possibilities of the emergence of financial crises. Thereafter, the appearance and the magnitude of financial crises were also linked to financial integration and exchange rate regimes.

Financial crises jeopardize the stability of currency areas and fixed exchange-rate regimes. Higher degree of trade and financial integration influences the stability of fixed exchange regimes. It is argued that countries with pegged rates or members of a currency union are facing a trade-off dilemma between financial integration and independent

monetary policy. According to Aizenman, a currency union anchored to a leading global currency stabilizes inflation at a cost of inhibiting the use of monetary policy to deal with real and financial shocks and vice versa. Currency unions with low financial depth and low financial integration of its members may be more stable at a cost of inhibiting the growth of sectors depending on bank funding (Aizenman, 2016). Mundell's (1960) trilemma states that financial openness and proactive monetary policy are incompatible with a fixed-exchange rate regime. The crises in Mexico (1994), East-Asian countries (1997), Brazil and Russia (1998), Argentina (2001), could all constitute empirical examples of Mundell's trilemma.

Similar research results confirmed that countries are dealing with this binding trilemma. Borio and Lowe (2002) support that it is difficult to find in history an example of a monetary regime that had accomplished all the above targets at the same time. Aizenman et al. (2012) state that recently in developing countries, monetary independence, exchange rate stability, and financial openness, are converging towards "middle ground" with managed exchange rate flexibility, which they attempted to hedge by holding international reserves, while maintaining medium levels of monetary independence and financial integration. Accordingly, the trend for developed countries has been moving towards the increased exchange rate stability accompanied by financial openness at the expense of monetary independence.

Thereby, the trilemma implications encompass financial instability issues. If we treat trilemma's features as variables, then a rise in one variable would prompt an adverse swift to the other. If the solution is to tighten a currency, there are numerous issues that will initially need to be resolved, such as coordination problems, a banking union, and unified deposit insurance supported by effective institutions to deal with possible moral hazard arising problems (De Grauwe, 2011; Krugman 2012; Aizenman 2015). De Grauwe (2011) also quotes that when entering a monetary union, member countries cease to have control over the currency in which their debt is issued. As a result, financial markets can force these countries' sovereigns into default, making the monetary union vulnerable to changing market sentiments. Aizenman (2016) concludes his thinking concerning currency areas with two challenging trade-offs. Firstly, currency areas may be more stable for countries with limited financial development, at a cost of lower potential growth. Secondly, credible backstop mechanisms and deeper pooling of risks may stabilize a currency area, at a cost of ensuing moral hazard. Thus, countries are dealing with the exchange rate risk, financial stability, and autonomy. If they have to give up something that will be mainly determined by the time and epoch conditions.

4.4.1 The case of EU

The Eurozone countries of the European Union is the best example with no monetary independence, strong degree of financial integration and free capital mobility. The design and the adoption of the euro were decided in the early 1990s under the framework of the Maastricht Treaty, at a period of full prevalence of anti-inflationary policies. The rhetoric of price stability, competitiveness, money supply control and inflation were top economic priorities at that time, whilst the Keynesian recommendations of aggregate demand and full employment were at lesser importance.

By examining the function of euro zone, we observe that during the first decade of the introduction of euro, high capital inflows were accompanied by high growth rates. The adoption of single currency has brought additional profit opportunities, transfer of capitals from center to peripheral economies, enhanced fragility, bubbles and over optimism. However, the sovereign crisis emerged in the second decade had also brought up the EU functional deficiencies. There was a balance consideration between creditors and debtors within the EU, putting from one side the moral hazard issues[28] and on the other side, the stability of the euro currency. The decisions that were taken and the policies implemented to resolve EU sovereign crisis are well known, but we could argue that the balance finally stood somewhere in the middle. The economy in many member states is highly depended upon banks, which in turn have become exposed to sovereign debts, creating a cycle that eventually confined credit supply.

The sovereign crisis in EU has revealed the weakness and the shortcomings of the Eurozone financial system. A banking crisis as occurred in Spain could easily be converted into a sovereign crisis, since Spanish authorities have decided to bailout the troubled banks, instead of recapitalizing, rendering thus the debt as a public one. Thus, European authorities realized that it is essential to break the cycle between banks and sovereigns[29] and to establish a regulatory mechanism. Focusing on financial cycles, we identify the close link between domestic financial cycles and capital mobility flows that poses the issue of whether prudential regulation policy in the euro area would be compatible with high capital mobility.

Furthermore, the role of the European Central Bank (ECB) in that monetary scope has not been fully implemented. The ECB does not actually function as a lender of last resort. It could act so but the institution is not obliged[30]. Similarly, neither the ECB nor national central banks are permitted to provide any credit to national governments at any circumstance[31]. The lender of last resort function enables central banks to stabilize a financial system by providing base money to the banking system, whenever reserves and liquidity in commercial banking were low. Thus, governments with deficits can only issue debt in the primary bond market or through treasury bills. Ergo, the ECB could indirectly intervene, through open market operations and to buy governmental bonds from the secondary bond market.

Monetary policy and in particular the set of the interest rate comprises another problematic issue within ECB. The same application of interest rates levels influences differently each member state because of the financial markets differentiations. A reduction

[28] These issues are the main concern of the Northern countries of EU, which are reluctant to adopt a pool mechanism, such as a common bond, in their fear of possible lack of discipline by Southern mainly member states.

[29] Euro Area Summit Statement 29 June 2012

[30] ECB protocol 3 “In order to achieve the objectives of the ESCB and to carry out its tasks, the ECB and the national central banks may : operate in the financial markets by buying and selling outright (spot and forward) or under repurchase agreement and by lending or borrowing claims and marketable instruments, whether in Community or in non-Community currencies, as well as precious metals; conduct credit operations with credit institutions and other market participants with lending being based on adequate collateral”.

[31] Article 104 of the Treaty of Rome: 'Overdraft facilities or any other type of credit facility with the ECB or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favour of Community institutions or bodies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the ECB or national central banks of debt instruments'.

in interest rate to boost investment may not produce the desired outcome for all. Thus, each member state has its own borrowing rate and spread to finance its sovereign debt in the international bond market. Expansion up to an extent of the fiscal policy[32] is not allowed according to EU regulations and therefore member states' flexibility in times of financial disturbances is limited. The answer for EU could be the improvement and an updated set of rules of its super national organizations. In addition, the ECB and the national central banks could extend their jurisdiction as lenders of last resort, to adopt the role of safeguard for financial stability within Eurozone.

Consequently, in a monetary union such as the EU, financial distortions may cause sovereign and banking crises to a country facing high debts[33], making it impossible to overcome the crises by its own. Additionally, it becomes a contagion threat for the other member states with large trade cooperation, which also depend upon market's refinancing of their public debts. The Keynesian theory would dictate that imbalances in the EU could be resolved by a fiscal expansion of the creditor countries to debtor countries in order to boost growth. By contrast, we have observed the introduction of policies of reduction in total spending for the debtor countries as well as the deteriorating reforms in the labor market.

4.4.2 Currency crises in an open economy

One of the most common forms in international crises emanates from currency crises due to exchange rates shifts. The impact rests not solely upon national level but has international implications as well. A currency crisis could be caused by lack of confidence of expectations that the currency will be devaluated. Additionally, currency crises could be resulted by speculative attack on governments' reserves, when investors contemplate that a change in their portfolio currency option is needed and tend to get rid of domestic currency for another country's currency. This change in the attitude has numerous reasons, such as political, no further trust on governments' economic policy, fear for uncertainty or simply some other foreign currencies seem more promising for profitable or speculative reasons.

Krugman (1998) acknowledges three types of currency crises, the canonical crises or first generation, the second generation and the third-generation crises, where all of them are associated with financial crises. In the canonical crises, speculative investors wait until governments' reserves exhaust to the point that they will not be able to defend the exchange rate any longer. The second-generation currency crises depict situations where government has the option to allow devaluation or to defend its domestic currency according to the circumstances. A fixed defending exchange rate could be often proved more costly, particularly in cases where market is confident that eventually the currency will depreciate even in the absence of a speculative investors attack. In this case, government is ahead from the events to save costs for defending the exchange rate, but a currency crisis will still be inevitable since investors will run to get rid of domestic currency. Third generation currency crises are more complicated and more associated with international financial crises.

[32] This due to the Stability and Growth Pact (SGP), which sets limits on fiscal expansion.

[33] See the cases of Italy, Ireland, Greece, Spain, Portugal.

In an open economy, capital flows from one country to another are chiefly due to the difference between the national and the international interest rate as well as to shifts in the exchange rate. When foreign capital flows to a country, foreign exchange market is emerged since extra foreign currency will be converted to domestic currency. Hence, foreign capital flow will mobilize credit and capital markets. On the contrary, when capital is moving from one country then the process operates adversely. What matters in both cases though is the shift in the liquidity level that affects the financial system yield curve and eventually the stability of the international financial status. In addition, the failure of monetary policy is another cause where liquidity could be dangerously declined. However, whenever there is a massive domestic currency withdraws, that will not necessarily mean the advent of a currency crisis. It depends on governments' ability to defend their national currency in order to prevent it from devaluating. During the last forty years, the major currency crises can be summarized as follows:

Countries affected	**Year**
Latin America (Brazil, Mexico, Argentina)	1982
European (Italy, UK)	1992
Mexican peso	1994
East Asia (Thailand, Malaysia, Indonesia)	1997
Russian ruble crises	1998
Brazilian real	1998
Argentinean peso	2001

Most of the above currency crises could not be faced by countries. In Mexican currency crisis, the US government intervened to prevent the precipitation of peso[34]. The collapse of peso had also been accompanied by high private indebtedness that entailed on many banks' failure. The Mexican government was pushed to nationalize most of the banks' debts. Mexico was in trouble again in 1994, where capital outflowed from the country up to the extent where domestic monetary authorities could no longer support the foreign exchange value of peso. The United States and Canada launched a campaign to raise funds again[35]. Apart from these funds, many central banks in Europe, the IMF, and the Bank of International Settlements, had all contributed resulting thus in capital flows stabilization. The interesting point from Mexican currency crises in 1982 and 1994 is how truly helpful had been this assistance both for Mexican economy and for the international financial stability. The huge rescue plans that were initiated from US indeed prevented Mexican economy from defaulting. The repeatedly though aid might also bring up the moral hazard issue to Mexicans that any time they were in trouble, a financial rescue plan could be launched. If that holds, then Mexican economy cannot be benefited in the future by setting forward restructuring plans. The other issue involved the contagion effects. The Latin America currency crises also affected Brazil in 1982 and Argentina in 1982 and 2001. Therefore, it not

[34] The Federal Reserve Bank of New York provided a loan of one billion dollars to Mexico in 1982, and the US Treasury provided a billion dollars' worth of oil with current payments for future delivery to the US Strategic Petroleum Reserve. Those loans aided Mexico to avoid default cope the crises.

[35] The unprecedented aid to Mexico from US and Canada was mainly due to introduction of the North American Free Trade Agreement Act in November 1993 between the three countries. The credit reached Mexico in 1994 was approximately $50 billion.

certain if the large amounts of credit to Mexico had been effective or perhaps, they led to relative future problems by creating a precedent. The IMF provided with loans to East-Asian countries in 1997, to Russia in 1998 and to Argentina in 2001. However, in most of cases the devaluation of the above currencies, or a failure to maintain the parity, such as the case in Argentina, could not be avoided.

Most of the above currency crises resemble to credit cycle theory. The description of Krugman's third generation currency crises also resembles with Minskyan financial instability hypothesis[36]. The case of East-Asian financial crises is probably the best empirical evidence of the third-generation crises as described by Krugman (1998). It is linked with the enhanced financial fragility that excessive capital inflows occur. Excessive capital inflow creates a full confidence ambiance of excessive lending. In this ambiance, more credit is accessible in the line with unregulated financial scene subject to arise moral hazard problems. As soon as liquidity shortage appears, a deterioration of banking system will be evident, domestic currency will drop and economy will start losing reserves.

4.4.3 Speculation

Speculative attitudes are often met in the international financial field. The global financial market has inevitably attracted fund managers, enhancing the arbitrage and speculative transactions. Certainly, more financial investment options are desired but simultaneously this financial globalization could impose negative economic implications. Financial markets often operate not in terms of reason, but in panic-driven and herb behavior conditions. Profits could be generated but they do not contribute to the productive long-term investment that serves the total output and employment. By contrast, they add to financial instability and cyclical movements in the economy. Kaldor (1980) considers speculation as an act of buying cheap and reselling more expensive later. Minsky (1975) supports that speculation created business cycles, comprising also depression cycles, rather than seeking the equilibrium point and a normal sustain economic process.

Financial globalization alongside with speculation could entail to serious economic consequences for a country, leaving it helpless, with no capacity to successfully launch a single recovery policy or to defend from an international speculative attack. Davidson quotes that "in today's global economy any news event that fund managers even suspect that others will interpret as a whiff of currency weakness can quickly become a conflagration spread along the information highway and results in lemming-like behavior that can be self-reinforcing and self-justifying (1997:671-2)".

According to the efficient market hypothesis, all information of an asset is available within its price. By adopting the hypothesis, we therefore accept that speculation cannot exist since there neither information deficiencies nor delays, nor irrationalism in the market. However, speculating agents who might have access to private information, they could create asymmetric information in foreign exchange market. Hence, it is possible to induce a self-fulfilling crisis by moving their capital to a forthcoming weak foreign currency.

[36] See next chapter.

However, it is difficult to compute the possibility and explanation of each financial crises mainly due to the uncertainty. Keynes pointed out "human decisions affecting the future, whether personal or political or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist", and "there is no scientific basis on which to form any calculable probability whatever. We simply do not know" (Keynes, 1973: p.114).

Speculation often operates in two stages. Firstly, agents and firms react reluctantly and rationally to a new trend. Secondly, they become more and more engaged in the anticipation of higher and higher returns. An international speculative practice to exploit differences in rates among countries is termed as currency or interest rate carry-trade strategy, i.e., borrowing low and lending high. This tactic perquisites that interest rates on debt must be lower than interest rates on assets. Speculation is often seen as an attempt to forecast market's psychology. Speculators usually move against market trends for profits anticipation and as soon as they invest in an asset, they have already set their expectations. It is true that they bear risks with their attitude and at this point, two main issues need to be questioned. First, how covered in terms of liquidity and finance reassurance are they in case of losses, and secondly, when they take a position against market trends and put a lot of capital in their investment, do they possess the same information as anyone? The first question needs to be addressed to the financial institutions, which provide funds for their investments based on guarantees, and to the official regulatory authorities. The second question, if such a case ever occurs, constitutes a financial market failure as well as governments' failure to verify and assure a fair financial system. If the stability of the financial market were the perquisite, then the essential situation would be the existence of many speculators with different options, expectations, and investment decisions.

Speculative behavior is associated with the expansion of money and credit. It is not necessarily mean that in every period of money and credit expansion speculation will grow. Notwithstanding, speculative action does operate in the grounds of money and credit expansion. Apart from foreign currencies, investors usually speculate in the assets of real estate or stocks. Markets cannot be stabilized in times of large fluctuations in the assets' prices, bubbles creation and huge losses or profits even for the real economic sector[37]. In order to constrain fragility, markets must set rules to the agents to prohibit manipulation, continuous and constant buying and selling actions for very short-term periods of the same assets. The limitations required to be imposed in the global financial system is mainly to prevent agents or entities with large amounts of money, from speculating lower exchange and interest rates in the anticipation of future higher yields. Whenever capital inflows and outflows are liberalized with no restrictions, then speculation is possible. Resent financial crises examples in Latin America, Eastern Europe and East Asia had initiated from a similar manner. Additionally, the initial euphoric phase is not helpful to acknowledge what will ensue. In this international field what we could deduct as a conclusion for the financial global environment speculation is that instability and crises are not unexpected, but they consist of endogenous phenomena within the prevailed globalized financial system. The reason is that the function of the financial system which generates them.

[37] It is possible an industry unwittingly to find its stock asset price extremely high and becoming a bubble.

4.5 The contagion of a crisis in the world economy

Most of the financial crises are likely to become international. There are contagion and spread effects arising mainly from international trade and financial linkages. A connection among countries is that arbitrage links with national markets. That is because the determinant factor is the leverage number of agents and the vulnerability of these markets. Contagion and spread effects also encapsulate securities and money transactions apart from arbitrage in products. The interaction of identical monetary policies among countries as well as the level of domestic money supply and interest rates may facilitate or prevent the spread of an international financial event.

A significant reason for the emergence of contagion could simply be the psychology of agents. Perceptions, norms, and attitudes are frequently influenced by other investors' actions. When an attitude on the price of an asset changes and everyone wishes to sell, it is likely to spread similar behavior at international level, even resulting in a liquidity need. Hence, the main concern would be the magnitude. Even if there is insolvency avoidance or deposits guarantee policies, these cannot be sufficient in cases of a contagion crisis at international level. The reason is the liquidity shortage, and thereafter, a vast amount of funds will be required because all products and financial transactions are internationally traded and cleared. Consequently, in the absence of intervention of a multinational coordinated lender of last resort, domestic monetary safeguards are still prone to unanticipated financial events.

Furthermore, many countries throughout the world run large budget deficits and debts that are primarily held by international financial institutions or by other governments and international organizations. Therefore, what if one huge institution breaks down, or a country with a huge national debt could not meet its repayment requirements? From this point on, contagion and spread effects will appear to other countries and financial institutions due to high interdependence. If banks and other financial institutions were isolated units, then financial crises and distortions due to contagion will never apply. The interbank system, capital mobility, credit expansion, nevertheless, render the default of one big financial institution extensive. Apart from international financial economies, whenever a financial disruptive event takes place, the implications are not limited to the financial sector. In fact, the financial sector carries away the real components of the economy such as consumption, saving, output and employment. What was initially a financial distress might trigger a wide economic crisis and recession.

4.6 Concluding remarks in financial crises and instability

In the current era, we notice that the international economic system has been developing in a more complex manner driven by financial amplification. We could argue that the global economy has been financialized. We have outlined two recent financial crises that turned to be international. These crises have highlighted the weaknesses, inefficiencies, and insufficiencies of domestic financial systems and at the international level, the inadequacy of the international monetary and financial system. The repercussions of the East-Asian crisis and the crises of the 21st century are a matter of much debate and analysis. We can argue,

though, that the actual financial crises are much affected and related to globalization. Financial distortions may arise from rapid credit expansion and high levels of capital accumulation. The presence of debt and capital accumulation in specific sectors deteriorates the recovery.

The essential implication is the identification of causes that render the financial regime either stable or unstable, in order to prevent instability and forthcoming crises. It could be argued that the crucial destabilizing phase of the cycle moves upwards. Therefore, what really matters in the real economy is the amount of all liabilities, loans, and credit structure, and certainly asset holdings not only for the current period but also most importantly for a longer period. The latter phenomenon is significant since the shift of the economy towards fragility and imbalance does not take place all of a sudden but is the result of an accumulated event. Thus, it is necessary to observe whether the amount of actual circular income is sufficient to repay past loan obligations. If the answer is affirmative, then a financial regime is regarded stable, otherwise serious distortions are emerging.

Furthermore, economies are distinguished between developed and developing, where there is an asymmetry among them in terms of markets and institutions. Developing economies and markets in an integrated financial system will meet difficulties to cope only by themselves any adjustment made by the large economy. Similarly, the emergence of a crisis does not have the same implications in all countries. Most of the developing countries do not have the option to expand their fiscal policy due to their large debts or markets' unwillingness to lend them**.** It is evident that developing countries remain more vulnerable, since their domestic currencies are in no use in foreign currency market for settling accounts, and present greater exchange rate volatility with respect to main currencies, sometimes for reasons beyond domestic control. Unfortunately, in developing countries, financial crises have the additional effects of exchange rate devaluations, due to balance of payments adjustments and fiscal contraction. The above combination makes rather difficult for developing countries the application of fiscal expansion as a crisis counteractive policy.

We should also notice that financial crises have appeared because of the deregulation process that some countries have adopted in their financial systems. Innovations, securitization, speculations in foreign currencies, and banks' complex activities are also syndromes that contribute to financial instability. The underestimation of the possibility of a financial event is apparent, due to the myopic attitude of governments, bankers, investors, agents. Therefore, governments seem to be absent in the regulatory control. The deregulation mainly involves the distribution of bank loans and credit to insolvent agents and firms or to a larger group of borrowers with minimum criteria requirements. The abatement of regulation encourages the creation of financial cycles, rendering the system more vulnerable and prone to crises. Instability to the financial markets depends on their structure.

Finally, financial globalization in association with speculation could entail with a limited ability for countries to initiate a recovery policy or to defend domestic currency by their own means from an international speculative attack. Whenever capital inflows and

outflows are liberalized with no restrictions, then speculation is possible. Additionally, the initial euphoric phase is not helpful to acknowledge what could follow. Consequently, instability and crises could not be simply attributed as unexpected events but as endogenously cultivated occurrences within the globalized financial economy.

However, the bottom line remains the transmission of each country's financial distortion to the international financial system. Financial integration and globalization have increased growth rate opportunities but likewise the risks. A financial crisis originated from a country with high interdependence in terms of trade and financial transactions may become an overall and complex issue at the international level, unable to resolve it by its own means. That is the reason why many economists urge each country to take precaution measures to internalize their distortions at the lowest possible level. However, regarding the degree of globalization, the trade interactions, free capital mobility and in some cases a monetary integration (such as the EU), how could it be possible a financial event to be isolated? Consequently, the world's financial stability and economy could be in peril. Despite mutual benefits in prosperous periods, the other side of the coin is the transmission of a crisis. Therefore, the solution lies with the creation of the problem. Since the simultaneous existing of all the above factors is apparent, then all institutions and governments become equal partners of a financial default whenever and wherever that might occur. Hence, all responsibility is to solve it in a common and fair manner.

Chapter V

5 The Contribution of Hyman Minsky to Explanation of financial Instability

5.1 Introduction

Minsky has been one of the economists who stream away from conventional theory, and he could be considered as a post-Keynesian economist. Minsky's approach to macroeconomic theory has been steadily based in post-Keynesian traditions contrary to mainstream economics (Papadimitriou and Wray 1997, p. 3). His work has provided us with comprehendible explanations concerning the instability of the financial system and the frequency of recent financial crises. The chapter is structured with the quote of economists who influenced the most of Minsky's work. We present subsequently the main elements of his theory, comprising the financial instability hypothesis, the money manager capitalism, and his employment policy. Thereby, we present some possible explanations why Minsky's theory had been ignored for many years. Hence, we discuss his current relevance and finally we draw our conclusions.

5.2 Minsky's most influential economists

Minsky paved on the path of Marx, Keynes, Simons, Schumpeter, Lange, and Fisher among the great non-neoclassical economists. Minsky wrote, "As a student, I was most influenced by Henry C. Simons, Oscar Lange, and Josef Schumpeter" (1982, p.5). Minsky linked Keynes' financial theory of investment to Schumpeter's credit view of money and finance. In addition, one of most influential economists for Minsky, especially for his financial instability hypothesis, was Irving Fisher who had developed a theory of how financial speculation could lead to economic collapse.

Fischer's theory had not attracted the interest as much as his previous work[38] that he had developed before the Great Depression. However, in his Debt Deflation Theory (1933), he kept a different stance from his previous theory of finance. He recognized that debts could not always be paid off and that market was never in equilibrium. The latter is a stable period of the economy and once it departs away then instability ensues. Adding more debt to this situation, it entails a serious threat for possible financial crises. If many debtors break down then crises emerge and what follows is a deflation spiral process, recession, and a reduction in aggregate demand. During the phase of the accelerating debt-deflation process, we observed the peculiar phenomenon where nominal debt is falling since credit is

[38] Fisher's "Theory of Interest" continued as the economic theory of how asset prices are determined. In his "Theory of Interest", Fisher supported that the interest rate 'expresses a price in the exchange between present and future goods' (Fisher 1930) He regarded that 'the market must be cleared, and 'the debts must be paid'.

no longer available, but the debt to-GDP ratio continues to increase. Unfortunately, after the Great Depression, economists continued to quote his pre-crisis theory on finance, ignoring his debt-deflation theory until Minsky rediscovered it. The Minsky moment (discussed below) is much alike to Fisher's debt-deflation process.

5.3 Minsky's main insights

Minsky likewise many post-Keynesian economists discarded some of the traditional assumptions. The widely held belief suggests that instability could not be generated on the long run, but only in the short run there might be some exogenous disturbances, asymmetric shocks or other temporary market imperfections. Minsky repudiated the traditional view of consumer choice as the central role in economic activity and replaced it with entrepreneurs and bankers' perceptions. He put emphasis on the interaction between industrial capitalism, banks and other financial institutions, governments, workers, and consumer individuals, under the umbrella of an uncertain future. When a financial incident occurs that entails implications to real economy. Thereby, he rejected the notion that financial issues are independent from the rest of economy. Minsky believed that the financial system should be transformed in order to redirect finance from financial securitization and speculation to the capital development of the economy.

Minsky (1986) outlined that the financial system influences investment in an economy by determining a demand price level for investment goods. Even though neoclassical theory assumed economy as a barter economy, with the rest of the variables simply adding up to the main model, Minsky accounted for the actual economy to be driven by the pursuit of financial profits, where production precedes market exchange, and finance precedes production. Additionally, it contributes to production and investment costs within the use of external financing since the creation of liabilities will require future repayment. Therefore, the expected gains from production and investment must be adequate to validate the forthcoming debt. Bearing in mind the uncertainty factor, sufficient profits cannot be guaranteed, thereby increasing both borrowing and lending risks. Eventually, these risks will diminish the supply and demand for investment goods, swaying investment as well.

Minsky captured the cyclical movements of the economy and identified the evolution through stages that breed successive stages. He outlined the movement as 'the success that breeds excess which breeds failure' and "the more things change, the more they remain the same (1993, p.2)". In particular, the impact of success in stipulating financial innovation is an endogenous result. An environment where capital profits are gained and expected consists of a favorable one to initiate speculative finance. He also argued that 'one can never step in the same stream twice (Minsky, 1993, p. 2)'.

5.4 The Financial Instability Hypothesis (FIH)

Minsky established his own analysis of financial instability, with the interaction of finance and macroeconomics. He made his contribution with his famous Financial Instability Hypothesis and his book "Stabilizing an Unstable Economy". Minsky suggested that economic stability in fact leads to instability, a phenomenon also termed as the "paradox of tranquility", whereas investment volatility constitutes the main cause of financial instability.

Minsky states that current financial capitalism system is inherently flawed (1986, p.287), although the conventional wisdom, that still prevails, supports the perception that markets do function. Minsky argues that "there is no possibility that we can ever set things right once and for all; Instability, put to rest by one set of reforms, will, after time, emerge in new guise"(1986, p.370). Instability to financial markets depends on their structural. Minsky supported that structural changes in the financial system take place during the euphoria phase providing the example of the period of 1922 to 1929 (Galbraith, 1955).

The financial instability hypothesis (FIH) is a theory of economic process under financial capitalism. Minsky (1992) regarded the financial instability hypothesis as "an interpretation of the substance of Keynes's General Theory (Minsky 1992, p.1)". As we have already mentioned the formulation of FIH has its roots on Fischer's (1933) debt deflation theory and Schumpeter's (1934) credit view of money and finance. It could be thus considered as a financial theory of investment that highlights the influence of debt in the financial system and how it is validated. According to Minsky, the financial system is unstable and becomes even more fragile in prosperity times. The FIH presumes that free market operation does not lead to full employment equilibrium, and that cycles and crises are endogenous resulted from the "financial attributes that are essential to capitalism." (1986, p. 173). Papadimitriou and Wray (2008) mention that the FIH was established in a two prices system that Minsky had adopted from Keynes. The first one is a price system for the current product and the second one consists of a price system for assets that may be held during time.

Modern economy commences with negotiations between the owners of financial institutions/money managers and entrepreneurs/businessmen to finance their investments for making future profits, contrary to traditional view, which mostly gives weight to consumption[39]. The gist of the recent economic operation is the exchange of present capital to future, whereas present capital is used for current investment in production and future capital represents profits accrued to repay past loans. Thus, the main interest in real economy is the amount of all liabilities, loans and credit structure and asset holdings not only for the actual period but also, for the long run. The latter circumstance is quite important because the shift of the economy towards fragility and imbalance does not take place all of sudden but consists of the outcome of an accumulated event.

[39] This view contradicts the traditional economic theory that supports that negotiations are made between individual in a free market exchanging their bundle of goods and services

Financial institutions supply the economy with credit, spending power, and thus, aggregate demand (Minsky, 1986). Agreements of loans are made to be paid off in the near future. Firms are seeking profits to refinance their positions and to meet their past obligations. Thus, in actual economy the past, present and the future are linked through production, profits, and financial interdependencies. The circular flow ensures the cash flows of income between governments, households, firms, and external and internal flows in case of an open economy. It is necessary to observe whether the amount of circular income is sufficient to repay past loan obligations. The outcome of payment commitments creates expectations for future, and thus, positive expectations enhance robustness. Consequently, the key elements are uncertainty and expectations that induce firms and households to take positions and most importantly to invest. As Kalecki (1965) notes, changes in level of investment are the main determinant in changes in aggregate demand. Apart from output and employment, shifts in investment influence the flows in profits. Profits and investment are complementary since the one brings the other. Changes in the level of profit will then have a strong impact in the level of debts, in prices of assets and mainly in the capacity of borrowers to pay off past loan engagements.

Minsky implied that financial system could contain hedge finance, speculative or Ponzi positions. If it consists only of hedge then the financial regime will be stable, otherwise unstable. When hedge finance is dominant, positive expectations emerge, implicitly, inducing all participants in financial system to be engaged in more debt. The financial instability hypothesis implies that an economy could easily shift from hedge to speculative in times of euphoria. This phenomenon takes place either in forms of risk aversion or reductions in margins of safety because profits are being created and short-term credit is easily accessed. Therefore, there is a strong incentive of refinancing interest and positions rather than taking the option of getting rid of debt burden. Hence, the financial system fluctuates from being stable to instability.

Minsky (1986) analyses the process when financing shifts from hedge to speculative and, eventually, to Ponzi. Initially, at the hedge phase, enterprises usually adopt a conservative approach to financing, and they are viable enough to meet their debt payments, both interest and the principal. Financial innovation grows to meet the demand for additional financing, rendering endogenous the money supply. Nevertheless, as economy expands, enterprises are willing to increase their debt levels since higher profits are coming in, and consequently, they require more capital. Such success encourages other agents to imitate similar behavior. However, “success breeds a disregard of the possibility of failure: the absence of serious financial difficulties over a substantial period leads to the development of a euphoric economy in which increasing short-term financing of long positions becomes a normal way of life (Minsky 1986, p.213)”.

This overoptimistic psychological behavior is not only transparent from borrowers’ size but from lending size as well, implicitly demonstrating that market discipline has been lessened. This exemplar was apparent in the high-tech sector during the late 1990s and in housing sector in 2000s. In the housing sector not only relative companies but also homebuyers were also taking on more debt. Since credit-access was easy and interest rates low, more agents engaged on debts that require refinancing when the principal is due for

repayment. Minsky states that bankers and other financial intermediaries are "merchants of debt, who strive to innovate with regard to both assets they acquire and the liabilities they market (Minsky 1992, p.6)".

According to Minsky, the financial system has moved now to the speculative finance phase. In speculative finance, borrowers can only validate the interest payment but not the principal and thus must roll over the financing with another loan. The acquirer of more profits attracts more and more agents and enterprises, driven up indebtedness to the level where eventually refinancing is required merely to make interest payments. That is the phase of Ponzi finance, where agents and firms must borrow even more to make interest payments on their existing liabilities (Minsky 1982, p22-23, p66-67, p105-106; and 1986, p206-213). The Ponzi finance can neither meet the principal nor the interest and the only option left, expect for new borrowing, is to sell assets or dividends, lowering in that way the margin of safety. At the end of this period, credit is getting more limited, liquidity declines, deleveraging begins, highly indebted firms and agents cannot longer meet their payments and break down. They spread contagion effects to other firms, agents, and financial institutions. The speculative phase signifies the boom whilst the Ponzi phase the recession.

The forthcoming disruptive period or a crisis as the result of financial instability will be apparent whenever borrowers can no longer finance their debts "through normal channels" (Minsky 1977, p.140). Therefore, a period of moderate prosperity can be quickly transformed into expansion, which can even more rapidly unwind and turn to a deep recession (Minsky 1986, 1992). That is where "Minsky moment[40]" appears when everyone has become fully aware that indebtedness had reached its peak and repayments cannot be easily met. It is the moment when expectations change. Magnus (2007) refers to Minsky moment as the point where credit is not easily available and the central bank intervenes to offset potential financial distortions. Minsky refers that "whereas experimentation with extending debt structures can go on for years and is a process of gradually testing the limits of the market, the revaluation of acceptable debt structures, when anything goes wrong, can be quite sudden (1982, p.67)". Hence, the economy will experience a crisis, to an extent that will be determined by each period's financial circumstances and by the authorities' interventions. The outcome is a decline in aggregate demand, and in worse cases, even a debt-deflation process. Minsky mentioned the implications of the crisis would be more severe if the official authorities do not interfere (Minsky 1986; Mishkin 1991).

5.5 Money manager capitalism

Minsky noticed that mobilization of economy had shifted from the traditional roads of increased production. The period of the Thirty Glorious Years (1945- 1975) had brought global stability which had been gradually converted to a global financial system, where private financial institutions seek high returns through financial innovation. The growth path of economies was no longer depended upon the manufacturing-industrial sector but rather

[40] Paul McCulley, the managing director of Pacific Investment Management Company in 1998 during the Russian crisis (Lahart, 2007), adopted the term Minsky moment. Hence, the term became popular even from newspapers to describe financial crises such as the sub-prime crises.

on financial sector, which has gained more influence than any other sector. Minsky (1989) described it as the phase of "money manager capitalism", which has been emerged after 1973 and specifically since the breakdown of Bretton Woods system.

Minsky (1996, 1993, 1989) on his Money Manager Capitalism portrayed that capitalism in the US has traversed through four stages, which include commercial capitalism, industrial capitalism, financial capitalism, managerial capitalism, and money manager capitalism. He describes money manager capitalism as a situation where institutional investors have a strong say on economic policies, more flexible labor relations in line with greater working instability and income inequality, encouragement of financial innovation, and free capital mobility. All the above features function together in the context of an unregulated global financial market. Their occupation is to manage large portfolios in a new financial structure comprising an extra layer of financial intermediation.

Furthermore, the examination of contemporary money-manager capitalism closely relates to the actual financial globalization. The emergence of money managers was an additional element to the instability of the system. The increased level of indebtedness by corporations and individuals in association with the fueled securitization by managed money could easily initiate a panic or liquidity crisis and a general international financial crisis. Minsky also stressed the fact that money managers' actions at international level can alter the level of interest and exchange rates, resulting in overvaluations of domestic currencies. He referred that "portfolio choices of money managers drive exchange rates; the balance and terms of trade can change out of proportion to changes in relative production efficiencies (1989, p.10)".

Money manager capitalism has significantly increased its size in last decades (Whalen, 1997)[41]. Kregel (2018) argues that Minsky's "money manager capitalism" has started when debt validation through income creation from a successive investment has been replaced by capital gains to be accrued from the prediction of future prices of the assets. The expansive financial activity and relative institutions, financial innovations, deregulation and globalization were also contributing factors to the emergence of money managers. The main trait of this era is that wealth owners or savers held positions of funds consisting of any kind of savings, insurance funds, pension funds, university funds, wealth funds. Therefore, the scope of money manager is the profit maximization and the rise in the value of assets they hold. The notion of money managers currently links to securitization, hedge funds growth, and the globalization of finance. They wish to attract wealth holders, individuals, and firms' savings to enhance the total investment portfolio holdings, in order to be able to obtain higher returns. On the other hand, agents who trust their money to them will be content if their profits increase. The explosion of the number of money managers has also resulted in increased competition among them. Consequently, excessive risk taking is encouraged by adding, in this manner, more and more vulnerability and instability in the financial system.

[41] Between 1950 and 1990, money managers' control of U.S. corporate equities grow from 8 percent to 60 percent. At the same period, pension funds increased their share of total business equities from less than I percent to almost 39 percent, while their fraction of corporate debt rose from 13 percent to 50 percent.

Money managers took over from industrial finance capitalism whilst corporate executives, in an effort to augment the short-term stock market value of their corporations, no longer enjoy autonomy because pressure from money managers is apparent since they control the funds, (mutual, capital, insurance, private equity, hedge). Corporate executives were no longer interested in expanding their industrial divisions or the technological progress of their products. Thus, they turned to shareholding value also engaging their capital to the accumulation of the new emerging financial institutions such as investment banks, fund management and the new financial products they trade. Profits were higher in the new schema at the expense of industrial sector. The game of shares in stock markets that ensued has led to unprecedented rise in mergers, acquisitions and even the vanish of numerous industries. Technological progress is usually encouraged by enterprises, but it requires finance in the longer horizon. In the era of money management, short-term profits juxtapose the incentive of investing in research and technology, where profits usually accrue in long-term. By this way, money managers do not seem to contribute to the growth of capital development and to the protection of the economy. Hence, their scope is to increase the value to stockholders to gain in that manner, rather than pursuing profits from trade and production. Minsky (1989) suggested that international portfolios have gained more importance at the expense of international corporations.

Another important aspect of money manager capitalism is their contribution to the deterioration of labor conditions. Employment relations become more insecure and relaxed with flexible working conditions based on time-determined (and not on undetermined) contracts. Labor insecurity augments and that could be attributed as a feature of money manager capitalism. Money managers have moved increasingly toward treating labor as just another ‘spot market’ commodity (Whalen 1997). Whalen (1997, 2008) also explained the relation and interaction of Minsky’s money manager capitalism with labor insecurity. He jumped to the conclusion that the development of money managers relates to the increase in working insecurity.

5.6 The weaknesses of an economy according to Minsky

Overall, we could sum up with those characteristics that produce financial instability in order to be detected at early stage. All these weaknesses have been grouped and converted to potential variables – indicators as given in the following table. The below weaknesses and variables were in great usefulness when building the model described in following chapter.

Weaknesses	**Variables - Indicators**
Too much finance in the economy Euphoria traits	High domestic Credit ratio - debt levels Low interest rates low
Economic stability in fact leads to instability, a phenomenon also termed as the "paradox of tranquility", whereas constitutes the main cause of financial instability	Investment volatility
Deregulation during euphoria stage, weakness of thwarting institutions	Risk aversions, reduction in safety margins
Cyclical trends in the economy	Excessive High and or low growth rates
in actual economy the past, present and the future are linked through production, profits and financial interdependencies	Production levels, profits, financial interdependencies
The circular flow ensures the cash flows of income between governments, households, firms, and external and internal flows in case of an open economy.	Sufficient amount of circular income is to repay past loan obligations
Profits and investment are complementary since the one brings the other.	Changes in the level of profit have a strong impact in the level of debts, in prices of assets and mainly in the capacity of borrowers to pay off past loan engagements
Mobilization of economy had shifted from the traditional roads of increased production. The growth path of economies was no longer depended upon the manufacturing-industrial sector but rather on financial sector.	Less production - More finance Balance of trade, decrease in exports/imports in favor of financial transactions. Great interrelation of financial and nonfinancial sector
Movements in the level of interest and exchange rates, resulting in overvaluations of domestic currencies. Portfolio choices driven by exchange rates	Stability in the level of interest and exchange rates – exchange rate fluctuations
The financial structure evolves from robust to fragile over a period in which the economy does well.	Rapid and high-volume GDP growth rates, Consumption, Investment
Swings in leverage can be interpreted as changes in liquidity preferences.	Leverage ratio

Balanced government budget to produce deficits in times of recessions	Government current accounts
Debt-income rise as well as prices in at the same time, in stock market and real estate market and asset markets	Debt-income ratio, assets prices, real estate prices and stock market.
Riskier investment options	Derivatives, swaps, future –forwards contracts
Credit on productive activities	The credit in production sector could reassure more the repayments of the debt.
Features of boom-bust cycle	Gross domestic product (GDP) growth Trade balance (% of GDP) Current account (% of GDP) Central bank's FX reserves Domestic credit to private sector (% of GDP) Real interest rate (%) External debt (% gross national income) Fiscal balance (% of GDP) Broad money (% of GDP) Bank nonperforming loans to total gross loans Bank capital to assets Turnover ratio of domestic shares Foreign direct investment (% of GDP) Market capitalization of listed domestic companies Total debt service (% of GDP)

5.7 Minsky and the employment

Apart from financial theory, Minsky was adherent to policies of the kind of "employer of last resort" as well (Papadimitriou & Wray, 2008; Wray, 2011). He was equally sensitive with issues such as income inequality, unemployment, and poverty. He stressed the fact that economy faces a trade-off, likewise the efficiency and equity or the Phillips' curve inflation and unemployment (Minsky 1968). The pursuit of social issues such as poverty aversion and employment could enhance the economic growth overall. Minsky (1965) suggested that he would accept an unemployment rate between 4% and 5%, where for every 1%-point reduction of unemployment below that target GDP will augment by 3% points. He supported Keynes's view that the capitalism financial system has not only failed to lead the economy to full employment status but has also increased income inequalities (Minsky 1975). Even though investment is a potential tool for boosting economic growth, nevertheless, it may actually increase income inequality. This is case when profits emerging from investment are capitalizing in the hands of wealthier income groups.

He developed a strategy named as an employer of last resort (ELR) or a governmental job guarantee program. The state would offer public jobs at a minimum national wage to the unemployed, mainly recruited by intensive services to benefit directly the public welfare. The ELR could encompass part-time employment, discounted youth wage

or even child maintenance. The concept of ELR was to provide access to labor market to anyone with any skill at a guaranteed minimum wage. Minsky (1965) reckoned that ERL could eliminate the two-thirds of all poverty by means of a minimum wage.

According to Minsky "tight full employment exists when over a broad cross section of occupations, industries, and locations, employers, at going wages and salaries, would prefer to employ more workers than they in fact do (Minsky, 1965, p. 177)". The tight full employment policy benefits the economy in many grounds. It provides the way out to poverty, social cohesion and labor dignity, an increased GDP, insurance funds sufficiency, and certainly a stable financial system since tight full employment enables agents to fulfill their payments. Either way and in the absence of tight full employment policy, the ERL program reassures a minimum wage condition. In addition, the ERL could deviate the economy from the process of investment, profits, capital's share, leverage, and external finance, contributing thus to financial stability, public investment, public and private consumption. Certainly, moral hazards and free rider issues have also to be confronted in this case.

Minsky argued that "there is no final solution to the fundamental flaw of capitalism with complex, long-lived, and expensive capital assets that require external finance (Wray, 2007, p.16)". He noticed that high investment in association with high profits could encourage financial cycle booms, augmenting high levels of income in the distribution phase, and extra opportunities for financial sector to grow by means of external finance. As long as the economy stabilizes and prospers, even via reduced employment and poverty, it will soon develop endogenous dynamic forces that will eventually push for more profits. In this case, only the introduction of new set of policies and institutions could finally eliminate that perpetual problem. Minsky (1986) identified the concept where in times of high indebtedness, in association with reduction of workers portion in the total output, there will be the tendency for more speculative positions in the economy with levels of debt to grow even more. That implies a shift towards instability with enhanced likelihood of breakdown, which would also be due to income inequality amplification. In times of prolonged prosperity, agents tend to be engaged in more debt. In the high debt sensitivity case, decreasing workers' share and rising bankers share (at a slightly slower rate) could lead to greater indebtedness. In effect, a rise in income inequality (between workers and capitalists) leads to a period of instability and then perhaps a recession.

5.8 Why was Minsky ignored?

At the time Minsky published (1975, 1982, and 1986) his findings, he did not receive the proper attention, not even the analogous credibility. Providing possible reasons for this discard, we wish to clarify a priori that the discard on Minsky's theory refers not only to the academic or scientific community of social and economic schools. Additionally, it equally

refers to the political level, particularly in terms of relative policy design, adoption, and implementation in times of financial distortions.

We begin by focusing on Minsky's writing methodology. Minsky formed his insights within a conceptual methodology based on logical observations. He incorporated the repeated economic and financial phenomena that had occurred throughout economic history with recent contemporary financial characteristics into a single consolidated theory. That conceptual methodology has similarities with approaches of main economists of previous times (Smith, Ricardo, Marx, Mill, Keynes, Schumpeter etc.), and even with the methodology of ancient philosophers, like Plato and Aristotle who both formulated their theory based on observation and experience. In the present climate, notwithstanding, the prevailing technique to establish a theory is by means of modeling. Therefore, a presumable explanation is that his theory was kept out from standard mathematical formalizing. Minsky had avoided the formulation of mathematical and econometric models to enhance the validation of his views. Many scholars and economists suggest that the introduction of a new hypothesis or a theory in economics should normally be accompanied with relative mathematical proving, and thus, new theories without applied modeling would not be given any serious consideration. Certainly, many parts of his theory could be presented in rigorous models, but nevertheless, as Foley states that would "lose most of the richness of Minsky 's account in the translation to mathematical language (2001, p. 54)". It is evident that the validation of a theory or a new approach implies statistically/econometrically testing. However, these models/tests are always based on a given data, which in turn is structured, elaborated, processed, in a manner that suits everyone's initial pursuits and results that could have been set a priori. Data could be treated (certainly not changed), according to everyone's needs, by selecting specific groups of countries, years, periods, agents, units, measures, and simultaneously ensuring the minimum degree of bias for validation reasons, in order to produce the desired result. Certainly, the produced output will be incontestable because of its compliance with mathematical restrictions and assumptions that need to be respected for every test.

However, it is easy to produce desired results simply by adopting the most convenient test approach or methodology to reach to the desired conclusion. Indeed, if one reviews statistical and econometrical methods, he will remark the plethora of tests available to be introduced, and therefore, could make the suitable choice. For academics and scholars, there are no restrictions in terms of methodology or approach to be adopted, contrary to official statistics, where there is always a restricted common methodology approach in terms of data collection, data process, and model/s used. Consequently, the results may vary even if they stress the same issue and make use of same data, generating thus even more doubts and questions than clearing the dust. Perhaps that consists of an additional reason why in political level, economic policy design and implementation has become such a complex case. The essential point though remains the comprehension and interpretation of economic phenomena based on a common widely accepted approach. Otherwise, one could interpret blue color as white whilst other as green. For these reasons, we suppose that Minsky realized that issue and grounded on the observation approach.

Furthermore, there is the argument that Minsky's financial instability hypothesis is rather a pessimistic theory that raises doubts about the efficiency of the financial system. The theory provides serious warnings at early stage of possible financial crises. These warnings could never be easily heard particularly in a euphoric economic and financial environment, where GDP rates, investment, consumption, profits, output, and other figures were rising, and hence, future expectations become positive. Within this robust status, there is no place for a theory, which brings up the potential risks of such an agreeable trend and suggests prudential action to stabilize the financial system. Minsky reminded that markets have short memory, which will repeatedly delude themselves into convincing us all that this time things will not go wrong. Within this context, it is always easier and more convenient to embrace the positive and suitable prospects rather Minsky's alerting theory.

Additional reasons are related to the inconvenient time of his proposals. Minsky's theory was preceded the current era of free international capital and financial new liberalization. At late 1970s and at the beginning of 1980s, the economic trend was moving away from Keynesian policies, due to oil crises and the collapse of Bretton-Woods system. It had been the end of a thirty-year prosperity period and the outset of new liberalism. Thus, the new economic and financial environment was searching for a more neoliberal, traditional, free market-oriented and new monetary ideas, based on a minimum regulation level and state interventions, clearly different from Minsky's proposals. By contrast, Minsky incorporated into his theory the need for developing the operational procedures and interference of the two big institutions, i.e., big government and central bank, in order to restrain the endogenous flaws of an unstable financial system and to restore macroeconomic stability. However, the political and economic system had promoted smaller government programs stimulating rather the privatizations, greater indebtedness, financial liberalization, and globalization. Minsky always stressed the need for *Big Government*, notably to act as an automatic stabilizer of the financial system, and the *Big Bank*, serving as a lender of last resort and thus reassuring minimum asset prices. By 1990s, notwithstanding, Minsky realized that the two institutions[42] have weakened to such extent that a new coming crisis was likely.

Furthermore, his employment and social cohesion proposals were also not welcome inasmuch most economies were drifting away from full employment to inflation control policies. Monetarists were at their peak at that time, but Minsky criticized modern monetary theory for being narrow-minded, particularly for attributing financial crises simply as bank panics (Schwartz 1988, 1998). Even though his theory had to wait for more than thirty years to be recognized, at that time though, the prevailed economic status wanted to hear little about the concepts of government regulation, restrictions, and intervention. Even when the South-East Asian financial crisis had emerged in 1997, with so many similarities with the phases of Minsky's financial instability hypothesis, still, the references to his work were insufficient.

Minsky has never been considered as a mainstream economist and thus his theory could not be simply accepted. The mainstream economic status regarded the financial

[42] We imply the US government and Federal reserve

system as stable, whilst Minsky argued that this stability is fictitious and destabilizes the system. Consequently, for a non-mainstream economist who forewarns people with forthcoming possible crises, the recognition and the acceptance of his theory would have been limited. Even though several financial crises have been emerged presenting similar characteristics with Minsky's insights and early warnings, it is difficult to find empirical evidence in the level of governmental action, which has incorporated his proposals for precautionary measures.

Thereby, Minsky could be considered as those great painters who had been recognized after their passing. He realized almost forty years ago that the new mixture comprises of global deregulation, inflation controlling policies and a gradual growth of a global market economy. The result of that mixture would ensue to fragility and instability of the international system. The emergence of a financial crisis, especially the subprime mortgage crisis in 2008, has finally brought credit to Minsky's insights[43]. At that time, many economists, policy makers, scholars, journalists rediscovered Minsky's work. Most of them have realized the potentials causes of the financial crisis and the unstable financial system that had been cultivated. Nevertheless, Minsky's counter policy proposals were still unheard. The issue is that his views were neither convenient then nor even today.

5.9 Concluding Remarks

Traditional macroeconomic theory has ignored capital market imperfections and asymmetric information, which have turned to be the core features of financial crisis. Conventional economic theory has not only failed to predict financial crisis but beyond that, even contributed to instability via the emergence of financial products, such as derivatives and swaps, and the insistence on irrelevant theoretical assumptions that economy theory was underpinned. Traditional theory is based on models of steady states, where turbulences only occur exogenously and for short term, neglecting the cyclical movements and the booms-busts of the economy. When crisis and instability frequently appear, implicitly, then the backed-up economic theory and policy have failed.

Minsky (1982) stated that capitalism is inherently unstable as well as the entire financial system. The traditional perceptive of efficient market hypothesis that financial markets are always right cannot be hold as an assumption to put forward a theory. By contrast, Minsky stressed the importance of the financial sector supporting the interdependence of real and financial variables.

The fundamental assertion of the FIH is that "the financial structure evolves from robust to fragile over a period in which the economy does well (Minsky 1991, p.16)". The FIH describes a cyclical movement from expansion to contraction, underlying that the crucial destabilizing phase of the cycle is upwards (1980, p.517). Consequently, the essential implication is the identification of causes that render the financial regime either stable or unstable in order to prevent instability and forthcoming crises. Overall, we could argue that

[43] In fact this recognition was mentioned on the front page of the Wall Street Journal (18 August 2007) at the very beginning of the crisis in an article titled 'In Time of Tumult, Obscure Economist Gains Currency. Mr. Minsky Long Argued Markets Were Crisis Prone; His Moment has Arrived'

the FIH does not deal with the impact of exogenous factors and "holds that business cycles of history are compounded out of (i) the internal dynamics of capitalist economies, and (ii) the system of interventions and regulations that are designed to keep the economy operating within reasonable bounds (Minsky, 1992, p.9)". The financial instability hypothesis delineates the emergence of endogenous factors within the procedures accumulations that engender an advanced capitalist economy to be inherently unstable. It is also remarkable that financial instability hypothesis was widely acknowledged in the subprime crisis, in spite of its appearance in a time of a prosperous economy where inflation issues were at main concern.

Minsky had developed additional proposals relating to employment policy through state intervention. Government could guarantee a job offer at the minimum wage for anyone willing to work. He calculated that providing just one minimum wage, full-time job to each poor household that would lift two-thirds of families out of poverty. Nevertheless, we have been recently observing a rise in temporary and part-time employment and more jobs are outsourced and off shored. Enhanced competition serves as the excuse, but the real reason is that some corporate and government expenditures need to be diminished in order to leave the capital for debt requirements, portfolio choices and other financing assets' positions unchanged. The most severe implication though is an unprecedented increase in unemployment and deterioration in working conditions, particularly in countries that undergo crisis.

Minsky's theory had been ignored for many years because of its inconvenience to global economic trend. However, his vindication was ineluctable with the outset of subprime financial crisis. Minsky managed to describe and predict the crisis. It is currently a common observation that financial markets have been globalized and money managers and financial institutions comprise the protagonists in determining the financial markets and the process of international economy. The global financial crisis underlined the characteristics of money manager capitalism. It brought up their role and actions in association with increased instability, risk taking, production stagnation and most importantly labor insecurity and world income inequality. Furthermore, it stressed the need for worldwide policy cooperation. However, the financial crisis provides the opportunity for more skepticism to redirect economy theory towards stability and reality. In the strive to bear in mind all Minsky's insights, we deduct the conclusion that the current drawbacks of the financial system which increase instability are highly connected to social issues, such as unemployment and inequality, and perhaps they share the same cause.

Chapter VI

6 An extension of Minsky's Theory in Open Economy

6.1 Introduction

Minsky developed his theory in the context of a closed economy. In the current thesis, we present Minsky's theory within an international context. During the past four decades, oversight and overseas activities have increased in a potentially fragile manner in relation to globally integrated financial markets. The globalization of the economy, the integration of national, technological progress and innovation, enhanced leverage, have all resulted to the amplification of international financial transactions and hence to the externalization of the consequences. For this purpose, we will present some empirical relative work, but we briefly start from main features of the open economy to sketch the differences between a closed and an open economy.

6.2 Main characteristics in the open economy

In the open economy, the crucial role is the exchange rate. In the absence of an international monetary system exchange rate stability is important. In the case of EU, the euro is defined as common currency of member states who cannot apply independent monetary policy, but at international level, the value of euro is traded in currency market. Exchange rate value is important for international trade and financial transactions. Shifts in exchanges rates are inevitable for numerous reasons. When a country has achieved a trade surplus, then low inflation rates will be set and therefore the currency in foreign exchange market will augment its value and vice versa. Thus, changes in exchanges rates could be induced by the technological progress of other competitor countries. Sometimes countries preferred the low currency value to maintain the competitive advantage in their balance of payments. National experts often regard as low-cost measure to boost domestic economic growth and employment by maintaining exchange rate stable.

Foreign currency borrowing could be inducted by Minsky's theory in the same context as in closed economy. A unit could meet his payments in foreign currency under the Minskyan speculative criteria by continuously rolling debts over to maturity. In this case, though, the debtors would not only be vulnerable to changes in interest rates but also to exchange rates. Hence, in an open economy there is an add-on factor in Minsky's theory, rendering the units or agents more speculative (Arestis and Glickman 1999). Nevertheless, in the actual financialized era, the determination of exchange rates depends more on the portfolio choices rather than trade balances. Minsky states that "there are financial flows that dominate trade flows in determining short term movements in exchange rates and last long enough and go far enough to radically change exchange rates destroy industries and to quickly create large international financial links among economies (Minsky, 1988)".

The exchange rate risk is a matter of governments, units, and investors. In case of pegged rates, domestic financial institutions are emboldened to take up on short-term borrowing in foreign currencies, and hence, to lend the converted proceeds internally. In this case, the exchange rate risk is transmitted to the governments who should monitor such activities. Accordingly, in the open economy, banks, firms, individuals, agents, as well as the state are subject to Minskyan financial instability.

6.3 The domestic and international financial liberalization

It is apparent that the international financial system is deregulated. Thus, most of domestic financial systems have also been deregulated. In order to match the above argument with Minsky's financial instability hypothesis, we could contend the fact that importing financial innovation could turn the hedge financed units to speculative ones. Therefore, the import of financial innovation into domestic and expanding economies is another important element at international level. When domestic banks seek borrowing from abroad, then new innovative methods of finance will be applied, transmitting them ergo to domestic financial system. Thus, innovation may facilitate borrowing and lending, but it also deviates from the straightforward regulatory controls contributing to vulnerability and instability of the financial system.

Financial practices in an open economy could enter domestic financial systems and alter their conservative function. International agreements, such as General Agreement in Tariffs and Trade (GATT) and thereafter the World Trade Organization (WTO), or bilateral and multilateral arrangements, participations in monetary unions and pegged regimes, all of them in a sense obligate domestic economies to consent in a legislative framework that weakens their domestic barriers, in particularly in terms of capital mobility. Domestic economy is prone to any external disruptive events and pressures from the international system, which will amplify internally the repercussions (Kaminsky and Reinhart 1999).

In a globalized integrated world, international investors would attempt to jump into the domestic economy to take advantage of favorable rates. Huge capital inflows will enter the economy providing the immediate effects of increased liquidity, deposits, and assets prices in most of economy's sectors. Domestic banks could expand their credit not only domestically but internationally as well. However, we should assume that the above scheme perquisites free capital movement conditions. Consequently, the exchange rate will rise, making the economy an international investors' attraction.

Hence, a key element for Minskyan application in an open economy is the removal of financial regulatory barrier of domestic financial systems. Minsky himself (1975) claims that instability might increase internationally if countries were not treated in isolation. Although there are strong arguments for the liberation of the efficient market reforms, which could lead to mutual benefits, nevertheless, there is the contradictory view that financial liberalization and deregulations renders, especially the developing and emerging economies, more exposed to financial distortions.

6.4 Previous research at international level within Minsky's context

Minsky developed his model within a closed economy framework. Similarly, a great part of the Minsky's theory is based on the largest closed economy in the globe i.e.: the US economy. We could expand Minsky's theory in certain ways by applying empirically his theory or by developing his insights on the successive stages of financial evolution. Many economists were occupied by this challenge.

Van Lear and Sisk (2010) articulated the similarities of Minsky's money manager capitalism with the early stages of finance capitalism in the late 19th century. Kregel (1998) explained the Southeast Asian financial crisis by applying Minsky's insights. Additional applications and extensions at the international economy were developed by Wolfson (2002), Whalen (2008), Niggle (1989), Kaboub et al. (2010). Additional researchers have developed Minsky's theory, linking it with international level and mainly to the household sector (Arestis and Glickman, 2002; Dymski, 1994).

The global financial crisis in 2008 and the relation with Minsky's framework has become a matter of interest as well by Wray (2011), Ventimiglia and Tavasci (2010). All of them examined the impact of money manager capitalism in developing countries especially those that depend on one commodity. They showed that financial instability has increased in this new era. Liang (2011) concentrated on capital flows from countries where money manager capitalism is well developed to less developed economies throughout the globe. They analyzed the effects of theses flows to the domestic financial systems and economic stability of these countries and resulted in the need of authorities' intervention. Wray states that "with little regulation or supervision of financial institutions, money managers concocted increasingly esoteric and opaque financial instruments that quickly spread around the world (2011, p.15)". Thus, the financial system has become a pooled fund mechanism that increases the leverage and making misjudged risk assessments.

The application of Minsky's theory in an open economy has been a matter of empirical research as well for Arestis and Glickman (1999, 2002). They endeavored to link the financial crisis in Southeast Asia with Minsky' financial instability hypothesis. They began their analysis noting the financial liberalization these countries had experienced from the late 1970s and completed by the mid-1990s. That liberalization involved the removal of barriers to the international capital controls, but also allowed domestic financial institutions to engage in more risky lending and borrowing procedures, emanating from abroad. The 'make on the carry' tactic was apparent in these countries by domestic and international investors seeking any interest rates opportunities to gain short-term profits. The credit expansion was related with a property boom that was fueled by continuous capital inflows. As a result, credit expansion rapidly grew even in a speculative way, confirming in that sense the Minsky's account. Their conclusion states that financial liberalization adds more fragility to internal financial systems. Their extension of Minsky's theory show "how dangerous an

illusion it is to imagine that a governmental retreat from involvement in the functioning of the financial system will do anything to enhance stability (Arestis and Glickman 1999, p.32)".

Similarly, Arestis and Glickman suggest that "openness vastly expands the drive towards financial innovation and extends opportunities for 'making on the carry (2002, p.12)'". They support that as long as domestic economy moves towards financial fragility then it is prone to three types of crises. Firstly, a crisis originated internally but affecting the external sector too. Secondly, a crisis originated from abroad but also influencing domestic economy. Thirdly, a crisis that intensifies both internally and externally. The first type of crisis gathers the characteristics of the Minsky theory, when a reverse event will render agents' refinancing extremely difficult, leading them to default and a general decline in assets and property prices. International investors will turn to high liquidity products or invest in another foreign currency. The massive sale of domestic currency would result to a sharp depreciation in the foreign exchange market, initiating a crisis with relative contagion effects in international economy. The second type of crisis originates from abroad and depends upon fluctuations of foreign currency. As long as domestic agents borrow funds denominated in foreign currency, the central bank should acquire sufficient international foreign reserves to balance the debt to reserves ratio, in order to protect the economy. However, if the ratio debt to foreign reserves increases then automatically the economy moves from Minskyan hedge position to speculative and perhaps to Ponzi. Internal authorities will attempt to increase interest rates for stipulating the exchange rate, in order to restrain liquidity demand.

Wolfson (2002) also linked Minsky's financial instability hypothesis with Southeast Asian crisis. He argues that without the cross-border capital movements the financial fragility would not have been augmented in that scale. Additional fragility would have been lower if there were not many investment opportunities in the foreign country or regulatory controls. In global context, the fragility and instability grow faster, and the initiating factor of financial crisis is the development of the interest, as it flows from one country to another. Money managers exploit the differences in interest and exchange rates between countries, the global interest rate speculation, and the carry-trade. Debt deflation can be restrained by big bank and big government or even by combined action. However, in the case of Southeast Asian countries, there were neither a central bank[44] nor a big government to refine the crisis. Since there is no big government, then a coordination for international action to stimulate aggregate demand was necessary, but that did not happen in Southeast Asia.

Wolfson's conclusions for global fragility arise from the international capital movements and investment in domestic markets, exchange, and interest rate volatility and hence contagion. Debt-deflation ensues and that could take the form of debt exchange rate interaction which further deteriorates in the absence international lender of last resort and big government. Wolfson supports that IMF could play the role of lender of last resort since it can borrow money in hard currency. However, the IMF's intervention is not unconditional but requires policies linked to financial austerity. Wolfson interestingly wrote "to the extent

[44] Certainly, there was a domestic central bank in these countries that could defend the national currency decline and act as a lender of last resort. Notwithstanding, central banks could not assist domestic agents who had liabilities in a foreign hard currency.

that institutional changes in the international economy have reduced restrictions on the free market, it may the case that we are approaching a situation in which the global economy can be considered as a closed system of capital finance (1986, p398)".

Kregel (1998) considers the impact of a stable exchange rate, which raises optimism and procreates high foreign debt levels. Changes in the margins of safety to capital flows may be cultivated by over optimism of an extended period of the stability of the exchange rate. Kregel states that "this endogenous change in margins makes the passage from a fragile to an unstable system that much more rapid in the event of an exogenous shock (1998, p.6)". In a monetary union, exchange rate and monetary policy are the same. In the case of EU sovereign crisis, though, an analysis of fiscal policy conducted by each member state could be provided.

Hilling (2015) made a related analysis in emerging bubbles mainly in the property sector for Spain. Her findings have shown that the country had experienced a boom phase in the property sector. That was due to several of reasons, such as capital inflows, positive expectations, and further reduction of short-term interest rates. The internal demand was increased and so the current account deficit. Deregulation was applied in Spain too. Despite some removal of regulatory barriers, interestingly though, the question that remained then was "why Spain continued to have a relatively conservative financial system (Hilling, 2015)". It should be noted that introduction of the euro was another exogenous factor that led to investment opportunities pursuit from central EU countries to peripheral countries. The outcome was increased instability.

Another view exploring Minsky at international level stems from Gray and Gray (1994)[45]. The enhanced financial instability could be confined at the international level by the intervention of a dominant country, a regime, a status, or a strong organization to prevent the globalization of a crisis. That role was initially undertaken by Great Britain and thereby US. In the current era, though, it seems that no country by its own could assure international stability. Therefore, financial distortions could be transferred from one country to another by means of trade or financial linkages. The international financial system has become more fragile because of the integration and interaction of national economies. Imbalances of payments among countries render the emergence of disruptive event more probable with contagion effects. The Minskyan suggestion of big government at the international level to reassure stability could be assumed. According to Gray and Gray, this role could be held by an international hegemon, a prevailed global economically country[46]. The absence of international hegemon or committee or a lack of cooperation to absorb such an event contributes to further vulnerability.

In addition, Gray and Gray regard that globalization of financial markets have risen instability. The globalization of financial markets implies the increased ratio of assets and liabilities holdings denominated in different currency than domestic. Whenever debtors

[45] The authors were students of Minsky and the quotation in their article titled Minskian Fragility in the International Financial System is stems from the book Dymski, G. and Pollin, R. (1994), Explorations in the Tradition of Hyman P. Minsky, The University Michigan Press, 1994

[46] The authors perhaps imply the role of hegemony Great Britain had played in the 19th century until the First World War and the US until the 1970s.

cannot validate their debts in foreign currency or the creditors are not willing to refinance foreign debt, then the Minsky's financial instability hypothesis is apparent in the international financial system. International integration favors contagion effects when a financial shock occurs in a strong economy because of highly dependence with most economies through trade or financial relations, or even in a weakest economy because of its increased sensitivity and low endurance to an endogenous financial shock.

Gray and Gray (1994) support that Minskyan fragility is greater at international level than in a closed economy. The reasons of that contention are the instability in foreign exchange markets, international capital mobility and foreign owned deposits within domestic banking system. The authors recognized that in the absence of international hegemon, the international financial system required a relative committee and a lender of last resort. They also urged for the need of an international currency to avoid exchange risk and they finally questioned on whether free capital mobility could coexist with a stable international financial system, given the absence of international financial stability organization.

Beshenov and Rozmainsky (2015) conducted the application of financial instability hypothesis in the Greek debt crisis. Greece had become highly dependent in external finance with its budget balance deficit and a national debt climbing over its GDP[47]. When sovereign crisis[48] emerged and markets were substantially denied the refinancing to Greece, then the member states had decided to provide with financial assistance by imposing fiscal austerity terms as the remedy, and not policies linked to increased fiscal and monetary expansion.

Until 2009, Greece had received huge capital inflows mainly derived from Eurozone credit countries, such as France and Germany. As soon as Greece has joined the Eurozone in 2001, the economy presented high growth rates but were accompanied with large deficits, whilst the national debt continued to rise. That was the result of constant and continuous borrowing policy to maintain high growth rates. Nevertheless, this policy made the economy susceptible to any internal and external disruptive event. The economy was growing due to high consumption levels and the external capital flows, even though the national debt was already equal to country's GDP since 2001.

However, the euphoria climate had risen over optimism and concealed the extended risk of that situation. Finally, Greece moved to recession in 2008 and the severe implications for the economy and the residents have been applied since. The national debt further grew, additional and contingent taxes were heavily levied, aggregate demand had been reduced and the debt deflation process was apparent. The following bailout programs supposed to help Greece had actually provided with more time to foreign banks to get rid of Greek bonds, to turn the private debt as public, and to impose an extra debt burden to Greece's

[47] Although the fiscal deficit was substantially declined via huge cut spending and tax increased policies, the percentage of Greek national debt remains approximately to 150% to its GDP. Some scholars such as Reinhart and Rogoff (2009) suggest that an economy cannot recover with a debt exceeding the 90% of its GDP.

[48] Greece had been financed its debt mainly via bonds markets and for smaller amounts via Treasury bills. As soon as the spread yields rates grew at a prohibit level for borrowing, it become evident the economy could not avoid default unless a source of finance would be injected.

national debt[49]. The austerity measures have not only failed to assist Greece to service and reduce its debt, but they had also resulted to high unemployment and poverty (Papadimitriou et al., 2013). As a member of the Eurozone[50], the optimal policy for recovering would have been a fiscal policy expansion to boost aggregate demand, but it did exactly opposite. However, the country simply followed creditors' instructions for that adopted policy. Unfortunately, it is solely depended upon their decisions who could either force the economy to default or to revise their policies.

In their endeavor to test the financial instability hypothesis with the Greek crisis because of excessive private debt, Beshenov and Rozmainsky used the financial statements for 36 companies[51] from 2001 to 2014. They reckoned their interest coverage ratio and classified them. A company with a ratio over three is financially stable and "durable". Hence, they categorized the companies by applying the FIH, where firms with a ratio over three belong to hedge finance, between zero and three to speculative and under zero to Ponzi position. They found that the number of companies with speculative and Ponzi finance had augmented to 61% of the sample between 2001 and 2008, by increasing their borrowing rates. The companies expanded their production by means of borrowing from banks that willingly provide them funds in the prospect of stable cash flow from their expected profits. After the emergence of crisis, the research has shown that recession and debt deflation were evident. By 2013, only 17% of the companies of the sample were financially stable, whilst the others were contracting by cutting production costs and begun to sell some of their assets to repay their loans and to avoid bankruptcy.

The case of Greece is believed to be a typical example of the financial instability hypothesis, while Beshenov and Rozmainsky support the view that the economy has already moved to speculative phase with its accession to Eurozone. Hence, at the outset of the crisis it moved to Ponzi scheme in 2009, where the country was incapable to meet its repayment commitments. The remedy austerity policies had been ineffective. By contrast, Minsky's insights could have been served as an alternative to promote policies targeting for increased growth and employment.

6.4.1 Additional applications of the financial instability hypothesis

Testing the financial instability is always a challenging task. A possible way of application could be the examination of debt ratios. The change in the debt ratio to output depends on the periods of booms and busts, where in boom period tends to increase and vice versa. Thus, the rate of debt ratio influences the rate of profit, since the latter is now equal to output, minus wages, minus interest on outstanding debt. If we study the ratios of debt (private or public) to GDP, we could extract some hints where economy is standing. Additionally, we can use the debt-to-income ratios. Checking on the available data from international organizations for most countries, then many concerns could be raised. The

[49] Before the bailout programs in 2010, the Greek national debt was approximately in 120% and after couple of years, it surpassed 170% in 2014.

[50] Greece as any other member state of EU cannot devaluate the euro to increase competitiveness and to reduce debt burden.

[51] The companies were sampled based on the Athens Stock Exchange (ASE) General Index and their statements were derived from the Bloomberg Terminal.

debt ratio through higher credit could start to break or gradually to diminish. If it breaks, then a recession is an unwanted possibility. We could outline some relative empirical studies in modeling Minsky's theory.

Keen (1995) modeled Minsky's Financial Instability Hypothesis by means of "stylized facts" extension to Goodwin's cycle model. The analysis had shown that during expansive periods, profit-driven expectations result in more debt incurred than the economy could bear, and the reverse busts phase will be analogous to the debt accumulated. The model depicts that when a disruptive event occurs, then debt will continue to rise but the system will go on since there will be failures, bankruptcies and written debts-off. He verified his theory that government increased spending is capable to impede a debt crisis in an economy of mere credit. When investment cannot be fully financed by earned profits, especially during the boom periods, then this gap could be filled by debt. We could model the above argument in an equation where the rate of change of debt equals investment minus profits. Therefore, the rate of change of debt increases when investment is higher than profits and declines when profits are larger than investment. Keen (2017) argues that aggregate demand can be defined as the sum of income plus the change in debt, contrary to Say's Law where aggregate supply equals aggregate demand with no change in debt.

Biggs et al. (2010) measured the influence of the acceleration of credit on changes in aggregate demand using the ratio of the acceleration of debt to GDP. They named the above ratio as 'the Credit Impulse' and they concluded that a small recovery in 2010 after the subprime crisis emanated from a reduction slowdown in the rate of deceleration of credit. Hence, the factors to be considered in order to comprehend the effect of debt on the economy, apart from its the level, are also the rate of change of debt, and the rate of its acceleration, all computed to the level of GDP.

Borio and Lowe (2002) conducted an analysis of asset prices, credit, and investment. The aim was to show the extent on which these variables could provide information for future financial distortions. They made the analysis by defining a threshold value for each of the relevant indicator series. When the indicator takes a value that exceeds the threshold value that would be a signal of an upcoming crisis. Their sample consisted of data from 34 countries over the period from 1960 to 1999, including all the G10 countries[52]. The credit gap produced the best results in predicting crises. An interesting conclusion of the model concern governments bonds as liability. It should be clarified that when government liabilities are held domestically, then future generations that will have to pay for it will also gain from these earnings, since money is domestically circulated. On the contrary, when government debt is held abroad then that is an obvious liability for current and future generations' domestic taxpayers.

Dymski (2009) in his analysis of US subprime crisis supports that the credit system has significantly changed since Minsky wrote the Financial Instability Hypothesis. From the beginning of the 1990s, more low-income households were engaged in credit altering social exclusion in US market. Cross border remittances were growing as well as the US current

[52] All of them had a ratio of credit to GDP in excess of 35 percent at some point between 1960 and 1999, a GDP per capita in 1995 in excess of US$ 4 000 (at PPP exchange rates) and had total GDP in 1995 in excess of US$ 20 billion.

account deficit, rendering the economy a global liquidity sink. The interventions of central banks could no longer be fully effective due to the high level of banks' outsourcing of their lending/borrowing. Thus, financial instability that Minsky has described, it is determined upon institutional structures, which are unstable likewise.

Frenkel and Rapetti (2009) identified the different phases of the instability process until a crisis in an international economy. This process occurs in the following stages:

1	Domestic financial market liberalization
2	Free capital mobility
3	Fixed exchange rate or pegged to international dominant currency
4	Reduction of exchange rate risk and increase of domestic interest rates
5	Foreign debt issuance and increased capital inflows
6	Increased liquidity and domestic credit
7	Decrease in interest rates
8	Increased in aggregate demand – output -employment
9	Exchange rate appreciation
10	Trade balance deterioration - Current Account deficit
11	Attitude alteration in domestic positions
12	Capital outflows – devaluation process
13	Liquidity run
14	Central bank intervention

Kaminsky and Reinhart (1999) highlight the most suitable indicators of financial liberalization. These include the M2 multiplier, the ratio of domestic credit to nominal GDP, the real interest rate on deposits. In addition, the ratio of lending to deposit interest rates, the excess real M1 balances, real commercial bank deposits, the ratio of M2 divided by foreign exchange reserves. Furthermore, the indicators linked to the current account include the percentage deviation of real exchange rate from the trend, the terms of trade and the value of exports and imports. The indicators linked to the capital account are foreign exchange reserves and the domestic-foreign interest rate differential on deposits. Indicators of real sector include industrial production and an index of prices of equity. The fiscal variable is the overall budget deficit as a percentage of GDP (Kaminsky and Reinhart 1999, p.10).

Vymyatnina and Pakhnin (2014) incorporated Minsky's theory to explain Russian 1998 crisis and have found considerable similarities. It is quite interesting though that the research has also shown that Minsky's theory is relevant with the fall of USSR and equally applicable to state-dominant economies.

6.4.2 Traits of Financial Instability

We wish to stress the characteristics of the economy that encourage the fertile grounds financial instability. According to Minsky and other authors that have extended his work, the essential point is not to detect the financial crises, but rather to stress the

weaknesses of the economy that could enhance instability. The point of detecting financial instability is not to predict when a financial crisis will occur but rather to emphasize those traits that render a financial system and an economy unstable at early stage.

Minsky states "the theory of financial stability takes into account two aspects of the behavior of capitalist economy. The first is the evolution of the financial structure over a prolonged expansion and the second consists of the financial impacts over a short period due to the existence of highly optimistic, euphoric economy; the euphoric economy is a natural consequence of the economy doing well over a prolonged period. (1972, p.119)". According to his view, financial fragility emerges in euphoric times when bank profits are rising, interest rates are stable, net worth is growing, default rates are low, asset prices grow, credit is easily accessed and available, profitability is large, and the economy is steadily growing (Tymoigne, 2010).

Several studies have used Minsky's theory to identify financial instability. The most common finding is that the leverage grows and liquidity declines during the expansion period (Minsky 1977, 1984, 1986; Sinai 1976; Niggle 1989; Wolfson 1994; Estenson 1987). The ratio of credit or debt-to-income or debt-service ratio and the proportion of cash flows and liquid assets relative to debts are among other variables that could provide indications about leverage and liquidity. Certainly, the financial system becomes unstable where the credit ratio for households and firms is high but there are also additional factors. In one of his early papers Minsky (1963) encompass four versions of financial stability a) the increase of debts relative to income b) the rise in real estate and stock market prices c) the decline of liquidity and d) the degree of governments and central banks' intervention to sustain prices.

Another group of authors focuses on the detection of Minsky's stages of financial instability: hedge, speculative, and Ponzi (Foley 2003; Seccarecia 1988; De Paula and Alves 2000; Tymoigne 2012). Aspachs et al. (2007) use the growing probability of households' default, lower profit, and the reduction in real GDP to identify financial instability. Gonzalez-Hermosillo (1999) suggests that non-performing loans growth is an indicator of potential banking crisis and instability.

Frenkel and Rappeti (2009) in their boom-and-bust analysis for developing countries indicate that the instability emerges when interest rates are high enough to attract foreign capital. Interest rate differentials offer considerable arbitrage opportunities (also Wolfson 2002). Frenkel (2013) suggests that the cyclical dynamics of initial expansion with financial fragility will finally lead to financial crises and in currency crises for emerging countries. That is the case with Latin America and the East-Asia crises, when capital liberalization and fixed exchange rate regime encouraged arbitrage opportunities between domestic and foreign rates. The expansion period could be tracked down with the domestic credit growth, capital inflows, accumulation of foreign exchange reserves, and a rise in GDP. Hence, interest rates will start to decrease, real exchange rate will go up, whilst both the balance of trade and the current account deteriorate. The indications provided in the expanded economy are the high credit and asset prices growth that led to higher output and employment levels. For emerging economies, the appreciation of the real exchange rate and the higher demand for

imports worsen the trade balance. Consequently, the current deficit enlarges, and the economy is already fragile and instable. The slightest shift in liquidity levels and capital inflows is just the trigger to initiate the flame in an already financial unstable system. A debtor country with borrowing needs in foreign currency might not be able to meet its obligations. Therefore, international foreign reserves and robust external accounts play an important role to shield the economy.

At the same time, regulation is being relaxed contributing to financial instability. Regulation has always contained excessive risk-taking practices but the growth in shadow banking, in hedge and private equity funds have encouraged the regulation aversion. "The robustness or fragility of the financial system depends upon the size and strength of the margins of safety and the likelihood that initial disturbances are amplified" (Minsky 1986, p. 209). With his famous phrase "*Stability is destabilizing"* Minsky implies that agents are encouraged to more risk-taking investment decisions in addition to more borrowing (Wray 2012).

In the context of high interdependent global economy, a shift in external conditions will be sufficient to reverse the euphoric status. Capital inflows adversely operate along with foreign exchange reserve contraction, devaluations of the nominal exchange rates, and domestic interest rates increase. Credit is no longer easily accessed, domestic demand decreases and economic activity contracts. Minsky suggests that in the contraction period interest rates increase, which leads agents to sell out their illiquid assets to meet their debts.

Minsky analysis suggests that "over the course of any expansion, the economy moves from hedge to speculative to Ponzi finance. Minsky argued that this is a necessary precondition for an unstable financial system" (Papadimitriou and Wray, 1999, p. 10). The accumulation of debt in association with low interest rates were the main dynamic that render the economy more unstable, moving to more and more speculative units and inflating asset prices. Tymoigne (2012) conceptualizes Minskyan financial fragility that could lead to debt-deflation as the increase in the ratio of Ponzi finance, considering the interaction of asset prices with debt. He focuses on the household sector and suggests that instability is increasing when the main scope of refinancing and asset liquidation is to meet debts requirements. Papadimitriou and Wray (1999) argue that the essential factors to be considered are on firms' investment and finance and not on households' consumption and saving. Firms depend upon investment, profits, and debt. As Minsky viewed it, debt entails future payment commitment that could only be validated in the prospect of profits accrued from investment and production. The prices of the products will therefore determine profitability and debt validation.

The size of financial sector to GDP is enormous and the issue is that both household and financial sector debt in relation to income are huge. Arcand et al. (2012) support that too much finance in the economy could no longer have a positive impact. According to their results, there is a threshold when credit to the private sector reaches a relative percent of GDP then finance starts having a negative effect on output growth. In particular, the results

suggest that the marginal effect of financial depth on output growth becomes negative when credit to the private sector reaches 80-100% of GDP.

In his monetary theory of value, Gander (2019) notes that there is a relation among monetary phenomena and financial crisis. There is the possibility that money to be withdrawn from circulation process reducing liquidity levels. Furthermore, there is the option of money holders to invest either in production process or in financial products. The credit system has the goal to make profits and all new financial products will redirect capital flows from the production sector to these new financial products only for the prospect of higher profits. Moseley (2011) perceived the reduction of profitability as the main cause for increased indebtedness and wage stagnation. The decline in profits entails to a reduction in investment. In addition, wage stagnation will lead to induce households to borrowing to keep up with housing and consumption needs. The advent of neoliberal policies at the 1980s was the turning point for profits recovery. Until then, the rate of profits had been stagnated but from the 1980s and onwards the profit rate, at least in big economies like US and UK, has been recovered in and since it has been increasing (Duménil and Lévy 2004:1, 28).

6.5 Minsky in international economy

Minsky (1990) states that when a country has accumulated debt denominated in foreign currency then it requires the production of trade surplus. In international economy, that trade surplus, also adding capital inflows, is needed to adequate to finance foreign loan obligations. In the open economy, every unit might have liabilities. Corporates could lend and borrow funds internationally in foreign currency, and so could banks and other financial institutions, governments with their large sovereign debt, even households or individual units. The internationalization of finance is obvious, and the validation of international debt depends upon the economic performance of the above units.

At the international level, we need to take into consideration that money could be invested or lent abroad without any capital restrictions. The actual international economy characterized as an integrated financial system could be eventually regarded as the ultimate closed economy. The interest rates of domestic economy, the exchange rates regimes and the contagion effects are important elements. In addition, the monetary policy each country follows and the interdependence with other countries. We also regard the exchange rate risk as an element of financial instability in the international context. Minsky argued that “essential features of a more secure and prosperous international finance system include: stable exchange rates; an accommodative mono-reserve set-up; and an international lender of last resort (1986, p.166)”.

The post Bretton Woods period with the flexible exchange rates regime has induced many countries to run fiscal deficits, offsetting them with capital inflows or vice versa. The outcome though is an exchange rate volatility and the danger for an emerging event that would suddenly stop the required capital flows. Thus, imbalances of trade and capital flows are easily engendered, and the direct disentanglement would be a reduction in aggregate demand.

In global context, fragility and instability grow faster. Financial transactions in global economy are affected by differences in the levels of interest rates and by exchange rate shifts. Fluctuations in nominal and real exchange rates are evident during the last forty years and are related to relative growth of foreign exchange transactions and international trade (Sawyer 1999). The model of Minsky could be applied in global economy when we examine periods of devaluation or overvaluation of national currencies that are linked with overshooting and undershooting. Money managers exploit differences in interest and exchange rates between countries, global interest rate speculation, and the carry-trade. All these speculative phenomena could be connected to speculative and Ponzi finance and may lead to financial crisis and afterwards to a debt deflation.

Monetary policy is essential at international level examination. The increase in interest rates from lender countries could precipitate the likelihood of a financial crisis. Furthermore, if loans were made in a hard international currency, then an exchange rate decline in domestic currency value would require a larger amount of domestic currency to meet foreign debt payments. In this case, loans will be defaulted, and the exchange rate will further decrease, carrying away the economy into downward deflated movement. It should be noted that we are referring to a decline in the exchange rate and not to an abandonment of pegged rate, where the implications would be more rapid.

In case of cross border flows of money, the cyclical variability in credit supply of Minsky's theory could be extended. Kindleberger and Aliber state that "an increase in the flow of funds to a country led to an increase in the foreign exchange value of its currency and to increases in the prices of securities and other assets traded in that country (Kindleberger and Aliber, 2005)". The expansion period was linked with domestic credit growth because of an increment of capital inflows.

Minsky's theory in credit supply could be perceived at international level in the pattern of cross-border flows of money. Minsky (1986) distinguished the balance of payments statistics into four tiers of cash flows:

Tier 1: Trade (Goods and Services).

Tier 2: Income from foreign lending (factor service balance).

Tier 3: Net new foreign lending.

Tier 4: Short-term capital movements.

Considering Minsky's theory in open economy, we could deem tier 1 as foreign direct investment and "tier 4" as portfolio movements. The level of interest rates is important since it varies among countries and gives an opportunity for speculative action and for carry trade. Fluctuations in interest rates normally attract investors' attention and forces central banks to take necessary decisions. In addition, exchanges rates are vital for financial stability. It is evident that domestic currencies could appreciate or depreciate due to several circumstances, such as inflation, trade surplus/deficits etc. A rise in the exchange rate parity for instance could be the initial stage of what Minsky called a robustness period.

However, it should be cleared that the difference between pegged exchange rate regimes (domestic currencies pegged to US dollar or Euro) and floating regimes since instability may vary among them. In addition, a different category is the monetary union (EU) with a particular role to the international financial stability. Hence, the EU, UK, Japan, China, Russia, and certainly the US must be considered as leading contributors of international financial stability due to their economic size. Contagion effects emanating from one of the above countries would be broadened to a greater extent. In the global level, though, what is required to restrain instability is a coordinated and cooperative action.

During the boom period, a rise in capital inflows to a country entails to an augmentation in the foreign exchange value of its currency and additionally to a rise in prices of other traded assets, commodities, stocks, securities, property prices. The pricing levels in assets, securities, real estates, stocks, domestic currency are all rising. Overconfidence and optimism prevail and the rates of returns to investor grow and grow, thus attracting more and more investors. The above growth in cross-border flow of money to a country is usually related to domestic expansion of credit. Thus, domestic income in these countries increases in response to augmentation in the levels of investment and consumption spending. The overall outcome would be an economic expansion and that is due to the monetary shock of enhanced international money supply flown domestically. In domestic economy, consumption spending increases too but at the expense of saving. Households at boom periods deem that saving is not that necessary since their assets holding value (property, stocks etc.) has increased and there is no need for additional saving. That is another fictitious perception as well. At international level, there is also a variability of flows of savings from a country to country. As long as the prices of currencies and stocks are increasing, the rates of return are high and likely for further increase. Optimism about the economic future has overall enhanced. The existence of Minsky's model demonstrates that in credit supply changes are pro-cyclical since the growth in foreign saving flows to countries is linked to the increment in domestic credit expansion.

The high level of indebtedness of agents is the main concerning issue in the global economy. It should be noted that the debt is related to non-productive activities such as consumer and financial sector recycled credit and not on productive sector, which could reassure cash flows in the future.

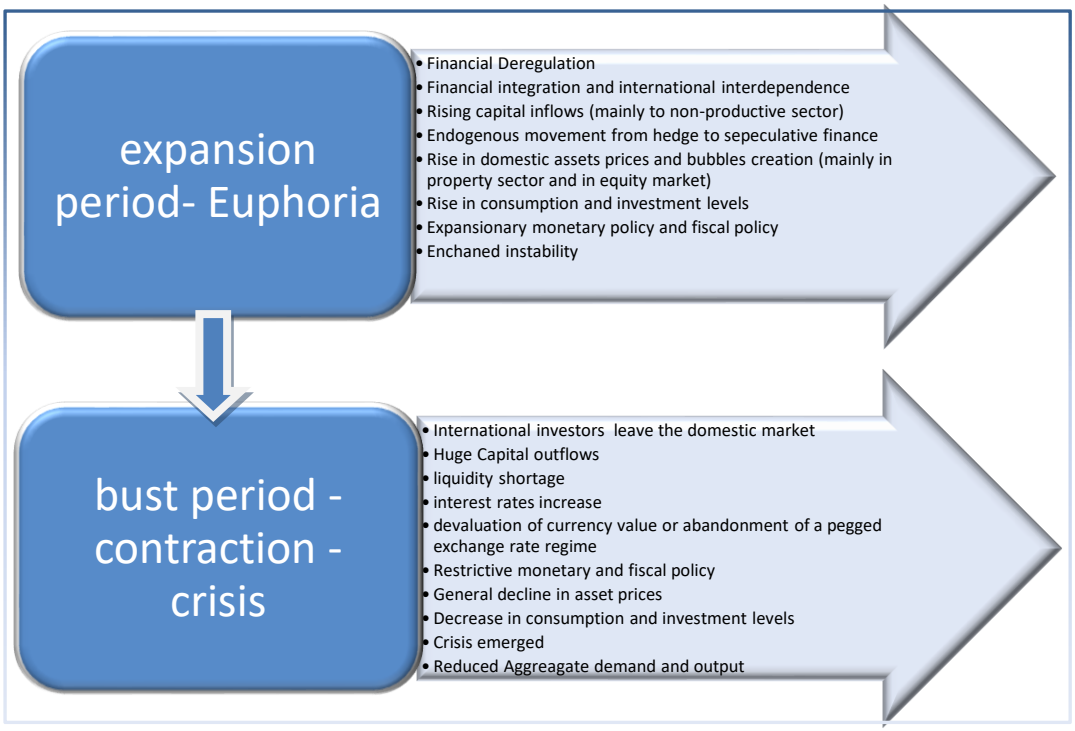
The bust phase puts an end to that euphoria period. It is triggered by another shock or simply by a change in international investors' preferences for other assets denominated in foreign currencies. Hence, the determinant factor of timing enters in the process. If the value of currencies and stocks grows, the returns to their holders will continue to rise. Positive expectations, optimism and eventually highest number of agents adhere to this highly lucrative game. However, the irregular boom phase cannot last forever. When "Minsky moment" appears then automatically cross-border flows of money reverse. This move is due to investors' preferences changes for assets and securities denominated in different currencies.

What is unknown is the exact moment of the appearance of this reverse shock and the bottom level of the general decline. Thus, portfolio changes result to large capital

withdrawals from the country. The bust phase entails to a reverse general decline to asset prices, in the prices of currencies, securities, and other assets, credit supply contraction and liquidity shortage. Consequently, there is an increased level of unmet debt payments. The latter brings several failures and defaults. Intervention, ergo, internal and/or external is required, to constrain the effects and the duration of the crisis. Sometimes the overall reduction in prices and currencies might be greater than the general level of prices before the process of economic expansion.

Minsky' theory at international level could be connected to the features of crises mentioned in the previous chapter. The pattern of cash flows that took place seemed relevant to Ponzi schemes. This pattern of cash flows was not sustainable since most of countries that suffered from crisis were international debtors and had also large trade deficits. Before the emergence of crisis, the countries paid the interest on their international indebtedness from their lenders in the form of new loans. The large capital inflows at that time accord with this view.

The following diagram represents the movement of an open economy from expansion to contraction and crisis.



Source: Kindleberger & Aliber (2005), Ariane Hillig (2015), and Self-Conducted

The fragility of international financial involvement apart from financial distortions is also determined by the prudency and wisdom of the agents. Cross-border transactions have been always visible due to mutual benefits and profit-seeking investor's nature. However, it is easier to assess the creditworthiness and solvency of a commonly known domestic financial corporation or agent than one from abroad. Hence, what it only takes to attract foreign capital or to encourage international financial transactions is the presence of greater

promising returns in a foreign currency (or country in a monetary union) mainly in the form of interest or exchange rates. The evaluation of risk taking though is a counteractive matter, where occasionally proper attention was not considered, or lenders were "naïve" on the balance of payments risk. International flows were coincided with speculative short-term positions. Many crises have emerged because of the latter phenomenon. Adding the corruptive factor as well as the asymmetric information, all of them, have further encourage speculative action.

In the last forty years, financial crises have been in larger magnitude than in earlier periods when currencies were pegged or when there was a commitment to parities for national currencies, even though flexible rates offer the advantage of independent monetary policy. Indeed, floating exchange rates offer the occasion to investors to transfer their funds from one country to another in the pursuit of higher profits. That partly explains the emergence of financial shocks and crises at international level. Speculative investors reckon the inflation rates in a country and soon afterwards the expected spot of exchange rates. The concepts of overshooting and undershooting will take place every time investors will decide to increase or decrease their asset holdings of securities in their portfolios denominated in a currency and will occurred in times of changes in anticipated inflation rates.

By contrast, during periods of pegged rates or commitments to parity, the exchange rate risk is eliminated. Pegged rates or committed to a parity imply that domestic inflation rate could not considerably deviate from the inflation rates from a country's main foreign trading partners. In this case, the increase in capital inflows will entail to a rise in the international reserve assets and the money supply. In the case of flexible rates then domestic monetary policy could result in changes in actual or anticipated inflation rates and thus altering cross border flows of funds. The gist is that a rise in the flow of funds from abroad is almost always related to economic expansions in domestic country.

Additional characteristics of Minskyan Analysis in an Open Economy		
Characteristics	*Closed Economy*	*Open Economy*
Credit and money supply	*Credit creation by domestic banks*	*Credit creation by domestic and foreign banks*
Asset prices and investment	*Asset prices and investment increase*	*Asset prices and investment increase due to capital inflows*
Short-term interest rates	*Domestic short-term interest rates are low*	*Domestic short-term interest rates are low relative to foreign but higher from developed countries ("make on carry" tactic encouraged*
Financial innovation	*Domestic financial institutions invent new financial products*	*Financial innovation is also imported from abroad mainly in the form of securitization*
Debt levels	*Domestic debt increases*	*Domestic and foreign debt increases*
Deregulation	*High deregulation domestic financial system*	*High deregulation domestic financial system in compliance with deregulated international financial system*
Source: Arestis and Glickman (2002), Frenkel and Rapetti (2009), Minsky (1986,1990), Kindleberger and Aliber, (2005), Ariane Hillig (2015), and self-conducted		

At the current era, financial globalization, markets, and agents have become internationalized, increasing competition, and inducing them to be engaged in more risks through numerous innovative financial products. The above status requires a liberal environment of free capital mobility to facilitate financial transactions and thus, progressive deregulation has been applied.

6.6 Some Further Considerations

After having highlighted the most relevant literature and research, it would be quite interesting to complement with some further considerations. These are related to observed phenomena, which are repeated during the cycles as well as in forming the perceptions, norms, and expectations of the agents.

6.6.1 The Illusionary years

By the term illusionary years, we refer in this research as the prosperity period or euphoria or the boost phase, or even the status where the economy is in equilibrium position. Minsky (1986) portrayed it as a tranquility period. However, the word 'illusionary' comprises a false or utopic euphoria. The expansion period or "prosperity" or even the economic growth may not be real or actual. In other words, it could be underpinned by non-sound economic foundations of enhanced productivity, but it could be grounded on a factitious rise in aggregate demand. It lasts as long as there is reinvestment, no liquidity demand and a large number of attracted and motivated investors. A continuous period of a phenomenal stability, which in fact is illusionary.

Markets induce people to invest on highly risky assets, without being aware of real pricing conditions, and thus making them part of this bubble that eventually will blow. Therefore, the dominant financial environment, on one hand, favors the bold ones by promising higher yields in near future and hence providing this euphoric but illusionary sentiment. That sentiment would make them reinvest repeatedly until the system will collapse and even go on bankruptcy. Therefore, the main incentive on the illusionary years is to follow the trend and become a speculative agent. On the other hand, those would rather stay in safe position, during the illusionary period, shall be excluded from any profitable gains and remain on a constantly returns which are below the average level. Eventually, some of them will decide to catch up on this pace. Hence, the conclusion is that during illusionary periods someone could either be a speculative or a bad investor. It is worth wondering which of the above options would be the rational.

6.6.2 The live and let die attitude

Considering the stages that the economic system has been traversing, we could imagine the following stage and perhaps the last one where the radical money managing could entail. It is a phase where the absolute egoistic attitude and atomistic self-interest

prevails. That attitude is already visible but with the difference that the pursuit of self-interest will not be constrained by any moral or ethical code. If someone could be better off at the expense of another or a group of persons, then this attitude will not be condemned but on the contrary, it could even be approved. Nowadays, this approval is implicit since individuals who have adopted that attitude are seldom be punished or constrained by other individuals, institutions or even state authorities. In the past years, whenever someone deviated from the moral norm then everyone pointed his or her finger on him leading him/ her to isolation and hence in self-reconsideration. However, greater antagonism has eliminated the notion of moral code and in general the common welfare, which constitutes though the solely way for economic and social prosperity.

6.6.3 The distant memory hypothesis - People tend to forget

Apart from any scientific research to explain the behavior and phenomena only in economic terms, it becomes also necessary to sketch the attitude of agents. Thereafter, how this attitude contributes to the appearance of repeated undesired events. Minsky (1982) quotes Keynes that "each state nurtures forces that lead to its own destruction (Keynes 1936, p.128)", and hence 'stability – or tranquility – in a world of a cyclical past and capitalist financial institutions is destabilizing (Minsky 1982, p.101)". Lavoie names this notion as "the paradox of tranquility (Lavoie 2015, p.4)". Credit is not material source with limited amount and as soon as is excessively granted then a new era seems to begin, which gradually erases all past events.

Keynes (1936) outlined that economic agents are easily fall into herd behavior, and thereafter they decide according to each period's business conditions and perceptions. Following the above argument, we could refer to the importance of uncertainty as a main factor of investment. Whenever, the state had to deal with any kind of financial distortion, it had launched a prudential surveillance program. Unfortunately, this program lasted until risk perceptions have changed again. Minsky (1986) notes that as long as the economic climate shifts, the perspective of economic agents would be modified leading us to the unquiet conclusion that lessons from history have not yet been learned. This is the so called *'distant memory hypothesis'*. It implies that the current businesses and the new financial environment will eventually prevail to economic agents' thought/decisions over the memory of past financial crises. Credit and investment expansion beyond normality could encourage this new perception, especially when this euphoria comes from inflated cyclical and speculative sectors such as the foreign exchange market, secondary stock market and the property market.

Even though crises have revealed the role of money managers and the defaults of the actual financial system, our main concern is that people tend to forget relatively quickly. Gains from speculative action sometimes are so great that exceed the annual income that an average household earns, which is so convenient to their unquestionable daily needs. However, that will render them vulnerable to the promises of financial markets. When a simply revenue is not the result of a hard long daily labor activity, but rather stems from a

short-time investment action of a financial product (not necessarily non-transparent), then such superlative easy income could cause distortions to human nature. As soon as profits are reappearing, then easy money will flow again. Dymski and Pollin (1992) explained that even if agents were not only fully aware of Minsky's FIH but have also accepted it that would not be enough to prognosticate when the financial crisis will be emerged. Until then, banks, firms and agents engaged in profitable occasions will be rewarded, exploiting every competitive advantage whilst prudent and conservative agents "will be penalized when their more aggressive competitors surpass their short-run performance (Dymski and Pollin 1992, p.45)".

Afterwards, people will lay out and unfortunately might fall again. It is true that agents could be occasionally furious and angry with money managers and bailouts programs that come from taxpayers' money. Simply because living into a period of recovery or remedy or healing from the woods of a crisis, this does not necessarily mean that the economy has already return to stability. That is certainly not the case as long as regulatory action against financial practices that have led to crisis has not yet been taken place. Hence, the system as it currently functions, only requires a constant period considerable enough to a) make people used to the new circumstances and begin to forget and b) to start producing a progressively slow leverage with a moderate rise of debt levels and credit until all will be paid off at a first stage. That will help people to reconsider loans and credits and eventually they will forget since easy money will be coming again. Thus, there is a new start.

6.6.4 The money trap – indebtedness

The money manager capitalism has achieved to prevail from the outset in the field of the financial sector and hence in the entire economy. Throughout time, it has also been developing at the international level. It is interesting to explore the reasons of this dominance. The first thing money managers needed to do is to raise funds so that they could start lending money and taking positions and gaining profits. The latter perceptive is the important one since the pursuit of short-term profits could enhance their credibility and popularity among wealth holders. The promises for short-term profits become reliable and as a result, more and more investors are being attracted. As the quantity of cash flows inflates, then their capacity for more speculative positions and more lending to private sector and governments arises. More precisely, at the outset of prosperity, firms are benefited from taking on increasing amounts of debt. The reward of the success results in the encouragement of similar behavior by other firms.

Money is available for enterprises to invest, expand, and innovate targeting in future profits. In addition, for governments to stimulate aggregate demand and to promote economic growth more rapidly than the traditional procedure. From an international view, in an interdependent globalized economy, initiatives of one government or firm may have impact to another. Externalities are being created if one firm/government pursuits the injection of cash flows by international creditors. In fact, during the prosperity periods,

money managers or financial institutions tend to encourage lending with attractive terms. In other words, they urged to lend governments and firms.

However, this is exactly where their trap is to be identified. The goal is simply the increment of the level of indebtedness in both national and international level, so all demands and terms perforce to be accepted in the long run. These terms depend on the assets of the entities to which they had lent. In case of industries, whole assets could be transferred to them. In case of governments, major public lucrative firms could be privatized. The money trap holds whenever easy money, or unearned from labor money, is being acquired and often in large quantities. Consequently, that kind of money could easily bring distortions in people's mind concerning and confusing the real value of money. As soon as individuals or governments fall into the illusion trap, that kind of easy cash flow will never stop. Hence, the fragility of this economy has reached its peak, and anything could happen. The conclusion is that for financial managers indebtedness is desirable, up to an extent, to usher borrowers to the money trap and eventually rendering them vulnerable, psychologically, and mentally incapable to react, but ready to accept their terms of repaying.

6.6.5 The debt issue

The implications of debt on agents, firms and governments are well known. Minsky portrayed the importance of consumer debt and the crucial role of financial innovation in all stages of money manager development. The implication is the constant need for close financial regulation. An asymmetry could be observed with the consequences of high indebtedness. Debtors are forced to decrease their spending, but from the other side, creditors are not forced to increase their expenditure in cases of an upcoming instability or recession. Nevertheless, debt increase is necessary to finance business activity, as Schumpeter (1939) and Minsky (1982) both argued, to boost economic growth. Let us not forget that aggregate demand, besides the rise in the GDP, is also increased through the debt level. If aggregate demand rise, it is necessary that current expenditure to be larger than current received income. This gap could be filled by financial markets whenever a period of economic growth, a part of spending is financed by selling assets or debt (Minsky 1982).

Therefore, what should be the acceptance debt levels and what is to be funded consist of some relevant questions. Bankers, agents, investors, government all hold subjective views about the appropriate debt level. Repeated reassessments take place at each period, at liquidity shortfalls, assets selling, changes in levels of interest rates and credit or even in risk perceptions modifications. Therefore, that buildup could keep on for years, but when anything goes wrong, the revaluation can be sudden (Minsky 1982). Considering indeed the post-Keynesian view, that economy evolves and develops according to the different circumstances that could vary at each period. Financing activities and projects are necessary, but barriers, ceilings and regulations need to be imposed in order to ensure the capability of borrowers to meet their past obligations.

Whenever debt is rising to finance sound investment opportunities, industrial productivity investment, or the Schumpeterian innovation, this would create more profits. Part of these profits will be used to pay off the debts. Hence, all will be cleared, and extra credit might not be needed again. On the contrary, if debt is directing to finance speculative actions, then the permission on debt-level is on vain. Keen states that “when lending is undertaken for investment or consumption, debt tends not to get out of hand. However, when borrowing is undertaken to speculate on asset prices, debt tends to grow more rapidly than income. This growth causes a false boom while it is happening, but results in a collapse once debt growth terminates (Keen, 2017)”.

Thus, the question is what to engage debt. The issue of debt quality must concern not only financial institutions but governmental authorities as well. There are certainly some speculative and Ponzi schemes seeking for finance. It is on the responsibility of lending side to be extremely cautious to whom are about to lend. They will not only jeopardize the payments fulfillment and eventually the viability of the financial institution, but also the financial instability. The above argument could not be perceived as an exaggeration considering the financial size of an institution and the interdependence between domestic and external financial institutions and governments.

Chapter VII

7 Financial Enlargement and Growth in Transition Economies

7.1 Introduction

Until now, most of the concepts of the financial instability and the consequences have been developed. At this point, it is interesting to provide some descriptive information from a group of countries that meet the criteria of the goal of this thesis. For that scope, the concept of Minskyan financial instability and its relationship with growth is highlighted. The rapid growth model grounded on capital inflows has been inextricable intertwined with the financial deepening process. Romania, Bulgaria, and the Baltic States have experienced rapid growth models until the outbreak of the crisis in 2008 when a plunge was ensued. Large capital inflows in association with greater financial integration, and foreign ownership of financial institutions consist of main features of the economies. However, during the period of accelerating growth until 2008, financial vulnerabilities were built-up as well. Minsky in his theory has delineated the credit cycle process that bears resemblance with the course economies have traversed. By 2011 and onwards, economies have recovered but GDP growth rates have been relatively modest. Thus, the chapter outlines the contradiction between these fiscal and financial positions.

7.2 The Impact of financial system in economic growth

According to the dominant paradigm in economic theory, an efficient financial system can stimulate rapid economic growth. In general, financial intermediaries encourage the efficient allocation of capital to investment production and eliminate the liquidity risk. Thus, the financial system sways investment, saving, and ergo economic growth. Schumpeter (1911) mentioned the positive impact of financial development in economic growth since banks provide financial assistance to entrepreneurs' investment projects. The same conclusion had been deducted later (Gurley & Shaw, 1955), (Goldsmith, 1969). King and Levine (1993) refer that an efficient financial system constitutes a key factor of economic growth. According to Beck et al. (2000), the development of an efficient financial system is an important determinant of economic growth. Levine (2005) suggests that financial markets can boost economic growth by providing payment services, liquidity, information, thus facilitating the trade of goods and services, by moving deposit capital to productive and tradable sector. Cojocaru et al. (2012) redounded that credit to the private sector is a positive factor in promoting economic growth except for periods of hyperinflation. As far as economies in transition are concern, they abutted that financial efficiency positively influences economic growth (Cojocaru et al. 2015).

Financial development boosts growth via the channels of capital accumulation, human capital, and total factor productivity. Each of these functions certainly depends upon regulatory and legal framework that is applied to each country. LaPorta et al. (1997) consider the regulatory framework and institutional structure of each country as a crucial element of the positive impact of financial system on growth. The terms reform and liberalization were quite popular at the beginning of the 1990s in Bulgaria, Romania, and the Baltic States. In this way, the policies that have been followed accommodated the development of a liberal financial sector under the standards of foreign advanced countries. These policies involved legal and regulatory structures that encouraged the new financial system to grow.

7.3 Financial development in transition economies

The reform of the financial sector initiated in early 1990s and was accompanied with the transition process towards market economy. There has been a serious challenge to transform from a heavily regulated economy to an open and liberalized market. It was not the same case for all post-socialist countries, but heavy regulation had been applied in Bulgaria, Romania and the Soviet Union (including Baltic States)[53]. The countries were committed to strive towards structural reforms as a perquisite to join EU, where their accession in 2004 and 2007[54] had been a contributor factor to pursue convergence with rest of EU countries. Romania and Bulgaria have traversed similar route towards European integration and accession. Accordingly, Latvia, Lithuania and Estonia had indicated impressive expansion, even referred as the Baltic tigers.

The countries started to alter their financial systems in accordance with international financial systems. The banking sector had been the driving force of financial sector. The new legal framework allowed the operation and development of private banks, which were entitled to trade, invest, cooperate, and generally to provide the financial services a regular commercial bank offers. Therefore, new private banks were permitted to operate internationally, attracting the interest of foreign financial institutions and investors. Within a decade, foreign banks[55] took control of most domestic banks (figure 2), whereas Estonia displayed the highest share verging on 100%. The above fact had been catalyst for the expansion of banking sector.

[53] During the Communist period not all countries shared the same degree of centralization. For instance, in Hungary, Poland and the former Yugoslavia some independence was given in firms but for Bulgaria, Romania and the Baltic countries, as members of the Soviet Union, the status quo was quite different.

[54] Romania and Bulgaria have joined EU during the second enlargement wave in 2007.

[55] Mainly by Austrian, Belgian, German, and Italian banks.

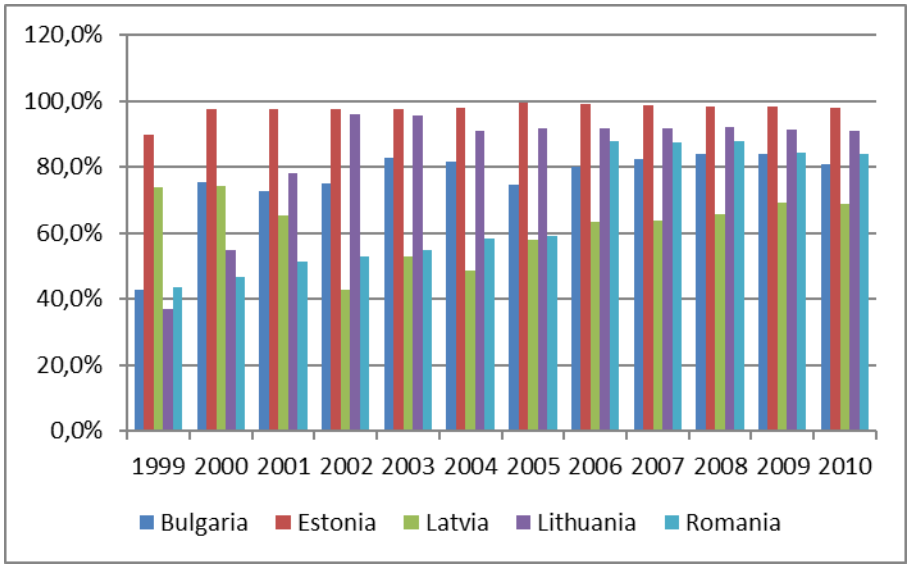


Figure 2: Foreign ownership share percentage

(Defined as banks with assets of foreign ownership > 50%, EBRD 2009)

The contribution of foreign banks to the development of their financial systems was notable. They totted the missing know-how methods, financial products, innovations, and newest technology to fit in the domestic banking system. The new foreign-owned banking environment enhanced the efficiency of domestic financial system, credit, competition, attracting foreign capital inflows and investments, and hence boosting economic growth.

Therefore, economic growth has been accelerated from the beginning of 2000s and was mainly driven by credit growth and large capital inflows. The Baltic States performed an unprecedented GDP growth, exceedingly even 10% (figure 3). Over the years 2000-2007, Latvia had recorded the highest GDP growth with average rate of 8.5%, Estonia with 8%, and Lithuania around 7.5%. It should be noticed that Bulgaria and the Baltic States had fixed exchange rate parity to euro and that accommodated the impressive increase in GDP. Bulgaria and Romania had presented an average GDP growth of 5.9% and 6% respectively from 2000-2008. During the period of the transmission of crisis (second half of 2009), all countries had displayed negative or very low GDP rates. From 2011, all of them have positive rates but they have never reached the levels of pre-crisis period.

GDP per capita augmented even to 10%, particular in Baltic States and then plunged approximately to -14% (Lithuania) in 2009. Although Romania remained in floating rate regime, still, there was a 10% increment in 2008 (Figure.4).

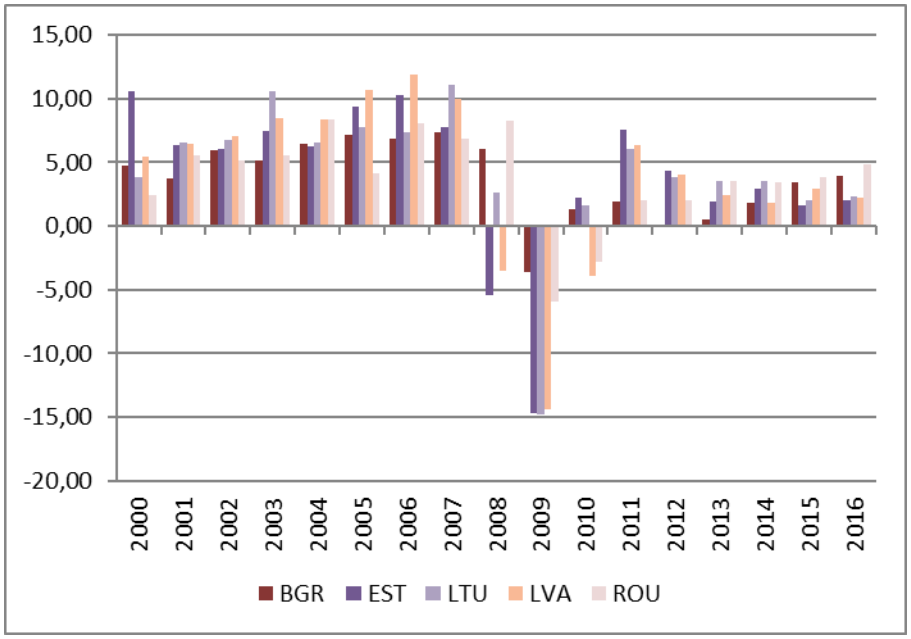


Figure 3: GDP Growth Rates
Source: World Bank, 2018

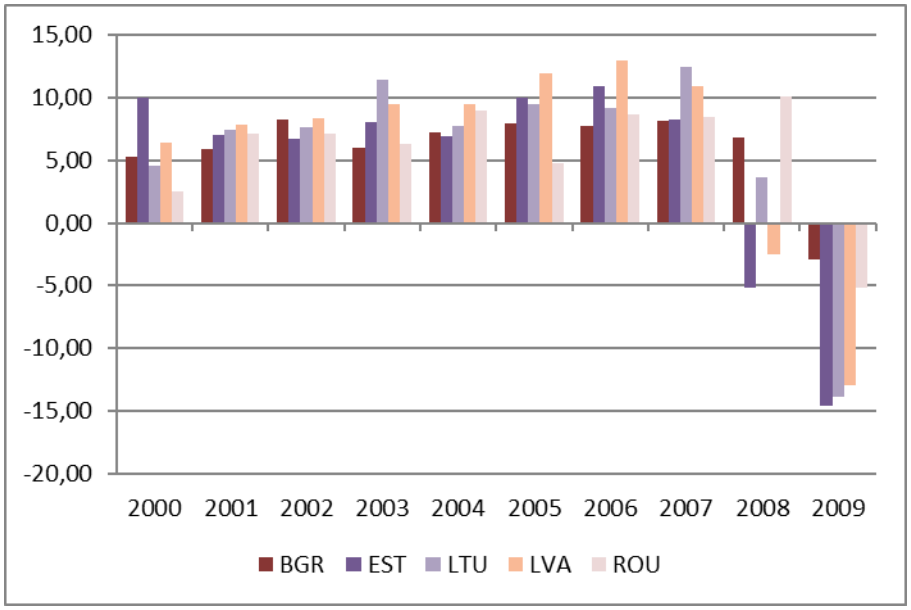


Figure 4: GDP per capital Growth
Source: World Bank, 2018

During the transition process, it is normal to present higher rates of growth because of the convergence process. Besides, neoclassical theory states that growth is higher for emerging economies, but also the faster a country grows, the further away deviates from its steady state. Except for financial development, similarly the international trade, technological transfer, privatizations, higher competition, skilled labor force, deregulation, all of them have contributed to enhanced economic activity.

The gross fixed capital formation (GFCF) had reached an average of 30% but after the crisis, it has been stabilized in an average rate of 20% (figure 5). However, private consumption had the major impact in growth between 2000 and 2008, as it is depicted in figure 6. Public and private consumption still comprises the highest GDP percentage for all countries exceeding an average rate of 75%.

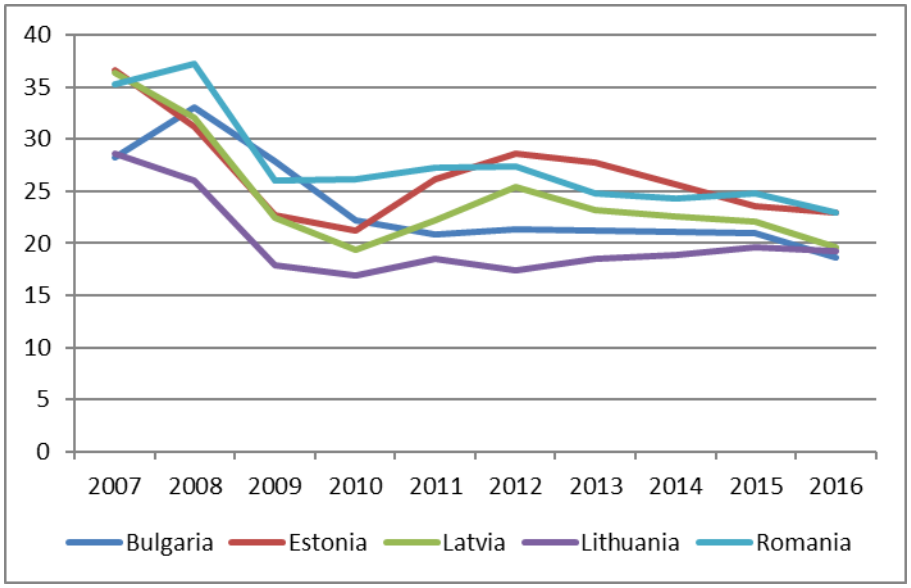


Figure 5: Gross fixed Capital formation (investments at current prices) percentage of GDP
Source: World Bank, 2018

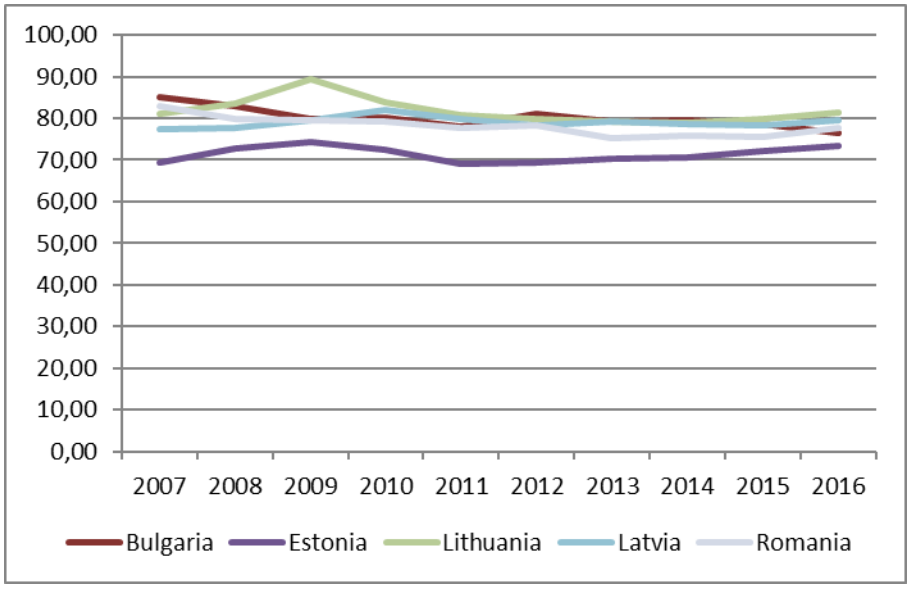


Figure 6: Final consumption expenditure percentage of GDP
Source: World Bank, 2018

7.4 Credit expansion and high indebtedness

In Baltic countries, Romania and Bulgaria, the growth model was associated with greater external indebtedness. Becker et al. (2010) state lending had been the determinant factor of the enhanced domestic consumption until the onset of crisis. Capital inflows and credit expansion include foreign direct investment (FDI), cross-border borrowing by banks and non-financial corporations, speculative capital short-term flows for portfolio positions, where the latter is characterized as volatile flows for financial stability (Leigh et al. 2007). By contrast, FDI consists of investment that establishes a lasting interest in domestic economies. Bulgaria and Estonia have represented the largest flows of FDI until 2008, but hence the average rates have not surpassed 5% (figure 7). Bulgaria and Romania have been rather attractive for foreign investors who were interesting in labor-intensive production.

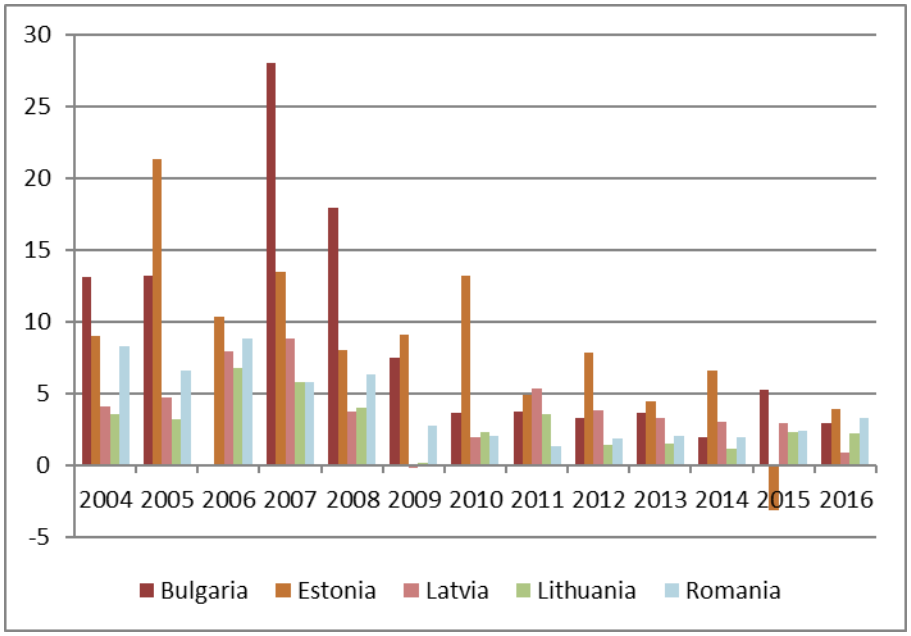


Figure 7: Foreign Direct investment (flows) - percentage of GDP
Source: Eurostat, 2018

Furthermore, agents and corporates were engaged in debt by acquiring the innovative financial products. Private sector lending has been one of main determinants of GDP growth. The debt of private sector[56] (firms and households) to GDP exploded (figure 8), which implies that domestic demand has been mainly financed externally in form of loans. By 2000, all countries indicated a private sector debt below 50% but until 2008 it soared up to 100% of GDP (Latvia, Bulgaria, and Estonia).

[56] The private sector debt is the stock of liabilities held by non-financial corporations and households and non-profit institutions serving households. The instruments that are taken into account to compile private sector debt are loans and debt securities.

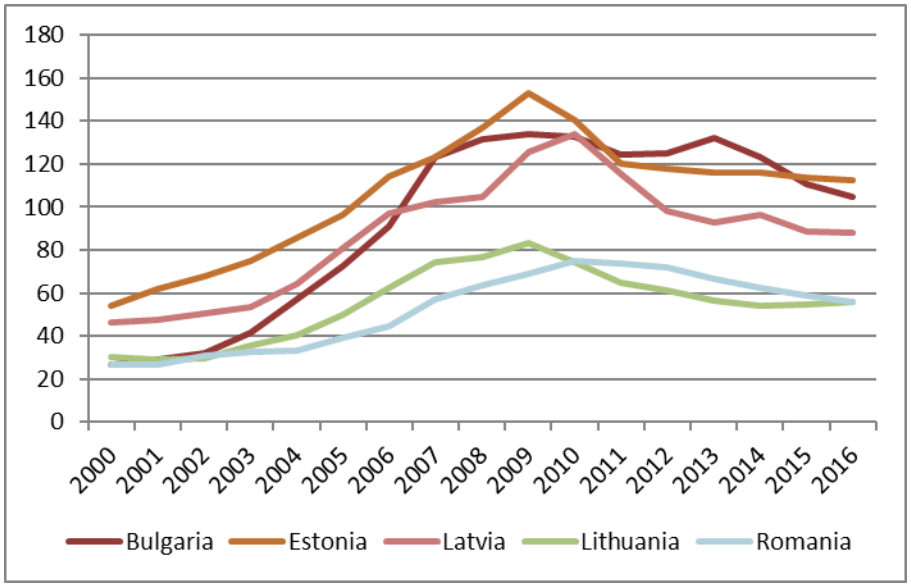


Figure 8: Private sector debt as percentage of GDP
Source: Eurostat, 2018

Additionally, the new banking sector inspired confidence to households inducing them to be engaged in more credit. Therefore, households were associated with indebtedness, especially in the forms of credit cards and mortgage loans[57] (figure 9). Estonia and Latvia presented household debts over 50% from 2008 to 2010. Households expected wage increases in near future because of income convergence policies but that also entails the deepening of current account deficit. The combination of low interest rates and higher income levels assisted households to increase their expenditure levels and validate their debts.

[57] The mortgage lending growth was also related to rapid growth in house prices resulting in an overvaluation of house prices.

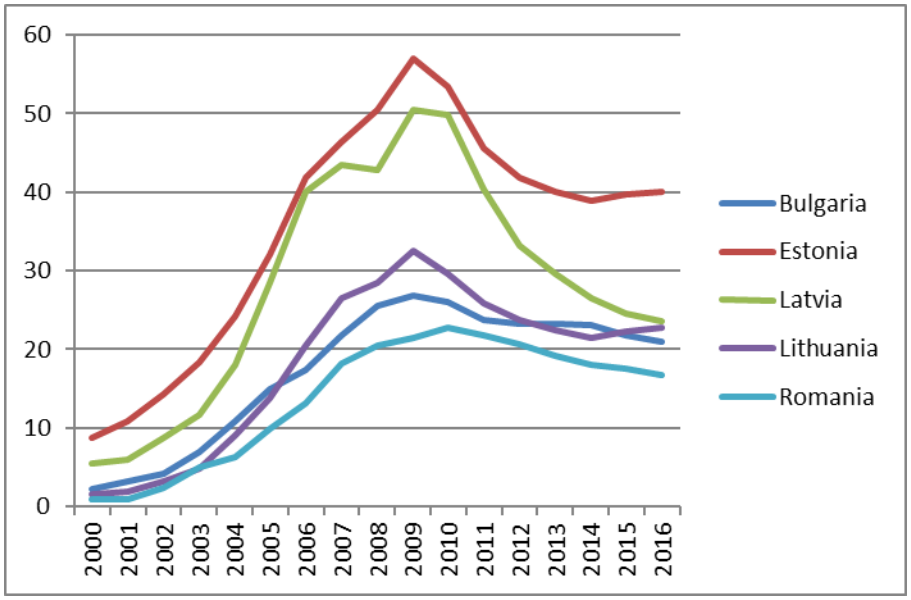


Figure 9: Household debt as percentage GDP
Source: Eurostat, 2018

7.5 Vulnerabilities emergence

Vulnerabilities involve the other side of the coin of rapid accelerating growth since they have been simultaneously enhanced. The financial system of Baltic States, Romania and Bulgaria could be regarded as bank-based oriented. That repeated cycle of credit growth expansion had led to economic growth but was based on credit and capital inflows rather than in productivity. That process enables the augment of growth rate in a rapid pace favoring short term financing but at the expense of long-term investment projects, resulted in large external imbalances. Government deficits were growing until 2009, deteriorating countries' fiscal stance (figure 10).

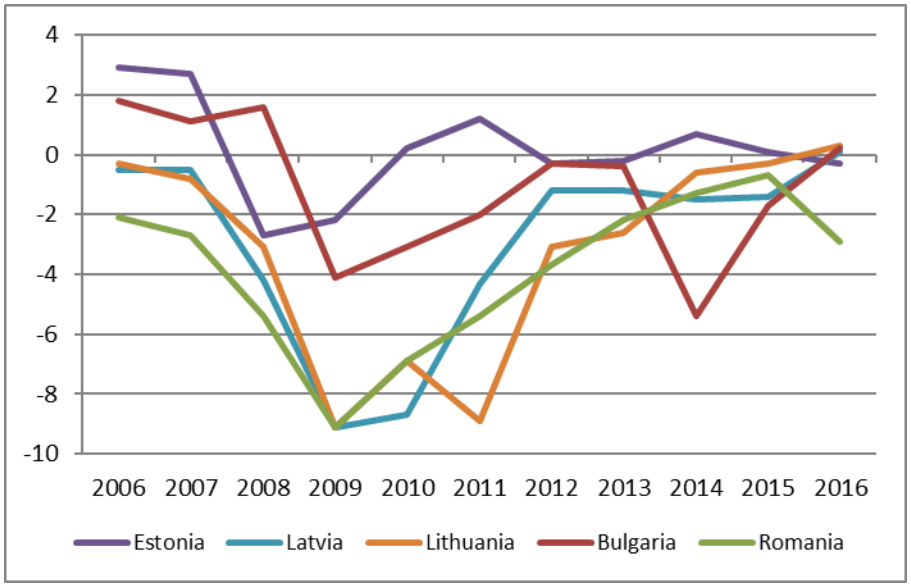


Figure 10: Government deficit/surplus as percentage of GDP
Source: Eurostat, 2018

The mixture of large capital inflows, credit expansions and loans led to aggravation of their current and financial account balance for almost all countries and higher inflation (figures 11-12). The negative current account in Bulgaria and Latvia had overpassed 25% and 20% respectively in 2007.

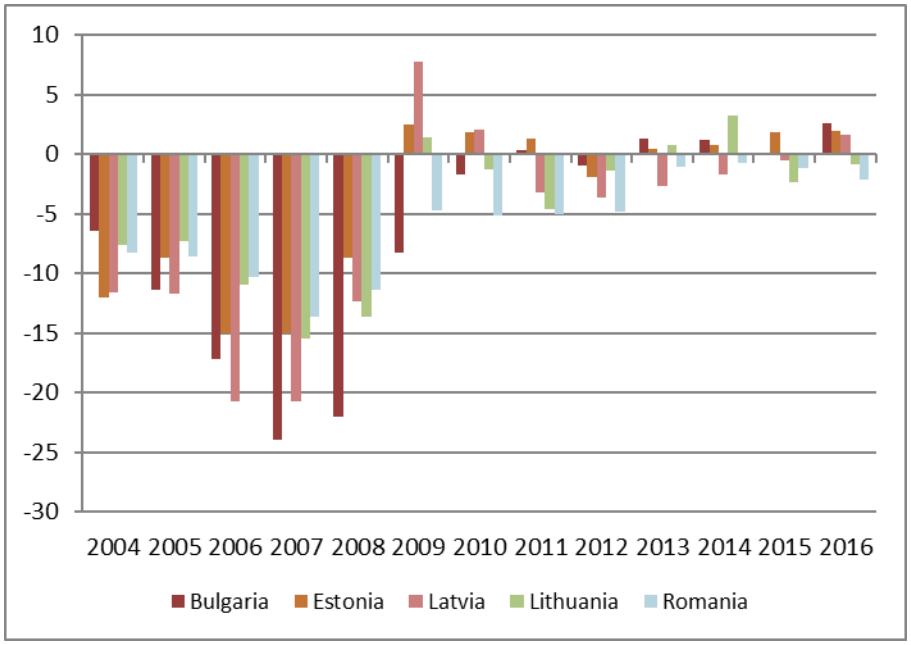


Figure 11: Current account balance percentage GDP
Source: Eurostat, 2018

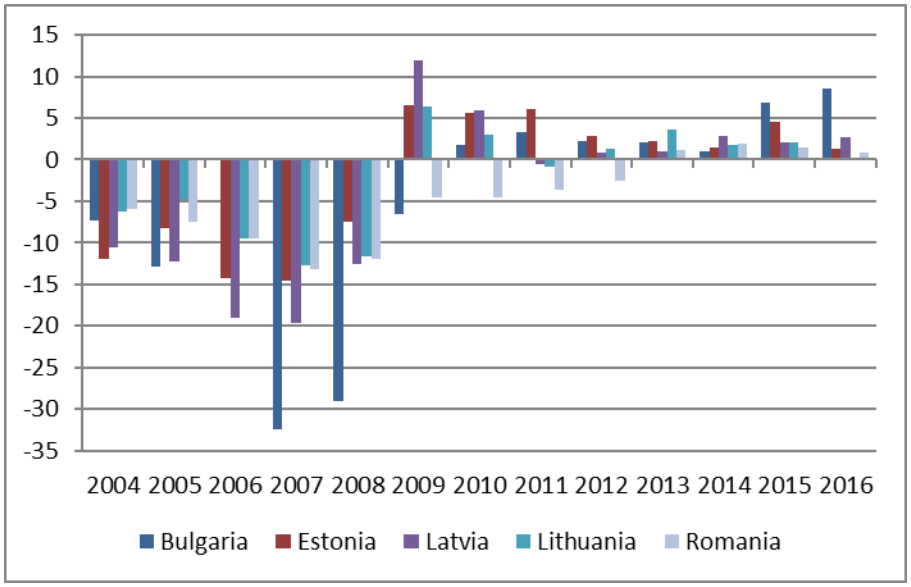


Figure 12: Financial account balance as percentage of GDP
Source: Eurostat, 2018

Figure 13 summarizes the net borrowing position all countries had adopted prior to crisis. It indicates the sum of total current and capital accounts' balances in the balance of payments. It had been negative from 2000-2008 showing that countries were in borrowing need with limited financial capacity.

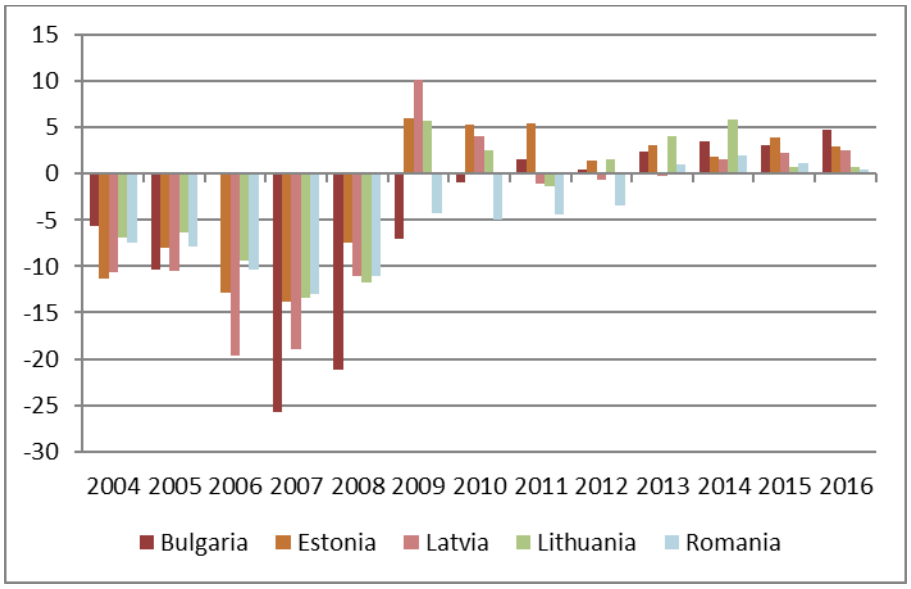


Figure 13: Net Lending/Borrowing as percentage of GDP
Source: Eurostat, 2018

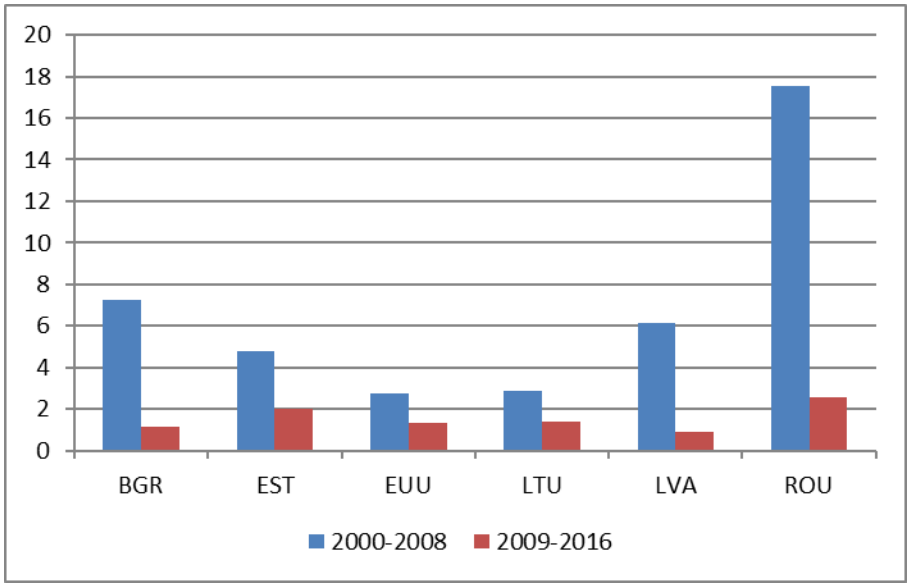


Figure 14: Inflation, consumer prices percentage
Source: World Bank, 2019

The pegged exchange rate has attracted large inflows of short-term lending from European banks but that deteriorated trade balance and the balance of payments. Bulgaria and the Baltic States with fixed exchange rates denoted higher credit expansions with relatively low interest rates. However, fixed rates would not facilitate these countries to deal with crisis by applying their monetary tools.

After the initial phase of credit expansion, banks become overconfident in terms of creditworthiness and optimism neglecting the implications of a distortion. As we have already mentioned, local banks were local subsidiaries and as a result there was increased reliance for loanable funds. Consequently, demand becomes dependent to domestic banking, which in turn was exposed to external factor. At banking sector vulnerabilities, the rising loan-to-deposit ratio (figure 15), especially for Baltic States, indicates that deposit growth could not keep the pace with credit growth.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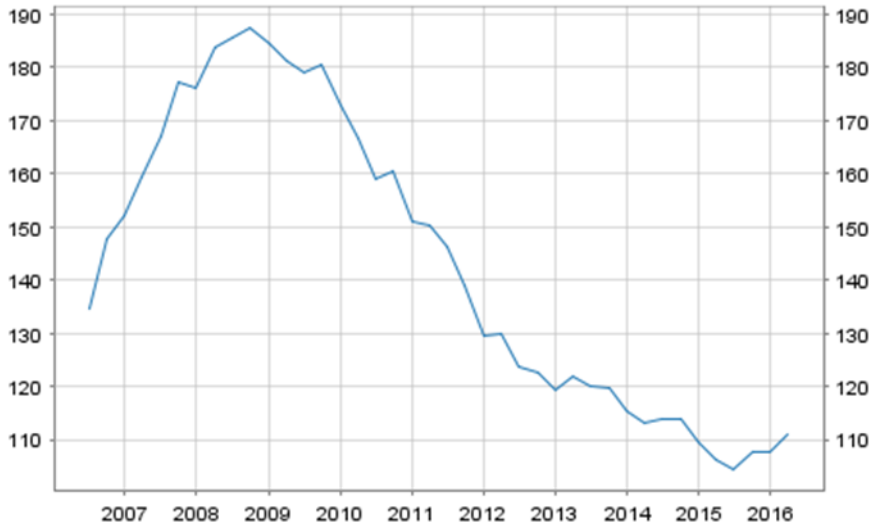
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Figure 15: Loans to Deposit Ratio
Source: ECB 2010

Banks consist of the driving force of domestic economic activity. Notwithstanding, financial stability is not assured by financial development via foreign banks whilst their presence does not guarantee liquidity in times of distortions (Winkler 2009)[58]. Therefore, liquidity may be withdrawn by subsidiaries from these emerging markets to meet their home banks' needs (Mihaljek, 2009).

The domination of domestic banking by foreign banks automatically made them susceptible to any exogenous financial distortion and hence contagion effects. De Haas and Van Horen (2012) have shown that large international banks in financial crises can create cross border contagion effects across countries, potentially leading to reduction in their output. Even if there is insolvency avoidance or deposits guarantees policies, these cannot be sufficient in cases of contagion crisis in international level. The reason is the liquidity shortage and hence vast amount of funds will be required since all products and financial transactions are internationally traded and cleared.

7.6 Global financial crisis and the transmission channels

The global financial crisis was spread via international trade and financial linkages[59]. The Minskyan financial cycle was apparent in the US subprime crisis where the boom phase commenced with an enhanced securitization of mortgages, mainly debts because of the introduction of financial innovations and the bubbles in real estate sector. Even though the crisis originated from an advanced country, it provoked a cessation of external capital flows. International investors started to withdraw in their attempt to move towards safer positions. Whenever a financial disruptive takes place, the implications are not limited in the financial sector, but it could carry away other sectors of real economy.

Contagion and spread effects have appeared to Bulgaria, Romania, and the Baltic States due to high trade and financial interdependence. The global financial crisis has influenced countries by means of various channels of transmission. The transmission channels are divided in direct, indirect, and second round effects. The direct channel operates via changes in assets' prices of financial institutions portfolios. The indirect financial channels, as well as second round effects, are arising whenever investors' confidence to domestic economy has been aggravated and is empirically denoted by retracting movements through capital flows, foreign exchange markets, real estate, money, and debt markets. The transmitted channels transpired via foreign direct investments, international trade, and monetary policy. The channel of international trade was evident because of the large degree of openness, due to trade integration with the EU, in the last two decades in terms of goods and services in their trade balance. In the exporting sector,

[58] An empirical example also stems from Peek and Rosengren (1997) who note that when Japanese banks experienced losses due to a decline in the stock market, their subsidiaries in U.S. have reduced lending more than the parent bank in home market. In addition, when a foreign subsidiary bank in Croatia suffered large currency losses in 2002 the parent bank did not act as lender of last resort.

[59] A decrease in the price of a basic world-wide traded good, such as wheat or cotton, it is possible to influence markets, economies and domestic financial systems even if the initial shift in price has emerged somewhere else. That is because the determinant factor is the amount of the leverage of speculators and the vulnerability of these markets.

the countries were rather competitive in terms of labor-intensive products and raw materials. Thus, the domestic demand channel has had full impact because of the decline of external demand from the main export markets of goods and services produced in the region. The contraction of FDI has led to the deterioration of financial conditions in domestic credit. The interplay among monetary authorities and the adoption of identical monetary policy amounted to another reason which principally addressed to Bulgaria and the Baltic States with pegged to euro regimes.

Consequently, financial institutions in Bulgaria, Romania, and the Baltic States were deleveraged, and a contraction initiated as a result of the decline in foreign demand. The Baltic States, mostly, were subject to sudden capital inflows stops. Bulgaria and Romania, whose GDP growth was supplied largely by foreign capital inflows, felt sharply their reduction, because they counted on foreign capitals to finance credit expansion. Hence, consumption and investment could not be easily refinanced, and unemployment (figure 16) had sharply increased.

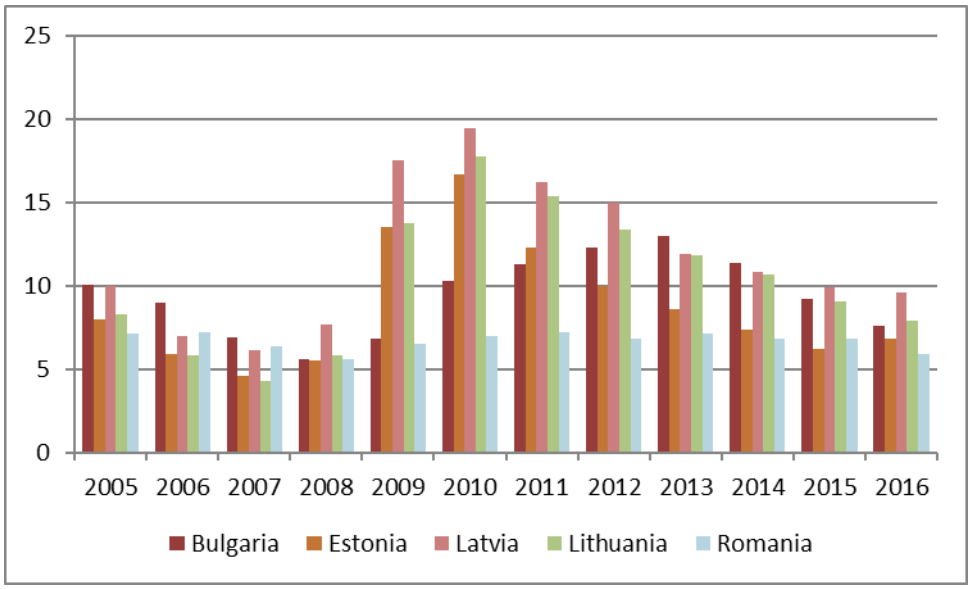


Figure 16: unemployment rates
Source: Eurostat, 2018

The impact of global financial crisis has moderated credit and lending rates but has also deteriorated the validation conditions. In Baltic States and Romania, the credit growth fell by an average of more than 35% between the last quarter of 2008 and third quarter of 2009. (ECB 2010, p.88). The high cost of financing of the economy and the further impairment in the economic perspective has forced banks to limit lending. In addition, labor market pressures render borrowers' ability to fulfill their payment commitments even more difficult. In Romania with floating rates, the depreciation in nominal exchange rates, in accordance with foreign currency, has also conduced to a rise of non-performing loans in total loans (figure 17). This increment was likewise noticeable in Latvia and Lithuania, where non-performing loans in total loans exceeded 20% in 2009.

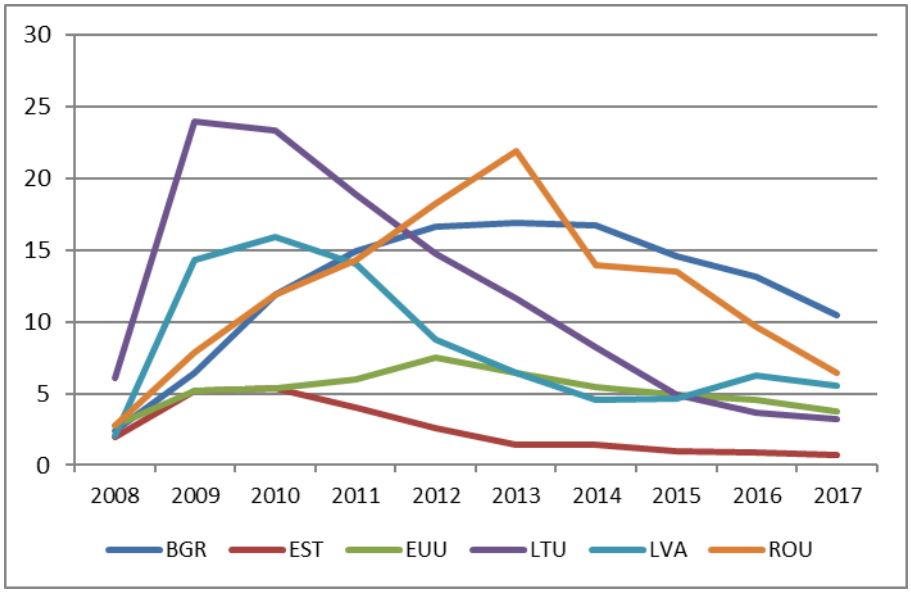


Figure 17: Bank non-performing loans to total gross loans as percentage GDP
Source: World Bank, 2019

A noticeable reason for contagion through expectations involves investors' psychology. The attitudes, perceptions, conventions are influenced by others' actions, particularly from those first suffered from a financial event. When psychology is modified and internationally spread, then contagion effects will probably take place to other economies as well. For instance, when agents consider the price of an asset as overpriced and wish to sell it, this attitude may be easily spread causing a massive liquidity need. This overoptimistic or pessimistic psychological behavior is not only transparent from borrowers' size but from lending size as well.

7.7 Alternative theories of financial expansion

The prevailed economic theory implies that countries with more integrated financial sectors can stimulate economic growth and are more resilient in times of crisis. However, many authors were quite reserved with this view. Arestis and Demetriades (1997) support that financial expansion and liberalization could result in a decline to savings deposits, consequently, to an increase in interest rates driven by larger demand in capital markets. In addition, asymmetric information could cause addable problems with negative effects on savings formation, and hence, on economic growth. Prasad et al. (2003) argue that there is no clear evidence that financial integration augments economic growth in developing countries, but rather it intensifies consumption volatility. In case of transition economies, they suggest that the targets of financial supervisory, transparency, and corruption control, must be included in their agenda.

Counter to the widely held belief, Krozner et al. (2007) refer that financial distortions have also a strong influence on real economy to the degree that amplifies the deepening of

financial sector. Wagner (2010) cites that the unrelenting financial integration and diversification involve larger systemic risk. Wray (2011) states that financial liberalization and expansion may initially yield prosperity and economic growth, but it could render the financial system unstable and susceptible to international financial events such as the global financial crisis of 2008. Following this view, we may now link the case of these countries to Minsky's theory of financial instability.

Minsky focused on financial instability, with the interaction of finance and macroeconomics. His insights could be used as a helpful tool to comprehend the financial boom and bust that had been occurred in Baltic States, Bulgaria, and Romania. Minsky observed the cycles as the result of an endogenous process in an inherently unstable economic system, where atomistic behavior dominates in the complex financial relations. He argues that the economy could easily turn from hedge to speculative particularly in the boom phase. As long as profits grow, agents will be induced to enhance their debt levels in order to further increase profits. This maximization tactic will encourage other agents in similar positions, contributing to a greater credit expansion. All the above characteristics could be traced in Baltic States, but also in Romania and Bulgaria from 2000-2008. Minsky emphasized the notion that financial issues will eventually influence real economy, which could be identified in terms of consumption, employment, investment, and output, where all countries had presented a large decline.

Minskyan instability could be further traced in the behavior of the stakeholders. The exchange of present credit and loans to future payments, whereas the present credit flow is used for current investment in the anticipation of future profits to pay off or rollover the debts. Thus, the expansion and accumulation of indebtedness urges the country's financial system, and eventually the economy, towards fragility in a steady process, which could be easily unnoticed. The financial instability becomes more visible from the arising unrest of the creditors, that the expected payments may not be fulfilled. That attitude was visible by capital outflows and deleverages process that had been observed in the countries from 2009-2011.

The forthcoming disruptive period because of the financial instability is apparent whenever borrowers realize that it is not possible to finance their debts by means of easy credit and loans. In this case, more unit move into Ponzi position, i.e., increase of non-performing loans. That is exactly the "Minsky moment", when each agent has become fully aware that indebtedness cannot longer be expanded through normal channels, and repayments cannot be easily met. Apparently, Bulgaria, Romania and Baltic States have all experienced, to some extent, that moment in 2008. The access to finance became more expensive or attainable, putting pressure to firms, households, and governments. The slowdown of capital inflows was operating adversely due to highly reliance on external funding.

7.8 Coping with the crisis

In order to cope with crisis, measures had been taken in terms of monetary and fiscal policy. It should be noted that remedy is not similar for all countries. Fiscal expansion is feasible in advanced economy, by issuing government bonds and treasuries. Thus, agents could turn to state safety, contributing indirectly to fiscal expansion. By contrast, in developing countries, such as the Bulgaria, Romania and the Baltic states, the capital outflows deteriorate the recovery process. Most of these economies cannot expand their fiscal policy either of their large government debts deficits, or/and from markets' unwillingness to lend them. Unfortunately, financial markets do not rank most of the developing countries with high credibility in times of distortions. In addition, financial crises have the additional effects of exchange rate devaluations due to balance of payments adjustment and also a fiscal contraction. The above situation makes difficult for developing countries the application of fiscal expansion as counteractive policy. Latvia and Romania have requested and received financial assistance from IMF, EU, and other international financial institutions.

In monetary policy, interest rates were reduced to stimulate domestic demand. As far as exchange rates are concern, the central bank of Romania intervened through open market operations to defend national currency. For the rest of countries with fixed exchange rates, central banks intervened in foreign exchange markets to avoid downward exchange rate trends. Perhaps exchange rate flexibility could reduce currency mismatches and help agents to consider more prudently the market price risks.

7.9 Concluding Remarks

Bulgaria, Romania, and the Baltic States have almost adopted similar growth pattern, whereby strong capital inflows accompanied by credit expansion fueled domestic demand and overheated the economies. Although the countries have been exporters of labor-intensive products, the evidence imply that the accelerating economic growth prior to crisis was chiefly grounded on private domestic demand. The governments of Baltic States, Romania and Bulgaria have shown full confidence in the financial model.

The pattern had performed outstandingly prior to crisis. However, the impact of financial crisis has highlighted the accumulated vulnerabilities of financial instability and rapid economic growth. The global financial crisis has revealed the weaknesses not only in terms of their financial systems but also of growth-based models. The financial systems were deregulated as a result of the transition period and the need to attract foreign capital. Interest rates differentials and plenty of investment opportunities have managed to accumulate foreign investors. As soon as the GFC started to unfold, contagion effects took place by means of trade and financial transmission channels, reducing capital inflows, external financing, exports, tax revenues, domestic demand, credit provisions, and also exchange rates.

Even though the presence of large foreign banks in their domestic banking systems could undoubtedly provide numerous advantages, there are also issues that need to be taken into serious consideration. The banks are subsidiaries and operate on the interests of parent banks and there is no guarantee that they will safeguard domestic financial systems or maintain credit and liquidity levels in times of financial distortions. Furthermore, they increase the possibility of spillovers effects since they automatically integrate domestic financial systems to the international level. Banking sector restructuration was further needed in accordance with adequate deposit guarantee laws and accounting methods to inspire confidence of the financial sector.

The Keynesian view suggests that in times of contraction fiscal policy should be expanded to sustain demand. However, public finance of Bulgaria, Romania, and the Baltic States could not afford that policy, bearing in mind the limitation of government revenues because of the restrained economic activity. In addition, financing from domestic or international markets was not an option due to the prohibitive costs of borrowing. The fact that governments had produced expansionary fiscal policies during the upward phase of credit cycle (2000-2008) has left them with rather less reserves to cope with downward phase. Advanced countries are better shielded against a financial crisis by means of greater reserves, a developed private and financial sector, greater share in international trade, and a fiscal budget ready to expand to maintain aggregate demand. The above fiscal and monetary tools of advanced countries do not apply in most developing and transition economies.

Considering the rapid economic growth countries had experienced prior to crisis, we notice that it was grounded on financial development, which has also emerged vulnerabilities. Thus, the model of economic growth was linked to financial instability that Minsky had described thirty years ago. It is the Minskyan credit cycle where higher GDP growth rates have brought confidence and optimism and an increment to most macroeconomic variables. Gazing deeper, notwithstanding, serious dynamic unstable financial indications had been nurtured. As Minsky (1986) cleverly pointed out, it is the illusionary stabilization of an unstable system. That signifies a fictitious GDP growth and stability that had actually yielded instability.

The emergence of crisis has nominated a lower but steadier growth pattern. That pattern involved emphasis in productivity and trade, deviating from high indebtedness and credit expansion. This debate arises not for the scope to disconnect economic growth to financial development but rather to pursue stability. That is a perquisite to minimize or even avoid contagion effects to real economy in periods of adverse financial movements. Although financial globalization and liberalization was accepted by most of transition economies, the Global Financial Crisis has inducted a premonitory heed as far as the boundaries of financialisation to real economy and economic growth must be.

Finally, a rapid accelerating GDP growth model based solely on the financialisation of economy does not constitute a panacea policy since it unperceivably destabilizes the system, particular during the boom period. Bearing in mind that economic growth is desirable for each economy we observe a tradeoff between two policies. Firstly, a rapid acceleration GDP growth that could be achieved via capital inflows and credit expansion and a modest growth

pattern based primary on domestic potentials. If one economy selects the first policy then instability is likely to rise, rendering the economy prone to international distortions. The benefits are clear, but likewise the risks. The second option reassures a sound and shielded economy, nevertheless, many years are required to attain real convergence. In any case, though, financial instability can reverse all initials benefits of financial deepening in an economy.

Chapter VIII

8 A Modelling Analysis for Transition Economies

8.1 Introduction

In the current chapter, we attempt to construct an econometric model linked to Minsky's Financial Analysis. The goal is to extract the relevance in the applied economic performance by observing financial instability under the context of Minsky theory. Therefore, we investigate the macroeconomic determinants of financial growth/instability using annual time series data for a specific group of countries. Following the literature so far, we recognized a priori the fact that large financial depth will eventually entail in financial instability. The group of selected countries includes those mentioned in the previous chapter, but it has now been enlarged in order to enhance the validity of the results. Still, all the involved countries belong to the transitional economies. The process of this course is given by Minsky's analysis, stating in the previous chapters. Certainly, there have been some contradictions on whether financial deepening could lead to instability, nevertheless, the concrete literature suggestions, the history of financial crises, and particularly the recent subprime crisis in 2008, have revealed this tendency to a great extent. Therefore, we aim at identifying the factors that have the greatest impact on the financial growth. This impact is not restricted in the positive movement but also in the negative.

8.2 Related literature

Most of the related literature has been explored in the previous chapters. However, we further refer here to the literature strictly related to the model in a reminding manner, avoiding at same time repetition. The model as structured with the variables is unique. It paves on articles through literature, which have incorporated similar (not necessarily identical) pursuit, by examining relevant relationships. Literature has provided with many interesting papers. Nevertheless, most of Minsky models are rather descriptive or stock-flow consistency models (see next paragraph) highlighting the interaction between agents and the emergence of cycles in the economy. A useful ground was found though on econometric models, which contributed with dispersed insights of the variables' interaction with other variables within the context of financial instability, even if they are not directly linked to Minsky. The integration of different models, directly (or not) based on Minsky, has enable us to make use of all potential input to produce an appropriate relevant model.

A quite common debate in the literature has been the question on whether the financial enlargement (enhanced credit ratios) will have positive or negative impact in the economy. Some of the articles argue for positive or negative effect of financial development on economic growth. The debate is still ongoing, but it seems that different conclusions could be drawn depending on the angle the issue is treated. An extensive financial grow, however, is likely to bring vulnerability and thus financial instability as raised by Minsky. The literature that was most useful though to develop the model has provided evidence on the contribution of the variables that will have the main impact on the financial enlargement.

Many economists have argued for the positive impact of financialisation. Eichengreen (2001) assumes that capital account liberalization can enhance growth by the discipline effect, i.e., pushing the governments to adopt more disciplined macroeconomic policies. Klein and Oliver (2008) share the view that capital account opening through financial integration could promote economic growth via financial system development. King and Levine (1992, 1993) analysed the relation between financial depth and growth. They suggested that financial development is associated with greater capital accumulation in the future. Levine and Loayza (2000) also supported that finance is positively related to capital accumulation, productivity, and economic growth.

Klein and Olivei (1999) in their analysis had made a distinction between developed and developing countries in a sample of 82 countries over a period from 1986 to 1995. Interestingly their results have shown a positive relation between financial depth and economic growth for industrial countries but negative for the developing. The authors attribute the difference to the financial systems observed in these two categories.

The same results have also been suggested by Edwards (2001). He states that financial enlargement favours the economic growth in developed countries but has the opposite effect in developing countries. Loayza and Rancière (2006) support that the financial development promotes economic growth, but it could also suffer from this tendency. Financial development moves along with the opening of markets, which channel and permit risk diversification. Considering the dual effect of financial depth in the economy, they have reached to an argument of both positive and negative long-run relation between financial deepening and growth.

Besides Minsky, many other reservations have also been raised. Aizenman (2012) suggests that financial integration could provoke financial instability and banking crises, which renders the financial system unable to furnish further credit to the real economy. Consequently, it will result in a decrease in the investment in physical capital and innovation. Kaminsky and Reinhart (1999) argued that the financial liberalization could lead to banking crises in their sample of 25 countries. They have quoted the experience of financial liberalization in Southeast Asian countries that was accompanied by a rapid rise in bank deposits and growth. This policy resulted in an increase of real interest rates and capital inflows but finally ending up with serious banking crises. If there is an unstable macroeconomic environment, banks could assume excessive risks which could lead to financial crises in times of distortions. The financial system is unstable which eventually could reduce the economic growth.

Mackinnon (1988) also examined financial crises occurred in Latin America, in the Philippines and Turkey. He suggested that in developing countries, where institution environment is weak, investors tend to adopt a moral hazard behavior by assuming risky assets projects at high interest rates and expecting good economic conditions to realize high profits. In the opposite case, though, official authorities or international organizations will assume huge losses at the banking system. In this issue, Stiglitz (1981) raised the point of asymmetric information between investors, linking to the free rider and moral hazard behavior.

Mehrez and Kaufmann (2000) also support that economies with low transparency levels or even high corruption are more susceptible to financial instability. They took a sample of 53 countries during the period 1977-1997 reaching to a conclusion that the probability of financial crises decreases when corruption level is low. Demirguc and Detragiache (1998) examined the impact of financial integration on the financial instability by introducing a sample of 53 countries during the period 1980-1995. They showed that the liberalized financial institution favors financial crises. Their results have also indicated that a mature institutional environment with low corruption levels could reduce the negative effect of financial integration on financial crises.

Creel et al. (2015) tested the long run consequences of financial instability to the economic performance for EU selected countries. They suggest that the large financial depth in the EU does not favor economic growth. By contrast, it brings potential risks that are triggered by the financial instability. The large scale of finance contributes to the increased risk of the large-scale financial crisis and some results of the recent financial crisis could be attributed to the enlargement of the financial system.

Kohler (2019) studied the financial cycle for the emerging countries in an open economy, following Minsky's framework. He empirically observed the fluctuation of floating exchange rates in association with the balances sheets. During the upward phase of the cycle, the currency appreciation improves the position of all agents who hold foreign currency debt, enhancing investment. At the same time, current account balances deteriorate, due to increased demand for cheaper imports. Hence, downward pressure is put on the domestic currency and the gains of the euphoria period are now being inversed. The amount of capital flows and the potential increase in the interest rates will determine the degree of financial fragility the economy will suffer. Kohler suggested that financial account regulation could reduce this fragility.

Another modelling approach that highlights the circular flow in the financial cycles is the development of the stock-flow models. The stock-flow consistent (henceforth SFC) approach to macroeconomic modeling has become increasingly popular after the recent crisis of 2007–2009. A stock-flow consistency model was first introduced by Godley (1999) to describe the circular flow in the financial system. It is not completely related to Minsky's theory, but the conclusion of the flow's process was the possibility to result in a volatile financial system. In addition, the recognition that models and policy analyses based on the SFC framework (e.g., Godley 1999) were able to predict the crisis. The main characteristic and advantage of the SFC approach is that it provides a framework for treating the real and

the financial sides of the economy in an integrated way. Still, the work of Minsky (1975, 1986) has been very influential to the SFC literature. Many of Godley's models and analyses formalize Minskyan ideas, while there is a considerable number of more recent papers that treat Minskyan themes in a SFC framework. It focused on modeling only the "core" Minskyan insight, i.e., the idea that economies that are left on their own self-function are prone to financial fragility and recurrent financial crises.

The basic principles for SFC are accounting consistency and the behavioral specifications of the model. Accounting consistency implies cash and stock flow consistency. The accounting structure of SFC models consists of balance-sheet matrices and the transactions-flow matrix. When there is a positive entry or credit (income, asset etc.) then there must a negative entry elsewhere in the matrix (debit, liability, payment). Stock-flow consistency implies that all financial assets and liabilities cancel out, except for fixed capital because it is the only tangible asset. Another implication of the model is that the aggregate of the net lending of all economy's sectors (private, government, and banking) must be equal to zero. If one sector produces deficits, then the other sector must run surpluses. The positive net lending on behalf of one sector will tend to decrease its debt-to-income ratio and vice versa. Thus, the SFC analysis coincides with Minsky's analysis as far as concerning the interdependence of the economy's sectors and how one sector, e.g., the private, could lead to indebtedness in the periods of credit expansion. The SFC models incorporate as behavioral specifications the Keynesian targets of aggregate demand and full employment.

For the open economy, we first need the interactions of domestic and foreign economy and their status. In order to apply the SFC model, we commence by the balance sheet matrix. We add in case the assets and liabilities that are issued and held both domestic and abroad. It is important to note that their value is denominated in domestic currency, so foreign assets' value is converted to domestic currency with the use of exchange rates. In the open economy, we therefore need to consider the determination of the exchange rate since it influences the trade balance. The overall performance of the economy affects the exchange rate including the domestic banking sector, industrial performance, and the governmental efficiency. In addition, investors' decisions and actions have a significant impact on exchange rates. The portfolio options of agents in an open economy environment with free capital mobility, gives ground to many exchange rate fluctuations.

We assume that in case of two economies both hold the same assets and implicitly need to set a currency reserve and that will be the foreign currency. Thus, the net financial assets (NFA) of one economy are juxtaposed by liabilities of the other economy and vice versa, complying with the accounting consistency. Therefore, the overall net value worth of one economy must equal its tangible assets. If one country faces a negative net financial asset position (NFA) then the other country must produce a positive NFA. Another implication in the open economy comprises the exports and imports. The same principle implies that the exports of one country consist of the other country's imports. Consequently, when all economies are continuously advised to pursue an export-led growth, then it should not be forgotten though that these exports would need to be imported by some other country. This is where innovation, product quality, economies of scale, promotion methods, tax incentives, and subsidies enter. However, it is not possible for countries, foreign and

domestic, to run altogether simultaneously surpluses. The SFC in open economy verifies the interdependence of countries, since the fiscal and external deficits of the one country might not be caused by its poor domestic economic performance but from the amelioration of the exports of a foreign country apropos to the rest of the world. Similarly, surpluses and deficits might appear due to changes on the exchange rates determinants, such as agents' portfolio preferences, and again not by internal flaws.

Dafermos (2018) developed a dynamic model that integrates the key insights of Minsky and Godley. The analysis showed that the instability and financial cycles could be emerged by the interaction between the propensity to spend and the targeted indebtedness. That is because of the level of stock-flows, which is highly related to the formed expectations that determine the targeted levels of indebtedness. These debt levels tend to grow in times of economic expansion and move inversely during the contraction period. As long as the target debt ratio is endogenously emerged, the financial system will be unstable.

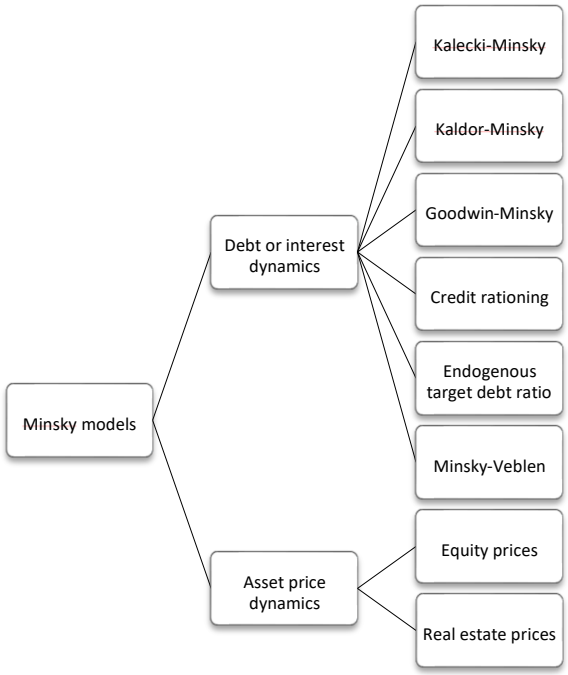
Likewise, Jump et al. (2017) developed a Minsky based model for repeating cycles. The model consists of the output and the debt. It functions through firms' actions, which are determined by the desired targeted debt to income ratio. Firms initially adopt the hedge position. The ratio is increased as soon as firms lower their margins of safety because of low volatility. Firms now adopt the speculative position. However, the higher ratios of debt to income will eventually increase volatility and the margins of safety. This repeated movement renders the economy unstable under the framework of Minsky's explanations.

Delli Gatti et al. (2010) set up a credit network model. The model is built on inside credit, which consists of agents belonging to the same sector (interaction among different firms A and B) and outside credit, which belong to different sectors i.e., firms' interaction with banks. Assuming that firms' "A" are the pure borrowers (from firm B and banks), banks are pure lenders to both firms, and firm "B" is a borrower from the bank and a lender to firm "A". In this case, firm "A" becomes the main driver of growth, and the volatility is depending on the consumption level of their output. The production levels of "B" firm would be much affected by firm's "A" net worth. A failure of firm "A" will entail in significant changes in the balances of their lenders. It is likely that the remaining borrowers (belonging to "A" category) will suffer from an increase interest imposed by the lenders side (banks and other lending firms). According to the model, the determinant factor of the creditworthiness and stability is the borrower's net worth. The interest rate, thus, moves in the opposite direction with the borrower's net worth. The authors also introduce the concept of the financial accelerator of this credit network, which will amplify the magnitude of shock in the network by the increased rates of credit imposed by lenders as a response to the decreased net worth of the borrowing firms. However, an endogenous mechanism for selecting business partners (borrowers/lenders) will change the structure of the credit network over time.

Nikolaidi and Stockhammer (2017) suggested an interesting structure to categorise all Minskyan models, where the dynamic interaction of their variables could emerge cycles and instability. They distinguish the models that focus either on the debt or on asset prices. We are interested in the first category, whereas the classification includes:

(a) Kalecki-Minsky models; assuming a stable goods market,
(b) Kaldor-Minsky models; assuming nonstable goods market,
(c) Goodwin-Minsky models related to wage share and employment rate interactions with debt,
(d) Minsky models for the credit rationing, considering banks' dominant role for granting loans,
(e) The endogenous targeted debt-ratio models that are resilient to economic cycle,
(f) Minsky-Veblen models; a combination of consumer debt with the Veblenian emulation motives.

The models' categorization is given in greater detail in the following table.



Source: Nikolaidi and Stockhammer (2017) p.33

Based on the above, we would argue that the interest of the current research fits better to debt or interest dynamics group and, more precisely, leans more on the classification of d) Credit rationing Minsky models. However, common elements could be also found on the e) models of endogenous target debt-ratio.

Similarly, Nikolaidi and Stockhammer (2017) classify Minsky models according to their features, type and dynamics. The first category concerns the inclusion (or not) of features such as the stability or not in goods market, the corporate or household debt, the equity or real estate prices, the credit rationing, labour market, financial regulation, endogenous interest rate, fiscal policy. The second category is related to the type of the model, where the given classification refers to either structural models, or the stock flow consistency, or the agent-based model (ABM). The third category is associated with the dynamics of the model that could entail in cycles or instability or even both. If we wish to

establish an integration of the current research to the above interesting context, then it would consist of as features the corporate debt, the credit rationing, interest rate, and the fiscal policy. It inclines more as agent-based model in terms of its type and as far as the dynamic is concern, it reflects both instability and cycles.

The characteristic of credit rationing Minsky models is that banks provide credit rationing according to their financial position. Nikolaidi and Stockhammer (2017) refer as "credit rationing" either to the amount of credit or to the interest rate that is charged by banks, which will indirectly influence the credit availability. The financial instability and the emergence of the financial cycles are much related to the interaction between the financial position of banks and firms.

The group of the endogenous target debt-ratio models deals with risks perceptions, which are to be modified during the phases of the cycle. Consequently, that will change the target of the accepted indebtedness. During the euphoria period, margins of safety are relaxed, and agents are willing to rise their debt and vice versa. The Minsky-Veblen models deal more with the low-income households and the willingness of banks to provide credit if their indebtedness is low, boosting thus the cycle, or by adopting the exact opposite policy whenever households' indebtedness has reached to high-levels.

Ryoo (2013) developed a stock flow consistent model based on Minsky's approach to raise awareness of the consequences of banking driven profitability actions on the financial instability. According to the model, the credit supply is related to the profitability of the banks and the profit–interest ratio of the firms. The author suggests that instability is arising from the expansionary effect of credit supply provided by banks in their effort to achieve the profit maximization. The mechanism for the emergence of cycles and instability is the credit supply, which in turn affects the level of firms' indebtedness. The prolonged period of this leverage during the euphoria phase will entail in a rise in bank capital. However, contraction will eventually arrive mainly for two reasons. First, firms will face contraction because the more indebted they become, the more the interest they will need to pay, decreasing thus their profitability. Secondly, increment on banks' capital will erode the profitability of banks and firms because of its negative impact on growth.

Furthermore, Nikolaidi (2014) developed a model between the interaction of firms and banks. Leverage is an important key element that is influenced by the endogenous changes in their margins of safety. The latter will determine the desired level of investment and leverage, whereas its change could produce financial instability. As long as investment moves in high levels, the leverage increases too, which in turn results in greater investment levels. This behavior will entail in decreasing the margins of safety during euphoria period and vice versa. The increment of accumulated indebtedness and leverage ratios reaches up to a point, when both firms and banks will realize that these ratios have become too high. Hence, they are reluctant to take on further debt and leverage, so investments will decline as well as the economic activity. The model shows that both leverage and investment move at the same direction in both phases of the cycle, regardless of the indebtedness levels. In addition, the study preconizes the stabilizing effects of the fiscal policy through a simulation analysis whenever there are changes in the margins of safety. These relative fiscal policies

could serve as a response to these changes, restoring in this way the stability of the economy.

Prochniak, M and Wasiak, K. (2016) in their research examined two groups of countries. The first one consists of the EU-28 counties (including the UK) and the second one of 34 OECD countries over the period of 1993–2013. They incorporated six variables to assess the financial deepening. Their analysis suggests that the big size of the financial sector has a negative influence in the economy. The model used by Prochniak and Wasiak has been a major inspiration to the current thesis. Some used variables such as the bank nonperforming loans, the bank capital to assets ratio, market capitalization of listed companies, the turnover ratio of stocks traded have also been integrated in our model too. However, our scope is not to check the impact of financial depth to economic growth. In the current thesis, the ultimate negative impact of financial depth has been recognized. Therefore, we decided to move further by investigating the aspects that contribute most to the financial depth (denoted as the domestic credit provided to private sector).

Dhrifi (2010) also analyzed the impact of financial integration on economic growth but in the context of a financial globalized system, which much resembles to our modeling approach as well. He states that the liberalization of the financial system and financial instability are highly related. That is a point also shared with our model, diverging from the alternative view that the financial integration is independent from financial instability. Although, there are arguments that the financial distortions usually emerged by countries with lack of regulations, supervision, transparency, nevertheless, the subprime crisis in 2008 has proved the opposite. Highly developed and industrial countries with an advanced financial system structure and high-quality institutional supervision also underwent the same consequences. Therefore, the facts seem to speak by themselves. The econometric results of a sample of 38 countries, from 1990 to 2005, have showed that the gains of financial integration have been thwarted by the losses of financial instability. For Dhrifi, all the pros of financial integration are reduced by the financial fragility. He concludes that the financial instability is an increasing function of the financial deepening with an overall negative impact on economic growth.

At this point, we should mention that the literature quoted so far from all the chapters has been much influential on the structure and the scope of the thesis. In order to build our model, the literature mentioned on the current chapter has provided with the main insights, and especially, the work of Ryoo, Dhrifi, and Prochniak - Wasiak. Herewith, we begin to present the characteristics of our relevant model.

8.3 Data sources

The data source for all variables has been derived by the World Bank's database. The reasons for selecting the specific database were primarily the reliability of the data, which this reputed International Economic Organisation bears. In addition, the fact that the

reported indicators are not simple estimations or data provided to the World Bank, and hence further elaborated or own-estimated. By contrast, the disseminated indicators are the combined outcome of the following credible data sources, the International Monetary Fund, International Financial Statistics and data files, OECD GDP estimates, the World Bank, and other national data sources for each reported indicator. Beyond the indicators provided by the portal, the World bank calculates the derived indicators, mainly changes from one year to the other, ratios, shares, which may be based on data from different sources. This is the case for most of the indicators of the model. For the financial indicators usually the one source is provided by the IMF (IFS database), and the other stems either by countries through a World Bank survey (related as WB source) or through the OECD (related as OECD source). This harmonisation of data is quite important considering that the World Bank adopts the same methodology for each country despite the differences in procedures that could be followed by each of them. Finally, it is considered as a sound approach to insert to the model all selected indicators from the same data source. All data are end of year values[60].

8.4 Data and sample

The data for the analysis includes the selection of the sample with the appropriate variables envisaged to check the model. Thus, our sample consists of 16 countries in total, (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Montenegro, Romania, Serbia, Slovak Republic, Slovenia, and Ukraine). The common criterion for the selection of these countries is the status of economic transition since 1990 that they have all traversed. Following the related literature review given in previous chapter, they could also be considered thus as developing or emerging economies. Another important reason is that the Department of Balkan and Oriental Studies of the University of Macedonia is highly linked to the studies and research mainly in these countries. The timeframe of the analysis refers from 1990 – 2020. Therefore, our panel data analysis consists of sixteen observations of the same variables over a thirty-one-year period. The reasons behind to select a big sample observation in a large timeframe is to enhance the strength of the panel and therefore the validity and reliability of the reported results.

8.5 Selected variables

The variables that have been included in the model are related to the degree of credit being received to be regressed against variables that will be deemed to have a significant impact on it.

[60] All data files have been extracted in 2022 from the World Bank Data Open available at: https://data.worldbank.org/.

The thesis deals with the financial enlargement (following the bibliography it is also called as financial depth or deepening) as an important reason for financial instability suggested by Minsky. Thus, we aim at producing a model that will identify those factors that will induce a change (and its proportion) to the financial enlargement. We are not only interested if this change would be positive but negative too.

For this scope, the dependent variable, the one that has encapsulated financial growth is the rate of the *"Domestic credit to private sector (measured as % of GDP)",* denoted in our model as "dCred". This dependent variable serves as a measurement of financial enlargement but also financial volatility when it excessively grows. The indicator of domestic credit encompasses the concept of indebtedness measurement via credit granted, estimated as percentage of the total GDP for each country. Below there is the presentation of all variables (the quotation provided in brackets are from the World database metadata of each variable 2022).

Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of no equity securities, and trade credits and other accounts receivable that establish a claim for repayment. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations. Examples of other financial corporations are finance and leasing companies, moneylenders, insurance corporations, pension funds, and foreign exchange companies *(International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates).*

The formulation of relevant multiple regression model requires the independent variables that were selected in the model. These are defined and described as follows:

The money supply or the broad money (as percentage of GDP). It is denoted in the model as *"BroM"*. It is defined as the sum of currency outside banks demand deposits other than those of the central government the time, savings, and foreign currency deposits of resident sectors other than the central government, bank and traveller's checks and other securities such as certificates of deposit and commercial paper *(International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates).*

Another relative variable is the "bank nonperforming loans to total gross loans" (*"bnpl").* These are the values of nonperforming loans divided by the total value of the loan portfolio. The loan amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue *(International Monetary Fund, Financial Soundness Indicators).*

Furthermore, the "Bank capital to assets" denoted in the model as *"BCAR"*. This is the ratio of bank capital and reserves to total assets. Capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments. Capital includes tier 1 capital (paid-up shares and common stock), which is a common feature in all countries' banking systems, and total regulatory capital, which includes several specified types of subordinated debt instruments that need not be

repaid if the funds are required to maintain minimum capital levels (these comprise tier 2 and tier 3 capital). Total assets contain all nonfinancial and financial assets *(International Monetary Fund, Financial Soundness Indicators).*

Hence, the stocks traded, turnover ratio of domestic shares (percentage) consists of an interesting variable and denoted as *"TR"*. The turnover ratio is the value of domestic shares traded divided by their market capitalization. The value is annualized by multiplying the monthly average by 12 *(World Federation of Exchanges database).*

The Foreign direct investment (FDI), net inflows (percentage of GDP), is also an important contributor to financial enlargement. Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP *(International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates)*.

Certainly, the real interest rate (percentage), denoted in the model as *"IntR",* has to be included in the model. Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. The terms and conditions attached to lending rates differ by country, however, limiting their comparability *(International Monetary Fund, International Financial Statistics and data files using World Bank data on the GDP deflator).*

The current account balance (*"CurAB)"* is the sum of net exports of goods and services, net primary income, and net secondary income *(International Monetary Fund, Balance of Payments Statistics Yearbook and data files, and World Bank and OECD GDP estimates).*

Market capitalization of listed domestic companies (percentage of GDP) denoted in the model as *"Capdc"*. Market capitalization (also known as market value) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded *(World Federation of Exchanges database)*.

Finally, the total debt service (percentage of GNI) denoted as "*TDS*". The total debt service is the sum of principal repayments and interest actually paid in currency, goods, or services on long-term debt, interest paid on short-term debt, and repayments (repurchases and charges) to the IMF *(World Bank, International Debt Statistics).*

The reasons for selecting these variables were related to the literature suggestions and after repeating processes to build on the best performing model. Additionally, their combination produces the most interesting and performing model, and the fact that the same variables had been used in similar models in the related literature (referred above) in order to describe the financial flows and its determinants. All variables from World Bank database (related to finance) have been tested in the model with different possible

combinations until we reach to the best performing model. This repeated process was one of the most challenging parts for building the model.

8.6 Methodology – optimising the model

The model is a panel data, which has been tested in terms of its robustness and the holding of assumptions. Panel data refers to data following a cross section over time. All selected variables have been used in the model through different, foreseen for panel data analysis, regression estimators. The selected model consists of the ordinary least squares (OLS) regression method, which serves as a linear regression technique that is used to estimate the unknown parameters. The method relies on minimizing the sum of squared residuals between the actual and predicted values.

We commenced with the production of the "Pooled OLS estimator" for a multiple regression model. The same model had also been run for other relative estimators and specifically for *Population Averaged Estimator, "Fist Difference Estimator", "Fixed Effects Estimator", "Random Effects". Thereafter, by analysing the results each estimator had yielded, it was decided to use the "Pooled OLS estimator", as more appropriate and valid, to interpret and analyse the results (all results are provided in the annex).

The stationarity of the data had to be checked in the model. The statistical model is built upon the assumption that the mean, variance are consistent over time, whereas the statistical properties of a time series (mean, variance, covariance, etc.) do not change over time. Stationarity is important because statistical models rely on it. Stationary data is easier for statistical models to predict effectively and precisely. That required thus the performance of a unit root test in order to check whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is set as the presence of a unit root and the alternative hypothesis is stationarity.

Given the produced results of the test and by checking on the tests (P, Z, L* and Pm) we could reject the null hypothesis. Since they are smaller than the alpha level 0.05 (statistical significance we reject the null hypothesis at the confidence level of 95%), this means there are no unit roots in our panels under the given test conditions (included panel mean and time trend). Therefore, we concluded that the values are stationary.

The normality test of the model states that the residual errors are normally distributed. We predicted the residuals from the regression model, creating a new variable 'resid' to generate the distribution plots of the residuals through the joint 'Skewness and kurtosis normality test'. The null hypothesis for the normality test is that the data follows a normal distribution, and the alternative that the data does not follow a normal distribution. The results showed that both skewness and kurtosis are asymptotically distributed (p-values > 0.05). Finally, the chi(2) is 0.558 which is greater than 0.05 implying its significance at a 5% level. Consequently, the null hypothesis cannot be rejected. Therefore, according to the Skewness and kurtosis test for normality, residuals show normal distribution.

The differences between the consistencies of the estimators have been emphasized by the Hausman test for FE vs RE. The Hausman test for fixed versus random effects model in panel data analysis had been performed. The null hypothesis is that the preferred model is random effects; the alternate hypothesis is that the model is fixed effects. The test produced a p-value less than 0.05 rejecting the null hypothesis of random effects.

Hence, we run the "Breusch and Pagan Lagrangian" multiplier test to check the importance of OLS estimator. The results {(var(u) = 0)} have also provided evidence to make use of the Pooled OLS estimator. We also recall that the OLS assume that the variance of the error term is constant, i.e. homoscedasticity. From the Breusch and Pagan test, we confirmed that the assumption of homoscedasticity also holds in our model. It is given from the almost zero value of chi-square but mostly from p-value of the test (Prob > chibar2) which exceeds the 0.05 verifying that the null hypothesis of constant error variance is true. Therefore, heteroscedasticity issue is not present in our model to cause bias in the coefficient estimates and making them less precise. Similarly, homoscedasticity was also confirmed by running the White' relevant diagnosis test.

An autocorrelation problem arises when error terms in a regression model correlate over time or are dependent on each other. Thus, autocorrelation between the residuals in the model had to be tested. That was done by using the Durbin-Watson method. The acceptance thresholds are depicted in the following table below. According to this, the seeking for the values with no serial correlation should lie between du=1.696 and 4-du = 2.304.

Positive serial	Indeterminate	No serial correlation	Indeterminate	Negative Serial
0 dl=1.600	du=1.696	2	4-du = 2.304	4-d1=2.4 4

Fortunately, the Durbin Watson test of our OLS model had initially resulted in value = 1.829901 stating that there is no autocorrelation issue in the model. However, we strived further to improve the performance and even more corrected it by applying the Prais–Winsten regression of the dependent variable on independents and estimating the autocorrelation parameter. The results had shown a small adjustment (New D-W statistic value = 1.764703), little lower but with no significant difference from the original, and still, displaying no correlation. Therefore, we stick to our original model. Besides the Durbin – Watson test, all correlation values between all variables have been obtained by the software package producing correlation coefficient values close to zero, eventually indicating no meaningful relationship between variables (non-multicollinearity). The correlation checks between all the explanatory variables was also made through the *vif* test. As a rule of thumb, *vif* values less than 10 indicate no multicollinearity between the variables. The results shown a mean *vif* value of 4.51 which indicate no multicollinearity between the variables.

8.7 Final model

It has been a challenging process in reaching to the final model equation because many variables have been included and excluded in the model in order to result in robust and significant output. The challenges that need to be confronted were the following. From

one point, the underrepresentation of the model had to be avoided, so the assurance of a satisfactory explanatory rate of the independent variables (R squared) not to be jeopardized. From the other hand, to avoid the overfitting of the model with many variables, causing possible issues with variance. The overfitting would reduce the overall bias from the model, but the variance would possibly go up because it will entail in greater variability. Furthermore, the risk of multicollinearity would be higher, and some explicative variables might have errors. Therefore, it was decided to reach to an optimal combination of the number of the explicative variables, in order to solve the trade-off issue of bias/variance by finally including the variables with the highest importance on the model. The panel data model was ideally attributed as "strongly balanced", which is certainly preferred over unbalanced panels. That enables us an observation of the same unit in every period, which reduces the "noise" introduced by unit. Rewriting the above general functional form into a more particular form gives the following estimation equation.

$$dCred = \beta 0 + \beta 1 BroM + \beta 2 bnpl + \beta 3 BCAR + \beta 4 TR + \beta 5 FDI + \beta 6 IntR + \beta 7 CurAB + \beta 8 Capdc + \beta 9 TDS + u_{it} \quad (1)$$

8.8 Results interpretation

The following table provides the regression analysis as resulted by the OLS Pooled regression estimator:

```
      Source |       SS           df       MS      Number of obs   =        24
-------------+----------------------------------   F(9, 14)        =     34.29
       Model |  7889.58929         9  876.621032   Prob > F        =    0.0000
    Residual |  357.935658        14  25.5668327   R-squared       =    0.9566
-------------+----------------------------------   Adj R-squared   =    0.9287
       Total |  8247.52494        23  358.588041   Root MSE        =    5.0564

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |   .5074399   .1053816     4.82   0.000     .2814188    .7334611
        bnpl |   1.882003   .3157288     5.96   0.000     1.204832    2.559174
        BCAR |    6.06861   1.183018     5.13   0.000     3.531289    8.605931
          TR |  -.4593867   .4013813    -1.14   0.272    -1.320264    .4014905
         FDI |   1.110276   .5158947     2.15   0.049     .0037922     2.21676
        IntR |   1.058014   .3543678     2.99   0.010     .2979712    1.818058
       CurAB |  -1.635558   .2862074    -5.71   0.000    -2.249412   -1.021704
       Capdc |  -.6062476   .1120525    -5.41   0.000    -.8465763   -.3659189
         TDS |   .6628327   .2882528     2.30   0.037     .0445919    1.281074
       _cons |  -68.72556   12.61626    -5.45   0.000    -95.78475   -41.66636
------------------------------------------------------------------------------
```

We could therefore interpret the above output as follows. From the *Source (a)* we identify the source of variance, Model, Residual, and Total. The Total variance is divided into the variance, which is the independent variables (model), and the variance not explained by the independent variables (Residual, or Error). The Sums of Squares (SS) for the Model and Residual equal the total variance.

The degrees of freedom (df) are associated with the sources of variance. In this case, the total number is 23. The model degrees of freedom correspond to nine, the number of predictors minus one (K-1), considering also that the intercept is automatically included in the model. There are ten predictors, including the intercept, so the model has 10-1=9 degrees of freedom. From the Mean Squares (MS), we divide the sum of squares (SS) by

their respective degree of freedom. For the Model that equals 876.2 and for the residual 25.5.

Hence, the F ratio is computed, by dividing the mean square model by the residual to test the significance of our independent variables in the model. Therefore, the F value we get is 34.29. This F value only compares the joint effect of all independent variables together. Its interpretation is associated with the p-value, whereas we observe that is almost zero (0.00). The low value indicates that the independent variables of our model do reliably predict the dependent variable and that there is a statistically significant relationship with the dependent variable. The p-value is compared to the alpha level of the 0.05 which is the most frequent and typical one. The same alpha of all p-values is used for the rest of analysis for each coefficient, where this approach in any case is imposed by sound and consistent statistical norms. It is reminded that this is an overall significance test of the group of all independent variables' ability to predict the dependent variable, and not of any of the specific independent variable.

Regression analysis in software (Stata) drops all observations that have a missing value for any one of the variables used in the model. The output was kept for the convenient advantage of the complete-case analysis, which provides with unbiased estimates of means, variances, and regression weights. Alternatively, if the observations were increased through imputation, then the imputed data would not have an error term in their estimation because the computed standard of errors use the average sample size across analyses. In that case, the estimates would fit perfectly along the regression line without any residual variance. This would produce underestimated or overestimated standard of errors, potentially creating unrealistic values.

The R-squared consists of the proportion of variance in the dependent variable that could be predicted by the independent variables. This value indicates that 95.66% of the variance of the dependent variable of "domestic credit" could be predicted from the overall measure of all independent variables of the model. This percentage is statistically deemed high and acceptant, to proceed with the analysis. It demonstrates that all independent variables together of our model can explain in a percentage of more than 95 per cent, the financial depth defined by our dependent variable.

Similarly, the adjusted R-square is also high (almost 93%). It is in relation with the number of predictors added to the model, bearing in mind although that each explanatory variable affects to some extent the dependent variable. It is a common norm that the adjusted R-square provides more "clear and clean" value to the estimate. The adjusted R-square is always lower that the R-squared, but the challenge is to come up with a value as closer as possible. For this reason, the selection and number of the explicatory variables had also been designed in yielding closer values between the two R squared avoiding large resulted differences that would introduce confusion and even some bias to our analysis. It should be noted that the inclusion of variables aimed at increasing the R squared at maximum possible level. Furthermore, if we have used the transformed model by Prais-Winsten AR(1) regression-iterated estimates, the R squared value would have reached

almost to 99%. The root MSE serves as the standard deviation of the error term, which is actually the square root of the Mean Square Residual (Error).

Next on the table, we observe the column with the dependent variable at the top *(dCred)* with the explicative variables following *(BroM, bnpl, BCAR, TR, FDI, IntR, CurAB, Capdc, TDS and _cons)*. The last variable *(_cons)* stands for the "a = intercept", the height of the best-fitted regression line at its crossing point with the Y-axis. That would be the predicted value of the dependent variable *"dCred"* in case all other variables are zero.

Certainly, the coefficients estimates for each of the independent variable provide useful insights. These are the estimates for the regression equation (represent each β in equation) that underline the relation between our dependent variable and each of the independent variable.

Each coefficient highlights the increase/decrease in the dependent variable that would be predicted by a one-unit increase in the corresponding independent variable. This relation, however, has to be associated with the columns of t-values and p-values. It serves the scope to test whether the coefficients are significant or not. Additionally, to check if the coefficients are not significantly different from zero, which should be taken into account when interpreting the coefficients.

From the first coefficient, we could say that for every increase by one point on the Broad Money growth, we predict a higher value in Credit by .5074399 points, keeping all other variables constant. The model is linear and therefore makes no difference for the each explained estimate, keeping the other variables constant. The coefficient is significantly different from zero. Under the same scope the rest of the coefficients are explained. Thus, the following most interesting aspects are underlined.

First, the largest positively relation on the dependent variable is observed by the *"Bank capital to assets ratio (BCAR)* by 6.06861 whilst the most negative (-.6062476) by the *"Current account balance (CurAB)* where one unit increase in *CurAB* will entail in a reduction in *Domestic Credit* by -1.6355. Therefore, as market capitalisation goes up there is no demand for further credit. Apart from the *CurAB*, the *Turnover ratio "TR"* (-.4593867) and the *Market capitalization of listed domestic companies "Capdc"* (-.6062476) also account for a negative impact in financial depth. Besides, it is certainly normal that higher turnover ratio or a positive capitalization of listed domestic companies push-up an economy in a less borrowing, or even inverse, trend. The *Bank nonperforming loans to total gross loans "bnpl"* (1.882003), the net inflows of *Foreign Direct Investment "FDI"* (1.110276), and *the Real Interest Rate "IntR"* (1.058014) all have positive impact more than 1 percent, whilst the positive impact of the *Total debt Service "TDS"* is little bit more than those of the *Broad Money* (.6628327). The higher interest rates attract foreign capital further inducing to higher credit, whilst more capital inflows in the form of FDI will boost higher credit availability. As we can see the independent variables from each one's perspective, they stimulate the financial development in the form of credit accessibility and availability. Total debt service obligations have to be met by seeking for more credit from the market.

Each of the coefficients is associated with the standard errors, which they serve for testing if the coefficient is significantly different from zero. They are calculated by dividing each one by the standard error to obtain a t-value and p-values. From the standard errors, the Confidence Intervals for each estimate are also being produced, which are depicted in the last two columns of the output.

Having noted the quantification of the influence that the independent variables have in the financial depth (credit), we need to stress the fact on whether this influence is significant or not. The columns with the t-values and 2-tailed p-values provide with this information in testing the null hypothesis if coefficient is close to zero. The t-values of a coefficient that is closer to zero is considered as an indication that this coefficient is statistically not significant. From the model, the closest to zero t-value is the turnover ratio of domestic shares.

The selected alpha level is set as 0.05 following the most frequent approach for hypothesis testing. Therefore, all the coefficients that have p-values 0.05 or less, are statistically significant. In other words, we could reject the null hypothesis stating that the coefficient is significantly different from zero. That is also the case having used the 2-tailed test. By contrast, if we had used the one-tailed test, then we would have divided all the p-values by 2 before comparing each them to the 0.05 alpha level. This approach would have rendered easily significant all the produced estimates. However, the statistical rules and the consistency approach impose to apply the same testing methods for interpreting all coefficients and thus the first option was chosen.

According to the above, the coefficient for *Broad Money "Brom"* (.5074399) is significantly different from zero using alpha of 0.05 because its p-value is less (0.000). The same statement applies for the coefficients of the "*Bank capital to assets ratio (BCAR), "Market capitalization of listed domestic companies (Capdc),* the *Current Account Balance (CurAB)*, the *Bank nonperforming loans to total gross loans (bnpl)*, the *Foreign direct investment (FDI)*, the *Real Interest Rate (IntR)*, and the *Total Debt Service (TDS)*. All of them have p-values less than 0.05, and therefore, we could argue that they are statistically significant having real impact on the financial depth. The p-value of the *Foreign Direct Investment (0.049)* is just below the threshold of the 0.05 but still significant. The only parameter not statistically significant is the turnover ratio of domestic shares *(TR).* It is different but closer to zero than the other parameters. Based on the 2-tailed test its p-value is 0.272, which is greater than the alpha level of 0.05. Thus, this parameter is not statistically significant but it's meaningful to emphasize that Capdc is more important than TR. Finally, the constant (_cons) is also statistically significant (p-value = 0.000). Even though it is seldom interesting the case of a significant intercept in regression models, however, it provides with the following important information. The existence of long run impact of the group of independent/explanatory variables on the dependent variable is also confirmed by the fact that the coefficient of the error term (cons) is negative and statistically significant (0.000 = p value).

The statistical significance of the coefficients is also depicted by their 95% confidence interval (last columns) for each of the coefficient. They are related to the p-

values in the scope that a coefficient is not statistically significant if the confidence interval (between the lower and the upper bound) includes the zero. From our model, the confidence intervals of all coefficients do not include the zero and thus we could support again their statistical significance. This is not the case, however, for the turnover ratio of domestic shares, where the zero is included. The confidence intervals provide the high-low levels of the estimate within the true estimate can be found. In addition, they also serve as measurement of the precision of the estimate by observing if the confidence are not quite distant. Such confidence intervals enable us to examine the estimate from the coefficient into perspective by observing the variance of its value. That is the case with the *Bank capital to assets ratio (BCAR)* that have the greatest variance, more than the *Turnover ratio of domestic shares*, but still statistically significant whilst the turnover ratio not.

8.9 An additional model

A final simple test we wished to perform had been the relation between GDP growth per capita and the financial deepening. The model also emanates from the previous chapter when observing the macroeconomic data for the selected countries according to their GDP rates and financial flows. For this purpose, we developed a single regression model defining the GDP per capita as dependent and the Domestic credit to private sector as independent for the same panel as it was for the multiple regression i.e. 16 countries over period 1990 – 2020. The aim is to check whether there is a positive or negative relation between growth and the financial enlargement, despite the ups and downs the latter could contribute to the growth. Therefore, the simple model is expressed as:

$$GDP\_cap = a + \beta dCred \quad (2)$$

The final model we used after the production of panel data results was the random effects as considered the most efficient. Similar to the multiple regressions, all relevant estimates and tests (Pooled OLS estimator, Random Effects GLS, Fixed Effects, Breusch and Pagan Lagrangian multiplier test for random effects) have been produced and given in the annex. The results are depicted in the table below:

```
Random-effects GLS regression                   Number of obs     = 305
Group variable: ID                              Number of groups  = 16
R-sq:                                           Obs per group:
     Within  = 0.0596                                         min = 11
     Between = 0.2046                                         avg = 19.1
     Overall = 0.0625                                         max = 30
                                                Wald chi2(1)      = 20.07
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       = 0.0000
------------------------------------------------------------------------------
     GDP_cap |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dCred |  -.0555772    .012406    -4.48   0.000    -.0798924    -.031262
       _cons |   5.159433   .6174516     8.36   0.000      3.94925    6.369616
-------------+----------------------------------------------------------------
     sigma_u |  .26159761
     sigma_e |  4.0827646
         rho |  .00408865   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

From the above table, we notice that the overall effect of the financial depth to the GDP growth per capita will eventually be negative for this panel. In spite of the potential

gains to growth, indeed as observed in the previous chapter for these countries and even in relative high rates, the other side of the coin seems to be greater in the overall effect. More precisely, an increase by one unit in the *domestic credit (dCred)* entails in a decreasing the *GDP per capita* by .05555772 units, whereas the resulted relationship is statistically significant (p value = 0.000: and the zero value is not included in the confidence intervals). Based on the above, thus, we express serious reservations on whether financial deepening will result in an increase in growth for these transitional countries in the long run.

8.10 Concluding Remarks of the analysis

Minsky's financial instability hypothesis suggests that the economy could easily shift from hedge to speculative in the expansion period. This usually occurs in forms of risk aversion, reductions in margins of safety, as long as short-term credit is easily accessed and there is a strong incentive of refinancing interest and positions, rather than the option of getting rid of debt burden. Firms are counting on debt-finance investment based on leverage whereas the latter reaches a relative threshold then investment shrinks and fragility becomes more evident. Minsky rejected the notion that financial issues are independent from the rest of the economy. When a financial incident occurs that entails to implications to real economy, which have been identified in terms of consumption, employment, investment and output, where all countries have presented a large decline.

From the discussion presented so far, we distinguish two periods, the euphoria and the slowdown, as also developed in the chapter of the financial cycles. We are much interested in the phases of the cycles and thus deriving the suitable variables. From Minsky's FIH these variables are the revenues, debt service, money supply, capital flows, etc.

The continuous increase of credit brings euphoria as long as it continues to increase. If suddenly, credit flows are not attainable then slowdown begins. As Minsky suggested, thus, the high dependency of an economy to financial depth will result in the emergence of this cycle. Financial instability thus is linked with debt accumulation. From our model, we distinguished the factors with the greatest influence to the financial economy.

Within our model, we attempt to discover the variables with the highest contribution related to that situation. The bibliography offers many insights about the importance of the variables and their relation to the financial developments. It works well when examining the factors that will affect, positively or negatively, the tendency of the financial depth. It has to be clear, certainly, that by credit (financial enlargement), we do not imply an undesired tendency. By contrast, we address on the risk of its large magnitude and the implications as raised by Minsky.

The starting point of the analysis is the acknowledgement that financial development will finally entail in financial instability. The scope was not to produce an additional model checking whether the financial deepening coincides eventually with financial instability, as many literature papers have already done it so. On the contrary, we rather wish to make a

further step on it by integrating Minsky's theory in a relevant context within the recent history of financial distortions.

We were interested in including countries with common characteristics. These characteristics were the developing status of the countries, (also transition status in our case), with non-mature financial system, but strong willingness for financial deepening and financial integration. The time panel initiates in 1990 (staring year of transition), passing through the financial crisis in 2008, and reaching up to 2020, whereas normality is restored. That enables a wider comprehension of their economic behavior through all the phases of the financial cycle.

It is quite interesting to examine the impact of the variables to credit from different perspectives. Some of the variables affect the financial enlargement by contributing to the euphoria climate (bank capital to assets ratio, money supply, interest rates etc.). Others, however, contribute on the increased need for money demand (non-performing loans, debt service). Others have positive effect but are beneficiary to the economy (FDI). Another group of variables (market capitalization of listed domestic companies, current account balance, and turnover ratio of domestic shares) has negative impact providing a dynamic boost to restore the economy in lower dependency levels on the financial system and thus less prone to financial distortions. This is what Minsky called the stabilizing factors.

The cultivation of positive expectations are explained by the bank capital to assets ratio. When it rises then financial flows will increase too. Generally, a bank (as the greatest representative of the financial system) with a high capital adequacy ratio is considered as safe and likely to meet its financial obligations. This statement however, cultivates good expectations and euphoria conditions urging to extra credit. The combination of a prolonged euphoric period and leverage will entail in a rise in bank capital. Banks play a dominant role in the financial environment and therefore their actions will result in significant implications in globalized financial economy[61]. It seems that banks function in parallel with the financial cycle, whereas credit availability grows in the boost-stable periods since they are more comfortable with their assets (BCAR) as well as the position of their borrowers, or vice versa. By this way, banks can influence the debt fluctuation by means of credit change, which in turn has an impact on the amplification of the financial cycle and economic activity.

The euphoria climate, therefore, is nutritious on positive market expectations according to the model. The continuous rise will cultivate positive expectations for the future and the economy. Under the same scope (euphoria), the increment of the money supply and foreign direct investment signify the larger amount of money availability. The money supply enhances the circulation of the money by creating its own money demand, whether this absorption could be perceived as financial deepening. The net inflows to economy through the foreign direct investments serve as an injection to the economy.

In addition, the real interest rate seems to work in parallel with financial depth *(dCred)*. Countries that have adopted the policy to attract capital flows, they are implicitly establishing financial vulnerability simultaneously, especially when speculative action is

[61] Particularly banks with huge assets and capital spread across the global financial system.

encouraged. In addition, an increase in interest rate could be attributed as a potential source of financial instability because it will call for interest payments enhancements of firms as well. Thus, the interest rate is positively related to leverage ratio of all debt-engaged agents, especially during the boost phase of the financial cycle. This is done gradually and deducible switching their finance position to a speculative or even to Ponzi status.

For a different perspective, though, the *total debt service "TDS"* and the *Bank nonperforming loans to total gross loans "bnpl"* both contribute to financial depth but not necessarily by cultivating euphoria financial conditions. Indeed, when *the Bank nonperforming loans* grow this leads agents to seek financial resources pushing, even urgently, the money demand. As for the *total debt service*, that could entail in a twofold situation. Firstly, total debt service requires more credit because loans have to be rollover and maintain the economic activity to the same level. Secondly, it could be as the case with non-performing loans where credit is essential due to the lack of liquidity entailing potential risks to the economy.

From the other side, the growth of turnover ratio of domestic shares could always be regarded as a positive indicator and most importantly, to shield the economy with domestic adequacy and efficiency. This also the case with the *Market capitalization of listed domestic companies* and the *Current Account Balance*. In other words, they are channels for economic growth outside the financial enlargement context. The *Market capitalization of listed domestic companies* signals the capital adequacy of the companies rendering financial enlargement less important and even reinverting, for some of them, the borrowing (or capital inflows) strategy that have been adopted during the past years. However, it seems that the greatest impact in diminishing the financial depth emanates from the current account balance.

The purpose of this analysis is the validation of the temporal relevancy of Minsky's theory. By *dCredit* we presume the financial depth of a country. As long as this financial depth exceeds more than 50% of the GPD (almost for all countries in the panel), that signifies the high dependence of the country from the financial markets. Financial excessive development bears also the risk for the best and proper function. It will also contribute to the increased risk of the large-scale financial crisis. The opportunities for higher profits realization, in association with agents' giddiness, could provoke moral hazard risks. It could be seen that some results of the 2008 financial crisis are attributed to supervisors' approval for large financial system. In spite of possible growth, it is evident that an economy moves to risky situations, being highly vulnerable to unforeseen distortions.

By observing the policies of most economies throughout the globe, it appears that most of them have adopted the capital inflows strategy. This strategy could be interpreted as higher credit available/accessible and eventually as financial deepening. Some countries have shown greater willingness to engage their economy into this strategy, whilst others less. The association of the financial grow with economic growth has been accepted during the last decades. The financial distortions and mainly the financial crisis in 2008 have also revealed the other toss of the coin by pushing into negative GDP rates, where this negative size is interestingly linked to the financial depth of each country. For our results, we regard

that the financial deepening will finally have negative impact on the GDP per capita for the economic transitional Balkan, Central-Eastern, and East-European countries.

From our point view, we argue that the interpretation of the results coincides with the Minsky's theory. Certainly, we suggest that a positive current account balance produces surpluses, limiting thus the continuously need for borrowing. In addition, an unstable macroeconomic environment contributes to financial enlargement and instability. This instability could stem from the relaxation of current account balances. According to our results, it seems that the pursuance positive current account balances will render the financial economy more stable and stronger in times of possible emerging distortions.

Chapter IX

9 Remedy Policies

9.1 Introduction

In the current chapter, we briefly wish to raise some remedy policies for an efficient and fair global monetary and financial system based on previous chapters' analysis. We mainly focus on the need for regulation and intervention policies in the scope of a stable economy. For this purpose, we provide suggestions for a new international monetary system, particularly from a post-Keynesian view, the role of a big government, a big bank, and the importance of the introduction of an international lender of last resort. Additionally, we shed some light to the contribution of dominant economies to the stability and most importantly, we emphasize on policies centering to avoid crises and financial instability.

9.2 Regulation in the current period

We have been living into an economic status that has been globally prevailed since the beginning of the 1980s. It is not easy to address the actual economic status as capitalism since the latter is a regime mostly associated with past decades and centuries. The cold war period, apart from the ideological differences that had divided the globe, also served as an impediment to the expansion of Western economy model until the 1990s. Nowadays, the financial status has taken a more complex dimension. It is about an unregulated free market economy in a global level, where the major capital accumulators and lobbyists serve their self-interests. Vast money brings power and becomes a pressure group whereas no government in the modernized world could ignore. The rest of the world though expects from democratic governments to protect them by adopting self-assurance policies, such as the full employment, stability, transfer payments, generally the promotion of demand policies.

Regulation and restriction policies constitute the weapon of governments to balance the above interests and consequently to stabilize the economy. However, when we carefully observe those policies, we end up to the frustrated conclusion that there is no such a case. It is extremely regrettable to realize that if someone is either poor or low intelligent person it would be extremely hard to survive into this economic status. How fair could that be? Therefore, governments need to impose regulation in order to balance the scale and to ensure stability. Needless to note that one of the reasons of the success of prosperous period from 1945 to 1975 had been the regulatory policies as previously mentioned.

Let us also not forget that the global stability could be achieved through regulation for everyone's benefit. Firstly, for those who are living under poverty conditions through

transfer payments, educational, socially induction and certainly full employment policies. These policies that are not been favored by a totally unregulated free market regime. Hence, the middle financially class majority that daily struggles to meet the requirements only wish for a steady and sound status to prosper. Finally, the most powerful economic players as soon as they realize that instability threatens their interests as well. Super profits could be made but super losses too since these are the implications of financial cycles with endogenous instability. Thus, a long run stable economic status, with no significant or at least some inevitable short-term fluctuations, could only be assured by regulation to bring prosperity for everyone and to promote economic growth.

9.3 The Necessity of state intervention from an ethical basis

Agents interact in the market economy mainly for mutual gain in grounds of common agreement. It could be argued that the operation of market is the result of interaction among different agents (households, firms, financial institutions, corporates, governments, organizations). In socially terms, people interact on a moral and ethical basis and this kind of behavior must be transmitted to the economy as well.

Adam Smith in "The Theory of Moral Sentiments" explicitly stressed his opinion on moral issues of human nature, where the non-operation of moral factors in the market economy is not possible. Smith refers that "how selfish so ever man may be supposed, there are evidently some principles in his nature, which interest him in the fortunes of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it (Smith, 1759)". He incorporated in the theory notions such as compassion and morality and initiated the view that atomistic behavior is firmly demoted in comparison with common interest when individuals think and act in a moral manner. Additionally, individuals consider their actions by other individuals' views putting themselves into the position of a third person. Sen (2011) suggests that Smith regarded that a successful economy and a society perquisite apart from self-interested motivated individuals, virtues such as collectivism, justice, equality, mutual trust, humanity. The same view is also adopted by Fleischacker (2004)[62].

The idea to refer to Adam Smith stems from the argument raised by neoclassical economics that Smith considers individuals as self-interest rationally profit maximizing units who put their atomistic pursuits at priority. Therefore, there is much contradiction to this argument as a misinterpretation of Smith's writings. Sen (2010) identified why the markets may need restraint, correction, and supplementation through other institutions for preventing instability, inequity, and poverty (2010, p.52)". In the current period, the prevailed liberal argument states that competition and unrestrained selfishness was of benefit to the whole society in capitalist societies (Sheil 2000, p26). However, global financial crisis has demonstrated that financial markets only provide short-term investment opportunities and a prosperity too fragile, which could be easily wiped out.

[62] Fleischacker, S. 2004. On Adam Smith's "Wealth of Nations": A Philosophical Companion. Princeton, NJ: Princeton University Press.

It is overt that human nature has two contradictory thresholds coupled: individualism and collectivism. However, reasonable agents could reach to a win-win result both for themselves and for the society. Collectivism can be developed on the grounds of interaction among reasonable individuals. Only when individualism and collectivism behavior complement and not contradict each other, then the outcome will be apparent not only in market economy but in the entire society too. The direction towards an ethical and moral economy constitutes a challenging and promising form of state intervention.

9.4 Consequences of financial deregulation

Financial deregulation consists of free capital flows, the removal of regulations on financial institutions and political controls from the central bank. The excuse for the deregulation had been the given opportunity to domestic banks and firms to compete internationally. Among the consequences of the deregulation is the accumulation of capital to few individuals and to international economic elite who wish to reinvest this capital to short-terms profit seeking opportunities and not to production investment. Therefore, most people does not benefit from this behavior.

Deregulation is a displacement where the latter could also be identified as an unanticipated event, shock, devaluation, or a change in agents' perceptions. Deregulation of banks and financial institutions is therefore seen as a major recent displacement. Financial innovations such as derivatives, mutual and hedge funds, all provide with new highly profitable investment opportunities but with greater risk of losses. International financial markets have become more and more complex as traders, who worked out more and more ways to make money from the markets, using derivatives, credit default swaps, or any other instrument/product, which were beyond common reason. Many financial institutions around the world were exposed to toxic financial products and suffered losses. The result was default, domino and contagion effects, whereas governments bailed out some failures. The latter was even more costly since taxpayers' money were used for that purpose, socializing thus the losses. Aggregate demand falls, combined with the unavailability of credit, reduce business and consumer confidence and economic growth, which have led to rising levels of unemployment and recession.

Overall, the financial deregulation implies the emergence of an international deregulated financial system, where there are plenty opportunities for huge short-term profits through investment, not on production sector, but on speculative, new complex financial products and other bubbles. The deregulation of financial institutions is a major contributory determinant to the emergence of asset price bubbles. Also, the possible outcomes of the international deregulation are suitable for fund managers. In case of profits, they could acquire the entire share but in case of losses, they share it equally to other agents and to the entire society. The actual deregulated financial system is an outcome of business interests' demands to generate profits in the global scale.

9.5 Regulation and intervention

The financial crises have questioned the conventional wisdom about how financial markets operate and how to regulate them. During the last forty years, we observe a deregulating process in the financial relations, which is being accompanied with a flourish in financial innovations, financial products, and instruments. In terms of international finance there is also greater capital mobility. The non-regulation-intervention has always been linked with the ideological concept of *laissez faire-laissez passé* that markets will always find the equilibrium. Notwithstanding the foregoing, history has taught us that financial markets should not be left operating totally unrestricted. There is no such empirical evidence proving that an unregulated financial market cannot fail. We observe during the deregulatory periods the increased frequency of central banks' intervention as a lender of last resort to withhold instability.

Prudent state regulation means the assurance of free entrepreneurism, full employment, sound competitive environment and anti-monopolistic policies. In addition, the encouragement of innovations in scientific, technological, and information sector. Regulation must be present within foreign economic relations and stipulate economic growth. In the financial sector, crisis prevention policies and counter-cyclical regulation measures to ensure a stable financial system. Regulation is associated with the stability of the financial system. It purposes to control the agents' behavior in the financial system, by highlighting the limits of their decisions and actions. Each financial agent is keen on promoting its self-interest, without regarding the consequences of their actions to the safety of the financial system. Thus, they are even prone to more unethical and dangerous moves, jeopardizing the soundness of the economy at national and international level.

Furthermore, there is the moral hazard argument implying that intervention will only deteriorate financial crises. By intervention and regulation in no way we imply the rescue of any financial institution or a sector that is in trouble and certainly not the implosion of financial bubbles. When a bubble is emerged then it should be stopped by its own. Otherwise, intervention could be viewed as safety net by speculators, knowing that in case of losses they will be guaranteed. Thus, intervention might encourage speculative action instead of its prevention. The way to overcome moral hazard is to bind intervention with regulation. Intervention within regulatory framework will prohibit from early stage the development of speculation.

9.6 The Success of regulatory policies

For the purpose to sustain the effectiveness, the intervention-regulation framework must be modernized and keep pace with financial innovation and modern financial practices. It is said that there is a trade-off between financial regulation and innovation, but the main target is to encourage the introduction of new products, processes and businesses but simultaneously to confine bubbles' exaggerations that stems from innovation. In other words, a sound financial system should not prohibit innovations and other internal initiatives but to prevail all these procedures. That could be done by setting beforehand some market standards or requirements. Furthermore, since innovation and profit maximization are aligned, then an interesting solution could be the counter cyclically profits orientation and to reallocate, via taxation, the excessive profits. The aim is to redistribute income and to

stabilize profits, and hence, to stabilize the financial system. Stephens quotes that “any reform that does not significantly reduce bank profits in the medium to long term will have failed (Stephens 2011)”.

We have been experiencing financial crises and thus there is a need to comprehend the emergence of conditions prone to crises and how intervention could prevent them. Regulation and intervention have been repeatedly criticized for promoting allocation inefficiencies. It is true that excessive regulation produces more non regulatory instruments and institutions in the financial market. Minsky (1986) believed that financial institutions are firmly regulatory escaping and the more regulation imposed, the more search for new ways of getting away. “The wisdom of allocating or altering a regime of intervention or regulation does not rest solely upon whether it improves allocation efficiency: the wisdom depends upon the regime’s joint impact upon allocation and stabilization efficiency and a judgment as to value of the tradeoff (Minsky 1986)”. Minsky’s insights clearly imply that economy has an automatic tendency to instability and that is the primary reason for regulation to restrain financial exaggeration practices in speculation. Regulation and intervention could stabilize what Minsky (1986) stressed as an unstable global economy. Consequently, the key role for policymaking is to impede instability by tracing and regulating the incipient sources. Thus, the economy requires a sufficient level of state intervention that simplifies the financial system and renders it more transparent and fairer.

9.7 Thwarting instability institutions - The Big Government

We shall proceed with the concept of stability institutions of the international financial system. We usually refer to the big government and the big bank. We seek for thwarting institutions at international level capable to guarantee the stability in times of turbulences. Additionally, to act as lender of last resort. The term “thwarting institutions” from instability was introduced by Minsky (Ferri & Minsky, 1992). Their role is to ‘constrain the outcomes of capitalist market processes to viable or acceptable outcomes’ (Ferri & Minsky, 1992).

Central banks and governments are thwarting instability institutions. The role as final monetary authority whether is a central bank or government remains a matter of controversy. At national level, the most significant thwarting institution is the ‘big government’, which could moderate instability via public spending and tax cutting. According to Minsky, the big government will have three effects:

(1) The "Multiplier effect" of government spending,
(2) The “Cash flow effect” to sustain cash in-flows to service debts,
(3) The “Portfolio effect”, when government debt is issued to provide safe assets.

Nevertheless, there must be also a lender of last resort to prevent big firms or banks from defaulting with contagious effects in the interdepending financial system. This big bank will provide the required high-powered money in the unstable economy.

Some theoretical literature of Minsky's big government proposal stems from Papadimitriou and Wray (1997), De Santana Vasconcelos (2014) and Tcherneva (2011)[63]. All of them stress the significance of big government for full employment and output. Minsky in his well-known book (1982) "Can It Happen Again" clearly implied that without the intervention of government and central banks, "it" will happen again. Whenever, the financial instability is at peak and recession in the way then these thwarting institutions could act as economic agents, large enough to confine the catastrophic implications and to stimulate the recovery. Minsky supported the design and the implementation of strategies and institutions that promote "a good financial society in which the tendency by businesses and bankers to engage in speculative finance is constrained (Minsky, 1982)". Wray notes that "government must play a bigger role, which in turn requires a new economic paradigm that recognizes the possibility of simultaneously achieving social justice, full employment, and price and currency stability through appropriate policy (Wray 2012)".

A big government[64] can provide solutions to the major diachronically economic issues such as the misallocation of resources and the problem of Keynesian effective demand, whenever insufficient resources are employed. The equation for aggregate demand, following Kalecki's profits equation, can be depicted as:

$$C + I + G + (X - M) = W + \Pi + T \quad (i)$$

and if we rearrange the equation for profits, it turns out:

$$\Pi = I + (C - W) + (G - T) + (X - M) \quad (ii)$$

Equation (ii) represents the significance of government sector. By assuming that consumption and the external sector are ceteris paribus, then only government deficit remains a countercyclical policy, when investment decreases, to prevent profits from declining. In that manner, government could keep the economy away from recession and debt deflation, leading it eventually to full employment level. By contrast, in the absence of big government a reduction in investment would induce a downward move of the economy leading to a reduced aggregate demand. Minsky stressed the importance of government transfer payments and interest payments over direct government employment[65] and production.

The government could play the stabilizing role by applying counter financial cyclical fiscal policies. To this end, governments could reduce expenditure and increase taxes during the euphoric phase and vice versa. Minsky suggests that the government size should be at the equivalent size or larger of that of private investment in order to offset profits in times of recession. His proposal in numbers made for US economy was about a government spending from 16% to 20% of the GDP. Notwithstanding, government expenditure creates inflation which generally favors borrowers to validate their loans more easily but as Minsky

[63] All of them concentrate their analysis in relation to US economy.

[64] The big government model was applied in the US, and hence in many developed countries, in 1933 and lasted till the 1970s. In the first third of the 20th century, small government model existed where the state had secondary and auxiliary role in the economy. From the 1970s and onwards we observe a compression of big government in the economy but not to the extent as it was during the first third.

[65] See the Minsky's proposal of the employer of last resort (ERL) program in chapter 5.7.

suggested “the floating off debt through inflation is a game that can be played only a number of times (1982, p. 112)”.

The state can play a dual role of regulation and supervision. It could intervene in the market to affect the allocation of resources, and to increase the aggregate demand to ensure that all resources are employed. Financial instability and increased indebtedness cannot be coped with austerity and fiscal contraction policies. That would create profits’ shortages required though to pay off the debts. The government can raise its deficit during contraction but that also implies the relative pursuit of surpluses during the expansion period in order to balance the budget. However, current account balances should not be deteriorated because they have an adverse effect to credit as shown from the results of our model in the previous chapter. In addition, government borrowing is not always the optimal solution since it will restrain fiscal policy due to high indebtedness, Also, there is the risk of inflation increases and interest rates might increase the crowding out private investment and rendering recovery more difficult.

Besides the intervention to prevent the economy from deflating process, governments should also be present during the expansion periods by taming the overoptimistic expectations. In that case, the authorities could slightly modify the interest rate[66] so to moderate investment, the level of outstanding debt, and eventually the expansion. Otherwise, it would be difficult for government to boost the economy in contraction period without putting forward this dual role. It is evident that huge and accumulated government deficits turn fiscal policy ineffective. Thus, the government is countercyclical stabilizer, moving reversely from current expectations and financial environment. Government’s intervention must aim at promoting common welfare. In an unstable economic environment, the government must act as a stabilizer.

9.8 Regulation in banking

The central bank holds a key role in promoting stabilization in the financial environment. Apart from their traditional role of the lender of last resort, Minsky also saw the need for action against speculative and Ponzi finance. Regulation means legal act and surveillance that need to be addressed to each financial product. First, it must prohibit the function of the shadow banking system. Hence, regulation could be introduced in new forms such as the conditions required for commercial banks to receive last resort loans or bailout programs, the minimum reserves requirements that the central banks impose to commercial banks.

There is a popular view favoring self-regulation policies by banks. The contention is that bankers know better their fields than state officials and thus are more capable to promote the efficient policies. The outcome of financial crises and instability has not empirically validated that contention. The gist of regulation is to safeguard the banking

[66] If the interest rate is already at high levels that would not be effective since an additional increase in the interest rates could provoke a crisis.

system from contagion effects, in case of a bank failure, to prevent a crisis from emerging and it seems that self-regulation is not sufficient to cover that magnitude.

Banking regulation should aim at the simultaneous implementation of three objectives. Firstly, the relief of toxic assets holdings by banks, the avoidance of the capital burden being transferred to taxpayers, and also the moral hazard issues. Governments and banks could determine the liquidity levels available in the financial market. At the international level, to set a limit of capital transfers and perhaps time limits where a financial investment should remain in a foreign country. For large banks, capital adequacy requirements must be even greater, competition in the banking sector should be encouraged, and also banking monitoring and resolution system in order to prevent contagion and spillover effects.

Esposito and Mastromatteo (2016) propose a ceiling of total assets of more than 250 billion in special drawing rights (SDR) that banks should have, with a range to be allowed to grow of 5 billion in SDR a year. The ceiling refers at group banks level and in absolute values. Banks that exceed this ceiling should be given two years to comply. A policy in that direction is prudent since it eliminates automatically the big banks and consists of a simple and transparent reform. The authors state that this "global cap would be like a big asteroid hitting the planet, wreaking havoc on the banks presently ruling the world economy, but a positive shock for the rest of us (Mastromatteo and Esposito, 2016)". The decline of big banks' market share will also result in a reduction of the financial sector.

Additionally, a clarification between commercial and investment banks is needed as well as their roles, and the operations permitted to undertake. Regulation is frequently called the response to financial innovations launched by financial institutions. Thus, it should be accordingly and incessantly updated. It is equally important though not to be modified to a large extent in order to avoid confusion among agents and to discourage financial investments. Therefore, these measures have the scope of diminishing the likelihood of banking crises and stabilizing the financial system.

9.9 Lender of last resort at international level

At national level, the central bank holds the following responsibilities. It sets the discount and interest rates, it functions as the lender of last resort, it imposes regulations and restrictions to commercial banks through margin and reserve requirements. The aim is the stabilization of the financial system by containing the fall of asset prices. Central banks provide liquidity to units to prevent them from selling their positions. Losses are not spread out and as a result, financial crisis is limited, deflation process and fall of aggregate demand are restrained. Lenders of last resort are indeed an automatic stabilizer but there is a negative message that induces units to adopt a relative behavior which loosens their appropriate perceptive of risk and margin of safety.

The lender of last resort in the domestic context has counterparts at the international level. By contrast, the international lender of last resort has no domestic counterpart by the sense that changes in exchange rates are unavoidable in the presence of distinct national currencies and central banks. Both internal and international lenders of last resort are supposed to stabilize the internal and relatively the international financial system. In an open economy, governments might borrow the necessary funds from abroad. Additionally, domestic firms and banks might also seek loans from abroad. If profits are not acquired or perceptions of risk change, then refinancing becomes more difficult. The financial system swings again and generates fragility.

Thus, international credit in an open economy is widely spread. The implications of this credit bring up the issue of the international lender of last resort in emergency cases of liquidity shortage or a massive withdrawal of funds from a country. Assets might be sold or hypothecated to ensure liquidity. However, if asset prices fall dramatically, then financial crisis is close. In this case, contagion and spread effects are evident due to highly financial interdependence. The episode of international crisis is likely and hence the international financial stability is in jeopardy. At this point, there is the need for an international lender of last resort to prevent the emergence of a crisis and to guarantee by means of its action the stability of international financial system. The latter must be the purpose of the international lender of last resort. Its absence could stipulate a recession following from a crisis and that could not be an option, considering the severe consequences an international crisis imposes to countries, to the individuals and firms. The non-intervened recession could last longer provoking more serious repercussions to real economy[67]. The great depression in the early 1930s is the best empirical example and made clear the need for an international lender of last resort.

The international lender of last resort could identify the excessive and rapid rise in external indebtedness of a country which augments the likelihood of a financial event that will lead to a devaluation of domestic currency. When changes in capital flows are accompanied with overshooting[68] and undershooting, then there is a strong impact in domestic real economy. The role of the international lender of last resort is to intervene to restrain the currency sharp devaluation during the bust phase. For instance, when a country is in need to devaluate its currency value to improve its external competitiveness, immediately transmits to domestic real economy serious consequences. The fiscal position of government deteriorates, deposits and savings are losing much of their value, and GDP will also decline[69]. The international lender will give the opportunity to a country to stall the necessary devaluation of its currency and if the country succeeds, then to call it off

[67] Such examples can be found in recessions of 1873 and 1890 and certainly at the outset of Great depression in early 1930s.

[68] Historically speaking currency overshooting usually precedes undershooting of the same currency and then there is a sharp devaluation of the currency. The latter phase is most crucial since that boosts firms and banks defaults.

[69] Empirical evidence of such experience provides the Mexican peso devaluation in 1994, the Argentinean in 2001, the South Korean and the Indonesia in East Asia crisis in 1997.

completely. It could provide the required funds to ease the undershooting[70] and certainly to refrain the spreading of the contagion effect at international level.

Some issues concerning the function of the international lender of last resort are related to time, legal basis and set of rules. The time of intervention is an important aspect. Intervention should protect the solvent firms and prohibit the spread of the crisis. A prudent policy is to let insolvency institutions to fail and exit from the market. Notwithstanding, the role of the international lender must be more preventive by suggesting and early warning the countries about the volume of sustainable international capital flows they could assume. Aspects such as the establishment, the role, the scope, lending conditions, intervention, methods of intervention, timing of intervention, should all be consolidated by a set of rules in a framework that would navigate the organization towards international stability, fairness, and prosperity. Another characteristic is the absence of an international currency in our era that raises the question at which currency the funds must be provided. In this case and empirically only speaking, it could lend to a currency most globally prevailed and perhaps with large holdings of international reserve assets.

For the world economy, the identification of the lender of last resort is not clearly detected. Certainly, there are international credit organizations that provide financial loans to countries with distortions. The IMF was established in 1946 in order to provide loans to countries with financial difficulties, or when their exchange currency has a downwardly movement and there are mass capital outflows. When a country joins the fund, it concedes to confine the scope of fluctuation in the foreign exchange value of its currency in the market with permission from the fund to fluctuate beyond. The IMF has served financially many countries but the price they paid was equally large. Countries that accepted fund's assistance were obliged to impose austerity measures in their domestic economy. These measures led to reduced aggregate demand, output, and employment. Despite the fact that default was avoided or postponed, the consequences were higher for the domestic real economy. It is a matter of debate whether the funds' loans are truly aiming to assist a country's economy or simply to serve external creditors with the repayment of their loans. The fund tends to isolate and internalize the financial distortion issue, which is linked with foreign partners, by offering the opportunity to all investors and lenders in troubled country to "escape" and punishing the domestic economy and its residents with recession. The question is whether a country's interest lies with the fund. Indeed, the common policy is to impose tighten fiscal adjustment programs to countries who suffer from crises as an exchange to required lending. These programs though are usually deflationary and reduce aggregate demand making even more difficult for economies to recover. Countries, which have adopted IMF's prescriptions, have not mostly succeeded. Many of those nations have experienced profound economic crises, low growth, larger foreign debts, stagnation and perpetual poverty. In contrast, some countries that have refused IMF's assistance and programs were better performed and recovered faster.

[70] By the term undershooting, we mean the real devaluation of a currency. On the contrary, the term overshooting implies the appreciation of the value of currency in foreign exchange market that emanates from differences between the domestic inflation rates with those of the country's major partners in international trade.

In this way, the influence in world stability is not sufficiently and efficiently covered. Therefore, the fund in no way can be attributed as an international lender of last resort in real terms, conducing to international financial stability. International lender of last resort is significant to the stability of world financial system. The insufficient and inefficient action of the fund leaves that gap unfilled. The fund is not a central bank, and it cannot issue money. Thus, international financial system is not fully or even adequately protected. The absence of an international lender of last resort renders the international financial system vulnerable and susceptible to crisis.

9.10 International banking cooperation

Nevertheless, the global financial system is in need for a solid and powerful banking cooperation and coordination. An established world central bank, functioning like the ECB or the Federal Reserve, would be more appropriate. Thus, the role of international banking cooperation cannot be solely assumed by one organization or one country but rather it is an issue of collective action. That role for international economy is not simple to propose since central banks of dominant countries could act in a cooperative way, sharing thus equally their responsibilities. National central banks operate as domestic lenders of last resort. At the international level, that operation is not clear and sufficient by any worldwide organization. An interesting deductive solution could be the international cooperation of national central banks. If no single organization could bear the responsibility of a unique international lender of last resort, then an association of national central banks could take control. In case of liquidity shortage in a country, its central bank might borrow from other foreign central banks. Additionally, all of them may agree the terms and conditions of assistance, based on mutual interests and they could raise funds for common reserve and in an agreed currency. There will be equal access for countries in need and the granted loans will be accompanied with the engagement of adoption of developing measures and full repayment to the reserve. The moral hazard issue is important too, so any country that fails to return the funds, it could be subject to be discarded from the common union or no other central bank will lend them in the future. In any case, though, the aspect of the proper function of an international lender of last resort is connected to the acceptance by dominant economically country or group of countries, of the responsibility of the international financial stability.

9.11 Policies for preventing international instability

In the new international era, we are experiencing a scheme of financial globalization and free capital mobility, making this international dynamic dominant in the global economy. Certainly, higher capital flows constitute a stimulus to national economies but on the other hand, and up to a certain degree, national governments have been deprived of sovereign in terms of fiscal and monetary policies. Thus, it is not convenient for national government to adopt affective demand policies in order to increase output and employment.

Additionally, the liberalized financial globalization is prone to fragility and instability putting at risk the entire global economy. Interdependence among governments, firms and banks is more apparent than ever and could be defined in many ways. We are interested in those financial relations particularly in terms of borrowing in foreign currency. There is an upward trend of external borrowing since the 1990s and therefore new implications as far as crises are concern have been emerged. In cases of financial difficulties, whenever the source of credit is national, the internal monetary and governmental authorities' action would be adequate to provide liquidity and refinancing. In contrary, if the debt is international, which is currently the most frequent case, thereby international external refinancing assistance is required.

Developing and new emerging economies require the policies for crisis prevention with "(i) exchange rate systems that provide flexibility to the authorities and prevent speculation; (ii) capital account management techniques; (iii) policies that secure robust external accounts, including the accumulation of foreign exchange reserves and the preservation of competitive (or non-appreciated) real exchange rates (Frenkel & Rapetti 2009)". The adoption of multilateral agreement in their exchange rates levels would be equally beneficial. Certainly, competitive exchange rates could lead to profits for specific countries but overall, internationally stability is not assured. For developing countries, perhaps some financial regulation is preferable to full financial liberalization.

There are many questions arising from units that are internationally active. Patient finance became impatient. Changes in the financial system emanate from legislation or evolution. There should be an international legal framework for their operations where all countries need to adopt, closer cooperation and coordination, prudential examination of speculative practices. A crucial question is who guarantees the liquidity and solvency at international level and who deals with funds shortage.

Certainly, there are agreements and common initiatives but not adequate, considering the vast amounts of funds that are mobilized in a cross-border level daily. Enhanced international cooperation is needed to assist countries to internalize financial distortions and to avoid spillover effects. Arestis and Glickman (1999) support that capital controls induction might be the available tool for stability. Krugman (1998) also favors capital controls measure.

The international organizations supposed to monitor the system are poorly performing. The main issue is that international organizations act *ex ante* and not *a priori* while they should focus on crises prevention and not only on restoration. As soon as credit levels of households, firms, governments significantly increase, or the ratios of debt/income-revenues rise then action must be taken in advance. This increase should be reflected on balance sheets, capital, and current accounts.

Furthermore, the launched bailout programs for resolving the crises, mainly in US economy, were truly costly for taxpayers. Even though banks and investors were protected by authorities' intervention the message for this remedy does not benefit the financial sector. In contrast, it encourages investors to bid high in the market, obtaining profits or socializing the losses likely to follow. It raises a moral hazard issue. "The gains risk being

privatized and the losses socialized. Evidence suggests this is a repeated historical pattern (Haldane, 2009)".

9.11.1 Proposal reforms

Following Minsky insights, we could draw some suggestions of potential counter acting policies to promote international financial stability. He was in favor of a more secure and prosperous international finance system, containing stable exchange rates and an international lender of last resort (Minsky & Whalen, 1996, p. 16).

A suggestion to tame international instability stems from reducing capital flows. More precisely, the capital flows of financial portfolio movements and more precisely those not related to trade and foreign direct investment. Speculative capital mobility driven by profit seeking and taking advantage of interest rate differentials and possible exchange rate movements must be confined since they are main responsible for engendering instability.

The introduction of the Tobin-tax, a tax to foreign exchange transactions[71], is an additional instrument with numerous advantages. It could contribute to the accomplishment of the previous suggestion and discourage foreign exchange financial flows. Moreover, governments would be benefited from extra tax revenues necessary to balance their fiscal account as suggested by our modeling results. However, serious objections have been raised against the introduction of Tobin tax mainly from political sides and other powerful pressure groups. It is a paradox that even though the Tobin tax has been deemed as a rational tax in terms of justice, equality, and international financial stability, nevertheless, other indirect taxes, such as VAT or consumption taxes, levied to all agents without any distinction have gained more ground in current era.

International regulation and the lender of last resort in global are two issues earlier discussed. It would be more efficient that the regulation should be designed at international level and not to be discretionary left to national governments, bearing in mind the highly integration of financial markets. Otherwise, the aspects of free rider and moral hazard would be raised, providing again a way out for arbitrage and make on carry tactics. There is again the moral hazard issue of irresponsibility by some countries to undertake greater risks, knowing in advance that potential losses would be socialized or bailed out.

9.11.2 Prevention policies

The prevention of international crisis requires a new set of global norms. Until now the government deficits were the restrained measures from preventing a financial crisis from turning to depression or recession. Therefore, financial stability presumes numerous features that will not be easily obtained in the current period. Such features have been already mentioned like the interest rate controls, capital controls[72], high ratios of reserves, macro prudential policies and lender of last resort facilities, more regulation on financial innovation. Banks' capital requirements of assets and liabilities often resulted to turn to the 'off-balance sheet' operations[73], which consist of interest rate and currency swaps, repos

[71] The tax can be reckoned to 0.1 or 0.2 percent to the amount of financial transaction.

[72] By capital controls by no way we mean the contraction of capital flows but rather an introduction of a ceiling point when one country experiences large capital outflows.

[73] The off-balance sheet operation includes fees or commissions for the banks, without showing the relative asset or liability in the banks' balance sheet.

and other derivative products. These products could take a value as an option to incorporate it in balance sheets to reckon the required capital requirement. Deposit insurance must always be a perquisite of the financial system. Minsky (1986) suggested the importance of credit controls in the banking system and the necessity to abridge the market size of huge corporations. Regulation and supervision in banking system is also needed to restrain lending in expansion periods that may lead to financial crisis. The compartmentalization of financial institutions by function, for instance, a distinction of investment from commercial banking[74] is required in order to increase transparency and also to publicly indicate what banks or markets can finance.

Simons suggested that money control needs limitations upon "large scale financing at short terms (Simons, 1936)". He proposed the removal of the link between financing via banks to the process of investment and production and to set constraints to money creation. In addition, to break the connection between debts and future profits. The viability of the current financial system depends upon future profits, which are essential to fulfill past payment commitments. In that way, profit opportunities are being increased at a faster pace and in international range. The exploitation of differences in international rates consists of another way to accumulate short profits. Thus, production and investment financing has shifted away from traditional supply sources to short term financing, rendering the whole system vulnerable. The break of that connection a priori is needed to enhance stability and to restrain contagion. Minsky (1993) also called for the encouragement of local community development banks, but it is not easy for them to compete with the big sized profit driven banks, whereas no significant measure is taken to reduce their size.

9.11.3 Too big to fail

The argument "too big to fail" is well-known and in a way allows big financial corporates to take advantage of their dominant position. The regulatory constraints should distinguish between large or globally systemically important institutions[75] (GSIIs) and small banks. In the strive to avoid future "too big to fail" demands, big banks must be subject to closer surveillance and higher standards in terms of capital, international expansion, profitability, innovations, and tax policy. By contrast, smaller institutions could be favored over big banks and encouraged to stay in the financial market keeping their share. The core problem with internationally big banks is that are getting bigger and bigger and the concentration of capital, is also entailing to power concentration. The outcome is that governments are founding themselves in the big banks' sphere of influence and that renders more difficult to impose them unfavorable regulatory measures. Nowadays, it is hard to find worldwide a government with the political courage to stand against big banks. Johnson refers that "oversize institutions disproportionately influence public policy; the major banks we have today draw much of their power from being too big to fail (Johnson 2009)". Their growth size must be limited and even broke to smaller banks[76]. This view was proposed by many distinguishing scholars such as Johnson (2009), Stiglitz (2010), Moosa (2010), and former bankers, such as Haldane (2009), King (1993) and Esposito and Mastromatteo (2016).

[74] Minsky (1994) names that separation as compartmentalization and is actually what the Glass-Steagall Act states.

[75] In global level, the banks currently considered as systemically important by international regulators number less than 30.

[76] The GDP-based size cap example is an interesting tool but internationally banks originated from advanced countries would have an advantage against other banks from developing countries.

Nevertheless, the problem might emanate exactly from that argument; there is too much capital concentration to very few financial institutions and brave political initiative is needed to monitor their actions. Let us not forget though that during the Great Depression, President Franklin D. Roosevelt had closed the insolvent banks and aided only the solvent ones, indicating that imprudent behavior would not be tolerated. He also initiated an immediate departure from the previous rigid liberal economic practices towards an active implementation of various state regulation tools. Minsky would presumably support a similar banking restructuring. Additional reputed economists such as Krugman (2009) and Galbraith J.K (2009) have already submitted analogous propositions. Galbraith (2009) refers that central banks and governments must request clean banking balance sheets and to begin dealing with big banks and not the small ones. Wray suggests that the "too big to fail institutions should be resolved— if a bank is so big that its failure would threaten the financial system, then it is "systemically dangerous" and too big to save (Wray 2011)". Perhaps the economy would recover more properly and quickly if the authorities had chosen the latter version. In our current era, it might be difficult to change the international financial status but at least an identification of bad and unstable policies promoting by specific units is essential in order to isolate them.

9.11.4 Reducing the size of the financial sector

The causes of the global financial crisis could be traced due to highly connectivity of international financial systems. Innovative financial products are globally spread producing rapid hyper profits but in case of distortions then contagion infects most interdependent countries. In world economy, we stress the significance of the reduction of the size, the instability, and the political influence of the global financial sector. Aiming at the stability of the financial system, we consider a perquisite of fiscal state or industry surplus. When state and corporates are in deficit, in times of credit expansion, this implies that surplus will rest at financial capital hands. Therefore, there is a need to enhance government capacity for countercyclical fiscal policy to sustain aggregate demand and to increase the state share in infrastructure, industry, and investment.

The financial system is too complex and needs to be simplified in order to be less susceptible to instability. Securitization as well as other short term and derivative financial instruments need to be confined. New standards of capital adequacy and sufficient liquidity levels on balance sheets could be imposed. Fragility has increased since global economy has been financialised and more and more agents are engaged in risky activities. If indebtedness is written in balance sheets, then the latter could be among the determinants of financial instability rising early warns. Governments could also reduce international competition among financial institutions by means of interest-rate regulations, geographical barriers for new market entries. The optimal denouement to avoid crisis is prevention but that postulates watchfulness and prudency. Additionally, But prevention postulates profound reforms particularly in institutional operations.

9.11.5 Global income equality, employment and production

An interesting solution to moderate financial instability is by adopting measure to decrease inequality. In any case, income, employment, and production are the ones that supposed to be highly protected and not the finance. If incomes and corporates are assured, then debts will be validated. Minsky favors a labor-intensive reform. He suggested that "an economy that is oriented towards the production of consumption goods by techniques that are less capital intensive…….will be less susceptible to financial instability and inflation" (1985, p.53). Equality might be achieved through more progressive taxation and more regulation in labor market. More emphasis could be given in wage increases at the expense of profits to enhance consumption and constrain consumer debt. It is a useful tool that serves as a prevention measure too.

Certainly, increased consumption through wage increase entails in investment reduction and maybe in net exports. Therefore, countries who are net exporters would definitively prefer to stick to profit maximization policies, instead of wage rises, as the major boost of their economy. Nevertheless, since we are interested in global scale, the wonder is how many countries are truly net exporters? Secondly, the wage led growth could not result in a globally reduced inequality, which will eventually benefit all countries through stability and increased consumption? In order to stabilize international financial system, we need to reconstruct a new Bretton Woods era to peg the main currencies (dollar, euro, yuan, yen etc.). Whenever trade surpluses appear then domestic monetary and fiscal policies must move to counterbalance (increase public spending etc.). Although a positive balance is traditionally regarded as favorable, for global prosperity is unfavorable when it is achieved by a country with fiscal independence[77]. Hence, fiscal independence is important factor within the international financial system since it provides an understanding of the allocation of roles among countries. As a result, the realization of mutual responsibilities among creditors and debtors is a prerequisite to the stability of the international financial system. At international level, the "new Mercantilism" that has allowed some countries to achieve large trade surpluses at the expense of others must be avoid. In other words, it is not fair for countries to have both fiscal independence and surplus in their trade balance.

9.11.6 Managing rationality and information policy

The aim and scope are to manage the market rationality. Are people able to find and set rules which would minimize such behavior that leads to fragility? It is a question of an institutional change which would induce the profit-seeking behavior of market agents into the performance that is less fragile and at the same time rational. In additional, could all agents have equal information? Does asymmetric information exist in the financial system?

Financial economists should have warned the public about the forthcoming implications. Additionally, they should have informed agents about all contingent risks. They had avoided doing so and that raises an ethical issue. Economists must be subject to an ethical code towards all parties and not simply attempt to deceive or to spread half-truth. The same ethical issue applies for economic researchers to render public the limitations of

[77] By fiscal independence, we mean countries with a real strong economy in combination with a world dominant currency.

their models and assumptions. Moreover, agents must be repeatedly informed by authorities about the volatility of the system or for actual financial status in order to take their precautions. In the current era, this role has been outsourcing to rating agencies that mark the financial product issued by corporates, institutions, or governments. However, rating agencies have not been able to provide consolidate and accurate information to the public, whereas on many occasions the granted rates were not even consistent to real terms. Every agent has its own perceptions and views about financial trends, but an official 'governmental opinion' adds credibility. The latter is extremely important because agents usually undergo the consequences of an emerged crisis, taking them by surprise without any chance to prepare themselves.

Notwithstanding, what we endeavor to introduce is a systematic official information platform, providing with the necessary estimations and actual features of the international system. The time of the information is an issue but the earliest possible is always better. It is really difficult to forecast the proper time to make the announcement, but it might be better to stay on an early information policy. Firms, households, banks, official institutions could easily consult the information given by the platform and then act accordingly. The dissemination of broad public information will protect asset's holders from the risk they undertake when they trust their investments to corporates and portfolio managers. Nevertheless, it would mostly enhance the transparency of the financial system, which seems to be a dire cause for its instability.

Moreover, when the balance sheets of banks/firms indicate reduced liquidity or higher debt-equity ratios then that is translated as a gradual move to fragility. When financial fragility emerges due to speculation attack or overconfidence, then immediate action must be taken to fix any forthcoming distortions. Consequently, there must be new forms and set of rules of the function of the international monetary system to limit its instability implications and at the same to promote full employment and growth.

9.11.7 Re-examination of economic theory

In terms of economic theory, there is the need to unify macroeconomics and finance into a single theory affecting each other, even though traditional theory does not fully integrate the financial sector. This cohesion would enable to comprehend both the notion of macroeconomics and the behavior of the financial sector, which in traditional macroeconomic theory gives emphasis on demand for money equation and not on liquidity and credit availability. There is also the need to develop policies based on more realistic aspects of the economy and not on some restrictive assumptions[78]. Rational expectations and DSGE models have currently not much relevancy and thus the theory could be further developed in issues of financial inter-linkages, imperfect information, and the presence of macroeconomic contagion effects. The international financial system has become too complex to be solely explained in an aggregate manner deduced from an individual scope as representative agent models imply. Kirman et al. suggest that "the inability of the standard macro and finance to provide any insight into any ongoing events make a strong case for a

[78] For instance, Arrow (1951) and Debreu (1954) in their analysis assumed restrictive conditions, such as perfect information, and perfect capital markets. Thus, many neoclassical assumptions as we have seen from previous chapters are questionable.

major reorientation in these areas and a reconsideration of their basic assumptions (Kirman et al. 2009)".

In any way, it is evident that global financial instability and crisis have influenced the foundations of macroeconomic theory. The concept of Keynesian 'veil of money' between real asset and wealth owner should be taken into account in the economic theory, since it provides with significant insights for current financial instability. Ghani notes for subprime crisis that "markets need institutions and an international institutional design that accords with the developed financial markets is the need of hour and current crisis also teaches us important lessons that markets are unable to manage themselves when the question is of preserving the macroeconomic and financial stability (Ghani 2007)". Minsky states that "instability is due to the way capital asset holding are accumulated and financed and apart from banking money, the liability structures available to units that own the massive capital assets must be constrained (1980, p.520)". Thus, the sole beneficial aspect of recent global financial crisis was the reveal that the prevailed mainstream economic status of the last forty years has been highly questioned.

9.12 Proposal for a new international monetary system

The international monetary system has been a matter of serious concern among economists. We shall focus though on main proposals, but we should start from Keynes' interesting international monetary proposals. All of them target in international stability and the avoidance of financial and liquidity distortions that may arise not only at international level but also domestically.

Keynes was mostly interested in developing ideas for a stable international system. In 1923, he suggested in "A Tract on Monetary Reform" the abandonment of the gold standard. Some years later, in 1930, with "A Treatise on Money", he proposed the introduction of a Supranational Central Bank with the main target to ensure international price stability. Hence, in 1933 by "The Means to Prosperity", he outlined an international fixed exchange rate agreement that could alternatively be changeable to floating.

However, his most well-known proposal is chronologically set in 1944 through his opinion for an International Clearing Union (ICU). The notion of the ICU was to moderate world trade tendencies from expansion to contraction and vice versa, where countries should reach to a common agreement, subject to changes according to trade circumstances of each period. He stated the need for a stable and worldwide international currency, with no large fluctuations, with relative exchange values with the national currencies. The international currency should balance any inflationary or deflationary pressures that might emerge which will jeopardize effective demand, providing thus more stability to the international system. He also stressed the importance to reduce agents' uncertainty by moderating capital mobility and through a fixed, but also subject to floating, exchange rate agreement between trade countries.

An ambitious similar proposal stems from Davidson (1992), who strongly supports the proposition of Keynes's plan for an International Clearing Union. He also believes that

the international monetary system requires exchange rate stability to protect national reserves and prevent investors from speculating. There must be an assurance of liquidity levels through a new international currency and an introduction of currency clauses. He proposed that international liquidity will be assured through a reserve asset that he called an International Money Clearing Unit (IMCU), where only central banks and governments would be allowed to retain that currency. The IMCU will be fixed to national currencies to ensure exchange rate stability, also given the option for flexibility to countries with balance of payments distortions.

Finally, he proposed a "trigger mechanism" to reduce trade and income inequalities at global level. For instance, countries with balance of payments surpluses must provide with assistance to countries with deficits through investments, foreign aid and importing goods from deficit countries[79]. This mechanism will restore equality and take away debt pressure from deficit countries and restrain the creation of balance of payments disequilibria. Besides the adoption of fixed exchange rates, the plan would also remove international capital movements of the private sector, resulting in a vast decrease in the overall size of global finance. It is evident that global finance is huge, and the above proposal fits in the needs of the current period. Nevertheless, other post-Keynesian economists[80] do not agree with this view due to their concerns of the loss of national sovereignty that, inevitably, a fixed exchange rate regime will ensue.

Arestis's view (1999) is like Keynes and Davidson basis, concerning the European scope. What needs to be done is the encouragement of hedge financing at international level. We could not also ignore the proposal made by Kaldor (1956) to create an international fund to ensure the stabilization of prices in primary goods whenever that is necessary. The scope is to ensure the provision of basic needs to underdeveloped countries and therefore to remove a major cause of cost inflation. In terms of finance, the challenging measure as mentioned above remains the introduction of the Tobin-tax, a turnover tax on international financial transactions, which on one hand will create revenues from transactions and on the other hand will constrain speculation.

Trimbitas (2013) deems that capital mobility must be free alongside with monetary independence and thus attention should focus on a new exchange rate regime. He supports an extended role of S.D.R., as a currency in circulation. The same proposal stems from Frenkel and Rapetti (2009) suggesting that the international crisis could be resolved by expansionary fiscal packages financed by the issuing of SDRs. Dickens (2011) points out that the monetary authority should have an impact to interest rates to promote employment. An international monetary standard could serve as an anchor and at the same time, national currencies could remain in circulation. Financial stability cannot be assured without putting together monetary, fiscal, and prudential policies.

In international context, there is an urgent need to come across with an updated, following the framework proposed by the Optimal Currency Areas (OCA) literature, system of currency stability. Countries with fiscal problems should not join a monetary union so as

[79] Exactly what Britain did during the gold standard regime period as the dominant world economy.

[80] Randall Wray and Warren Mosler.

not to lose monetary independence. Only the government possesses the means to settle interest-bearing debt denominated in the domestic currency, since it can float public debt at the lowest interest rates in the domestic capital market (McKinnon, 1997).

A proposal for a new monetary system should firstly consider that trilemma issue. Thus, an independent monetary policy with fixed exchange rate, and free capital movement simply cannot coincide. Regarding again the EMU, we notice that in Eurozone there is a fixed exchange regime, free capital mobility but no monetary independence. In addition, in Bretton-Woods system there was a fixed exchange rate regime, an independent monetary policy, but the capital mobility was restrained. International monetary reform needs to deal with issues such as money managed capitalism, trade surplus and deficits of countries and the overall redistribution of fiscal independence. It concerns the adoption of same successful rules applied in gold standard era with symmetry adjustments in trade surplus and deficits. Also, the issue of debt could be denominated in debtor's currency so as the risk of the exchange rate to be transferred to the lender side. The reconstruction of a new international monetary system should acknowledge the nature of international financial linkages among countries in the current era of money manager capitalism. The international monetary reform requires new legal and ethical codes compatible with equality, fairness, stability, and economic growth.

To summarize, most Post Keynesians argue for full employment policies in global scale. At the global level, it is essential to reassure stability, preventing the system from imbalances and distortions, reducing the possibility of a financial crisis. The aspect of exchanges rates[81] and international capital mobility are at great importance. We also consider that at global level, a new international monetary system cannot confine the monetary independence since the needs of each country could vary, and the instrument of monetary policy is essential to deal with crisis, trade balances, competitiveness, and development. We deduct to the conclusion that the exchange rate regime is vital for an international monetary system. A super national currency or a basket currency to accumulate international reserves could serve towards stability. Capital flows are also necessary to be free in order to induce world development, but nevertheless, capital movements need improvements in terms of monitoring and surveillance. The advantages of capital mobility are well known but when huge amounts of capital flow from one country to another, that also raises questions about the purpose of those actions since there is great concern of suspicious, speculative or carry trade motives. Indeed, financial distortions and crises could emerge from those actions.

[81] Certainly, in accordance with flexibility ratios.

9.13 Concluding Remarks

At international level, there are only international financial regimes that establish fixed exchange rates such as the Bretton Woods or the EU (regional level) that could be deemed as thwarting institutions. The literature for big bank and big government at international level is more limited. More precisely, the role of international financial stability in the actual period is on international organizations as main resorts for emergency finance.

Generally, most studies focus on monetary policy, interest rates and financial deregulation. Before the emergence of subprime 2008 crisis, monetary policy was regarded at great importance in order to control inflation. Fiscal policy or even better the scheme between fiscal and monetary policy, should be considered to conjecture an inclusive view of instability. Effective monetary policy is essential to control money supply and thus inflation. Fiscal policy should be auxiliary to monetary policy in controlling inflation. A fiscal policy action is needed to boost aggregate demand. If we wish to set the target of financial stability, monetary policy encompasses limitations for promoting it.

The Bank of International Settlements in cooperation with a group of central banks have developed an initiative for a framework of international supervisory. In 1975, the Committee on Banking Regulations and supervisory practices was established and issued the Concordat agreement that set recommendations in data quality and quantity improvement in international banking. In addition, efforts were made to enhance convergence of banking regulations between countries. An important element of that agreement was that a foreign banking establishment must comply both at regulatory rules of home and host country. Another agreement was the introduction of risk-based capital standards. Capital to asset ratios must always be under surveillance because of the off-balance sheet activities[82]. Countries need to assure the adequacy of domestic bank capital.

The new policies must be designed by taking into account all new variables emanating from global economy and challenges. Looking at the literature for counteracting policies of the sufficient credit levels, we notice that most of them presume countries as being operating in a closed economy. Recent development should also be considered in the new analysis of public and international economics. These include interdependence levels, contagion effects, fluctuations in international finance, global growth, depletion of resources. In addition, others that are not directly related to economy, such as global climate change, nuclear proliferation, global poverty, social cohesion, and inequality, which are significant to be incorporated in an integrated global public economic analysis.

[82] By off-balance activities, we mainly refer to interest rate swaps, credit, derivatives and other financial products.

Chapter X

10 Final Conclusions

In this research, we wished to develop a commonsense approach to realize the processes of economy and finance. It is a rather complex combination between observed facts with a theory that would be derived by deductive methods. However, the gist is that theory has to be accorded with the facts. The above argument constitutes a fundamental axiom to begin any endeavor to reach to certain useful conclusions. As Myrdal pointed out, when the observations of facts do not agree with a theory, i.e. when they do not make sense in the frame of the theory utilized in carrying out the research, the theory has to be discarded and replaced by another (Myrdal, 1957, p. 160).

10.1 Conclusion in economic theory

Apart from the financial fragility, Minsky's insights have also provided us with global direction lines about economic and social policy. Economics should be in accordance with social policy and more adherent to the real world. It is therefore essential to connect finance and the real economy comprising, growth, employment, income and wealth distribution. The terms rational, irrational, uncertainty are not much cleared in the mainstream economic thought. Irrationality is the adoption of a theory unable to explain economic phenomena and furthermore to adopt relative policies. Rational men are making decisions in an irrational world.

Traditional macroeconomic theory has ignored asymmetric information and capital market imperfections, which have turned to be the core features of financial crisis. Besides the inability to predict the financial crisis, financial instability was also encouraged by the emergence of financial products, such as derivatives and swaps. In addition, the insistence on irrelevant theoretical assumptions that economy theory was underpinned by. Traditional theory is based on models of steady states where turbulences only occur exogenously and for short term, neglecting the cyclical movements and the booms-busts of the economy. When a crisis and instability appear, then the backed up economic theory and policy implicitly unfold their insufficiency. Nevertheless, the financial crisis has also provided with the opportunity for more skepticism in redirecting economy theory towards stability and reality. It should be acknowledged that economy not only includes the market economy but the financial system as well.

10.2 The dominance of the financial system

The economic and financial system had currently been developed in a more complex manner combined with new technological and financial innovations, all of them within the new globalized economy. The actual function of the financial system could be attributed as a dynamic system that endogenously generates instability and cyclical movements. Instability and fragility of the financial system may result in a financial crisis. The question to be posed in this thesis is not the adoption of the position that aims at changing thoroughly the current economic system but rather to contribute on its improvement. By the term improvement, we mean at first stage, the identification of the weaknesses, and hence, how these could be resolved. The global financial crisis has revealed how international financial systems are regulated. We can acknowledge until now some fundamental stylized facts from our era. These are the dominance of the financial system over traditional economic activities, the relation of the increased financial inflow with economic growth, the stability of the financial system alongside with the stability of the real economy. In addition, the high extent of the interdependence of financial system among countries and certainly the great impact countries with highly developed financial system possess at international level. Whenever prosperity emanates from financial leverage, then that would enhance instability. The empirical lesson from recent financial crisis is the fact that whenever a currency value rises because of capital inflows expansion in association with current account deficits, then this combination renders the country vulnerable, since the economies are overheated. Therefore, we gather the conclusion that the sound function of the financial system is significant.

10.3 Minsky at international level

In the current era, we notice that the international economic system has been driven by financial amplification. We could argue that the global economy has been financialized. The globalized financial system has displayed several weaknesses and has induced much research to rediscover undeservedly ignored theories. One of them is Minsky's financial instability hypothesis that has been proven so relevant. Minsky offered a theory that emphasized on the endogenous flaws of the system stating that crises will inevitably emerge in the economy. It is not a drawback of a particular policy but the function of the entire system. Minsky had developed his theory considering only the US economy notwithstanding, we notice that the new globalized environment renders his theory applicable at international level too. Money creation by means of credit demand could easily diverge out of control by regulatory authorities, providing additional commendation to Keynes and Minsky's contentions about the ineffectiveness of monetary policy. The latter clearly implies the limitation of central banks' capability to control money supply, leaving them only with the remaining function of lender of last resort. In addition, the concept of big government is unlikely to be successive for international financial relations due to high quantities of capital that will be needed to pour in economy in times of distortions. Thus, when instability emerges at international level, the policy response from government and central banks will be modest. Moreover, Minsky's financial instability hypothesis allows the developing of additional extensions, where many have been presented in the related

chapters (e.g., Arestis and Glickman 2002; Wolfson 2002; Vymyatnina and Pakhnin 2014 etc.).

At international level, we realize major aspects that might further contribute to instability. Notwithstanding these new aspects in open economy, seem to attenuate the financial globalization. Differences in macroeconomic policies have been reduced, international capital mobility and investment are augmented, and financial deregulation and globalization are proceeding alike. Therefore, it might not be necessary in near future to distinguish Minsky's theory from closed to open economy since the entire world could be deemed as a closed economy. We certainly hope though that the enhanced risk of financial crises in the open economy would not constitute an excuse to remove the remaining constraints in the free market economy.

10.4 Concluding proposal reforms

In brief, an international monetary system does not exist nowadays in the form of an established status of fixed regimes. Instead, it relies on international monetary relations and agreements among nations in bilateral or multilateral level. Notwithstanding, the lack of a consolidated international monetary agreement has issued deregulation. The introduction of new updated rules and restrictions concerning international monetary relations are necessary to sustain the global financial stability.

The big question is whether a financial crisis is possible to happen again. The post war period of 1945-1973 could supply an important input concerning stability. During that period, public investment and interventions ensured the steady levels of economic growth, rising income levels and equality. The financial system was sufficiently regulated and the impact of cyclical movements to the economy was insignificant.

Another big depression has been avoided so far but there are frequent financial distortions followed by repeated financial cycles. Public investments are not encouraged as well as any government initiative, whilst economic growth is occasionally apparent and at small rates. Profits but mainly the sustainability of corporate and financial institutions are one way or another assured. However, other important aspects such as the increment of income equality and labor security should be equally encouraged.

Returning to the point of decision-making on economic policy, it is no longer relevant the argument to encourage systems such as capitalism, socialism, or whatsoever to be applied in the economy. It is the question of the degree of intervention or regulation that must be imposed in the function of the economy and mainly in the financial system recalling its importance. Minsky suggests that the "financial reform can be effective only as a part of a general system of reform (Minsky, 1986)". The target is one and simple. The stability of the financial system, a stable economy, crises prevention policies, businesses cycles avoidance, income equality, enhanced employment levels and so on. However, to achieve the above goals, it must be decided the appropriate level of regulation ignoring the size and the power of the current financial institutions. As Minsky pointed out, this is where the big government

takes place. The latter implies government intervention to sustain profits and investment in times of distortions and accordingly government surpluses creation to constrain profits in boom periods. Investment must be financed both externally and internally and not exclusively externally, which in boom periods encourages more leverage and external finance, rendering the economy susceptible to a contingent financial crisis. Minsky (1986) suggested that "global financial stability makes it necessary to define the domain of responsibility of the key central banks as lenders of last resort to the international financial community (Minsky, 1986)". The government must ensure a safe payments system and the capital development of the economy. These features do not necessarily need to be assured by the same system (banking, monetary), organization or policy.

10.5 The structure of current account budget

The current account of a state consists of one of most important tools to assess the economic structure of a country. It serves for the provision of required information concerning the needs of the economy for a period. The government could be deemed as another institution that also needs to validate its debts. The state budget has a specific role in stabilizing the economy and the profits. In times of recession, deficits could be allowed to certain extent in order to act as a macroeconomic stabilizer. If we attempt to link the indebtedness and the balance account, we could use the current account.

However, it is helpful to remind the design of households' budget for one year *X*. We compute that the income for the year *X* is *a* and the expenses are *b*. Therefore, the *a* must equal *b* for the year *X*. What is really significant though is the fact that a rational household would form its annual budget firstly by reckoning its annual income and thereafter their spending. Households need to know a priori their income in order to proceed to their expenditure and not by vice versa. Assuming that there are borrowing facilities the formation of their budget is limited to their income side, which is essentially what it matters.

At a macroeconomic level, the state should follow the same rule but as long as expenditures exceed revenues due to compulsory interest and loan payments, the structure of the state budget begins from the expenditure. It calculates the required payments (wages, payment of public debt, transfer payments), and afterwards revenues are being estimated. However, when revenues are not sufficient then a new debt must be issued throughout the year *X* in order to meet the payments. Countries with high levels of indebtedness and current deficits often find themselves into this situation and unfortunately most of the countries belong to the latter category. The corollary of this situation, also considering the interdependences and trade exchanges between them, is to enhance the imbalances and the fragility of the world financial system. The results from the modeling analysis have also shown the importance of the current account balances as a suspensory factor of credit increment.

10.6 The Relevance of Minsky

Minsky was one of the few economists who succeeded in predicting the recent financial crisis, and perhaps the only one who explained the reasons in high detail. Therefore, his insights cannot be set aside. Minsky's relevance in the explanation of the financial instability remains incontestable. Although he highlighted cyclical trends of the financial system, he cannot be simply regarded as a cyclist theorist. Minsky proceeded beyond cyclical trends to an analysis of transformation of the economy over stages with changes in expectations and behavior. He incorporated into his theory a mixture of factors that shed some light to actual economics status. Apart from cyclical trends, such factors include the financial accelerator, the weakening of thwarting institutions and deregulatory processing, behavior and psychological factors, and expectations. The latter contradicts to neoclassical view of rational expectations, an approach not compatible with the financial instability hypothesis. Therefore, Minsky could be regarded as a process theorist of the financial system. He integrated banking and finance, monetary issues, such as credit, debit, because they are essential to development process, where evolution and innovation are more apparent in finance.

Even though the pursuit of high growth and employment policies has always been set as target for any contemporary economy, Minsky has alerted that these policies have being jeopardized by the instability of financial system. He supported that "finance cannot be left to free markets" (1986, p.292). The current economic system is depended upon investment. When the latter is no longer applied due to limited financing, then crises could ensue. Ergo, there is no need to focus only on an exogenous event, but rather on the evolution of financial system and the reasons of changes in norms and conventions. Minsky stated that a dynamic accumulating capitalist economy through the development of financial system should be regulated. Thus, thwarting institutions such as the big government and the central bank could guarantee the avoidance of financial risks and the stability of financial system.

The next phase of international economy, as Minsky described in money managerial terms, is a full financial integration at global level, susceptible to financial instability. Therefore, only international action could modify this trend. The role of US as the dominant international economy to guarantee international stability is no longer applicable since the operation of money managers and securitization has started and blossomed without serious restrains and already gave ground to money manager capitalism to be internationally spread. As Minsky argued, "as the countries involved in money manager capitalism increase, an international division of responsibility for maintaining global aggregate profits will be necessary (1990, p.70)".

Except for the essential integration of the financial sector to real economy, Minsky has also not viewed economics as an independent science but as a part of an integrated social sciences theory. He noted that "if I had my way, the standard course in economics would be eliminated and economics would be introduced in the context of social sciences

and history. The current way of teaching economics leads to economists who are well trained but poorly educated (1985, p.205)". That was his perception about economics, to be examined in the wide context of social sciences, history, politics, behavioral studies and psychology, in order to get the whole idea of how individuals and society operate and interact.

This approach could provide, nowadays, an adequate explanation about changes in norms and conventions. Minsky did not perceive economics as a natural system but rather as a mixture of evolution of processes, innovations, perceptions, conventions and certainly legislation. There is no independent economic science but a partly contribution to the pursuit of social welfare. Thus, the important part is to set of goals and targets, and hence, economic policy will be determined. Therefore, these targets must aim at stability, prosperity, employment, growth, humanity, and equality. Whalen (2017) induces us to stand on the shoulders of Minsky, as he did on Keynes and Schumpeter, in order to understand financialization. There is nothing natural in the economic system and we could apply Minsky's insights towards an economy not only more stable and prosperous, but also more humane.

In any case, even though he made his views public at the beginning of 1980s, he remains relevant. It is essential to comprehend his theory since it could serve as a useful tool to realize the weaknesses of the financial system, and thus, potential financial crises could be predicted or better anticipated. The financial globalization, the unprecedented increment of domestic and international financial transactions, and the recent financial crises have all validated Minsky's theory. After the advents of similar financial crises, nevertheless, the big question is whether the Minskyan issue of financial instability has been currently resolved or has gotten even worse.

10.7 Contribution of the thesis - Relation with Minsky's theory

According to Minsky's Financial Instability Hypothesis, the financial system is unstable and becomes even more fragile in prosperity times. Minsky argues that "financial stability" could be a potential source of instability because agents cultivate their expectations when the financial cycle is upwards. During this period, growth is rising, whilst the perception of a stable economy is well formed. As a result, indebtedness is growing due to these euphoric expectations. There are units of hedge, speculative, and Ponzi. The fundamental assertion of the financial instability hypothesis (FIH) is that "the financial structure evolves from being robust to be fragile over a period in which the economy does well" (Minsky 1991, p.16). The theory suggests that the economy could easily shift from hedge to speculative in times of euphoria. This phenomenon takes place in forms of risk aversion and reductions in margins of safety, as long as short-term credit is easily accessed. Under these circumstances, there is a strong incentive to refinance the positions with extra credit rather than to eliminate the existing debt burden. As economy expands, enterprises are implicitly induced to augment their debt levels since higher profits are coming in. Such success encourages other agents to imitate similar behaviour. Firms are counting on debt-finance investment based on leverage, whereas the latter reaches to a relative threshold, then investment shrinks and fragility becomes more evident.

Minsky rejected the notion that financial issues are independent from the rest of the economy. When a financial incident occurs that entails to implications in real economy. These could be identified in terms of consumption, employment, investment, and output, where most countries have presented a large decline as shown in previous chapters. The forthcoming disruptive period, a distortion or even a crisis, as a result of the financial instability is apparent whenever borrowers can no longer finance their debts through normal channels and Ponzi units grow (i.e., increase of non-performing loans). That is where "Minsky moment" appears, when everyone has become fully aware that indebtedness had reached its peak and repayments cannot be smoothly met. The access to finance became more expensive or attainable, putting pressure to firms, households, and governments. The slowdown of capital inflows was operating adversely due to highly reliance on external funding.

From the above statement, we distinguish two periods, the euphoria and the slowdown, as also developed in the chapter of the financial cycles. We were much interested in the phases of the cycles and thereby deriving the suitable variables. From Minsky's FIH these variables include the credit, revenues, debt service, money supply, capital flows, current accounts etc.

The boost in the economy by financial depth is evident in the beginning. However, the same repeated procedure also brings vulneraries by systemic financial distortions, financial cycles of booms and busts. In the long run, hence, financial volatility will eventually hurt economic growth even with equivalent or higher negative rates gained in the euphoria cycle.

As for the financial instability, this will be stimulated by external and internal shocks of the economies and due to the globalization and financial integration, it will be transmitted to all involved parties.

The continuous increase of credit brings euphoria and if suddenly, credit flows are not attainable then the slowdown process begins. When more and more agents engaged in easy credit, then only a match is the missing element to light up the flame of a financial distortion. As Minsky suggested, the high dependency of an economy to financial depth will result in the emergence of this cycle. Financial instability is thus linked with debt accumulation. From our model, we distinguished the factors with the greatest influence on the financial economy.

In the model, we wished to identify those variables with the largest contribution linked with the above situation. The literature provides with many references about the importance of the variables and their association with the financial developments. That enables to examine the factors that will affect, positively or negatively, the trend of the financial growth. Certainly, by credit (financial deepening or enlargement) we do not imply an undesired tendency. Conversely, we focus on the risk of its large magnitude and the consequences as these were raised by Minsky.

The starting point of the analysis is the acknowledgement that the financial deepening could lead to financial instability. The purpose was not to develop another model to examine whether the financial deepening coincides eventually with financial instability, as many other literature papers have already developed. In contrary, the target was to take a further step on it by integrating Minsky's theory in a relevant context within the recent history of financial distortions.

For this purpose, we were much interested in including countries with common characteristics. These characteristics were the transitional status of the countries, with non-mature financial system, but strong willingness for financial deepening and financial integration. The time panel initiates in 1990 (staring year of transition), passing through the financial crisis in 2008, and reaching up to 2020, whereas normality is restored. That enables a wider comprehension of their economic behavior through all the phases of the financial cycle.

It is quite interesting to analyse the impact of the variables to credit from different perspectives. Some of the variables influence the financial deepening by contributing to the euphoria climate (such as the banks' capital ratio, money supply, interest rates etc.). Others, however, contribute to an increased need for money demand (non-performing loans, debt service). Others have positive effect but are beneficiary to the economy (FDI). Another group of variables (market capitalization of listed domestic companies, current account balance, and turnover ratio of domestic shares) has negative impact providing a dynamic boost to restore the economy in lower dependency levels from the financial system and thus less prone to financial distortions. This is what Minsky called as the stabilizing factors.

The encouragement of positive expectations are explained by the bank capital to assets ratio. When the latter augments then financial flows will also rise. Banks have

assumed a dominant role in the financial status and therefore their actions will always entail in significant consequences to the globalized financial economy. It seems that banks function in parallel with the financial cycle. Credit availability grows in the boost periods as well as the position of their borrowers, and vice versa. By this way, banks can influence the debt fluctuation through credit change, which in turn has an impact in financial cycle amplification and economic activity.

The euphoria climate, therefore, is nutritious on positive market expectations according to the model. Under these euphoria conditions, the money supply growth signifies the larger amount of money available. The money supply enhances the circulation of the money by creating its own money demand, whether this absorption could be considered as financial deepening.

Furthermore, the real interest rate operates in line with credit since higher rates have always been a measure for attracting capital flows. Countries that have adopted the policy of attracting capital flows have also established simultaneously financial vulnerability, especially when speculative action is encouraged. In addition, an increase in interest rates could be attributed as a potential source for financial instability because it will entail in interest payments enhancements for firms and households as well. Thus, the interest rate is positively related to leverage ratio of all debt-engaged agents, especially during the boost phase of the financial cycle, gradually and implicitly switching their finance position into a speculative or even in a Ponzi status.

From a different perspective, though, the total debt service and the bank nonperforming loans to total gross loans both contribute to financial depth but not necessarily by cultivating euphoria financial conditions. Indeed, when the bank nonperforming loans grow these leads agents to seek further financial resources, pushing even urgently, the money demand. As for the total debt service, that could lead to a twofold situation. Firstly, total debt service requires more credit because loans must be rollover and maintain the economic activity to the same level. Secondly, it could be as the case with non-performing loans where credit is urgent due lack of liquidity.

Conversely, the turnover ratio of stock market values of domestic companies, the current account balance, and the market capitalization of listed domestic companies could serve as stabilization factors. Most importantly, an increment in their value could boost the economy out of the continuous capital needs circle. In other words, they consist of the channels for an economic prosperity outside the financial enlargement context. The stock market value of domestic companies indicates the capital adequacy of the companies rendering financial enlargement less important and even reinverting, for some of them, the borrowing (or capital inflows) strategy. Finally, it appears that the greatest impact in reducing the financial depth stems from the current account balance.

The main target of this thesis is to identify and to confirm the temporal relevancy of Minsky's theory. By the dependent variable of domestic credit as percentage to GDP, we denote the financial depth of a country. As long as this financial depth exceeds more than 50% of the GPD, as the case for almost all countries of the model, that underlines a highly dependence of the country from the financial markets. Despite of some potential but non-

steady GDP growth, the economy could also shift into risky situations, being susceptible to unforeseen distortions.

During the last decades, it appears that most of economies throughout the globe have adopted the capital inflows strategy. This strategy could be interpreted as higher credit available/accessible and eventually as a financial deepening. Some countries have shown greater willingness to engage their economy into this strategy, whilst others less. The association of the financial growth with economic growth has been identified up to a certain period. The financial distortions and mainly the financial crisis in 2008 have also revealed the other side of the coin, pushing the economies into negative GDP growth rates. The volume of these negative rates is interestingly linked to the financial depth that each country has adopted during the expansion period. According to the current research, we consider that the financial deepening will finally have a negative impact on the GDP per capita growth for the under examination transitional countries.

In case of transitional economies, notwithstanding, the impact of a financial distortion or a crisis will differ from the advanced countries. It will result in capital outflows, rendering the remedy more complex. Most of these countries do not usually have the option, in times of distortions, to expand their fiscal policy either because of their large government debts or from markets' unwillingness to lend them. Unfortunately, for the developing/transitional countries financial crises have the additional effects of exchange rate devaluations due to balance of payments adjustment and also a fiscal contraction. The above combination makes difficult for developing countries the application of fiscal expansion as crisis counteractive policy. These countries will eventually need to make adjustments whenever markets assess their deficit unsustainable to be further financed. The outcome will be a reduction of the domestic aggregate demand. It is evident that developing countries remain more vulnerable, since their domestic currencies are less or not even used in the foreign currency market for settling accounts, and present greater exchange rate volatility. By contrast, surpluses countries could overvalue their currency or raise their domestic demand to offset international imbalances and help deficit countries to improve their balance of payments.

In this thesis, we integrated our model in an open economy status. That implies that the economies are open to capital flows (inflows or outflows), interest and exchange rate fluctuations that affect the domestic currency value. Whenever, an open economy grows in association with an appreciation of their domestic currency, hence, not only the internal but also foreign agents will be overconfident. Hence, this tendency could be converted to further risky investments. The risk for financial instability is also possible due to foreign debt increment and the negative figures of current account balances. As soon as lenders realize that the debts and the deficits of current account balances are too big to cope with, then suddenly, a bust period will come resulting in capital outflows, devaluation of domestic currency, increased rates, and consequently in a crisis and recession. These additional factors of an open economy could be an external source of financial instability, which are applied to the studied countries of our model. Therefore, a prudential monitoring on countries' current account balances and overall, on the balance of payments plays an important role in securing the economy from these fragility sources.

Stabilizing an unstable economy then is quite challenging as Minsky has argued. In his attempt to raise awareness of the potential risks of instability, we endeavored to establish his relevance. By establishing the actual contribution, we argue that a stable system could simply be the norms, the positive expectations, or even some encouraging macroeconomic figures. The norms and positive expectations sometimes are not built-up by the overall economic prosperity, but from a continuous situation of credit availability with attractive rates. In addition, the encouraging macroeconomic figures, even if that is the case of GDP growth, could have been attained at the expense of another figure, i.e. indebtedness, which will affect the future course of the economy. The volume of credit could provide hints about the magnitude of the instability. However, this hint may not be taken into account as long as credit is available. When credit, and hence indebtedness, reached to a certain point then norms and expectations are working on the opposite direction. The size of the credit cycle is at utmost importance. In our case, we attempt to quantify this size through the fluctuations of the financial growth by the given variables over the group of the transition countries. Minsky notified for this endogenous instability, which unfortunately is not easily apparent. We remark for instance extreme expensive prices in some financial assets. However, it is not evident whether these prices correspond to the real value of the products, or simply are the outcome of the euphoric period, positive norms or perceptions. Hence, what would be their real value and most importantly how dangerous could these perceptions be for the financial stability? The international financial system has already witnessed many financial distortions and crises and their reappearance should be avoided. The question though concerning the real stance of the financial system and overall of an economy in each period still remains. The statement of stabilizing an unstable system is still valid nowadays in a necessary attempt to foresee the real stance of the financial system regardless of current norms, perceptions, and expectations.

The deductive results of the thesis coincide with Minsky's theory, confirming the timeliness and the relevancy of a theory developed at the 1980s but still valid today. Certainly, we suggest that a positive current account balance could produce surpluses with no further need to continue borrowing in order to refinance the loans. Looking also at the history of financial crises, an unstable macroeconomic environment contributes to financial instability. This instability could stem from the weakening of the current account balances. According to our results, it seems that the pursuance of positive current account balances will render the financial economy more stable and stronger in times of distortions. Minsky's recommendations lean on that direction as well. Minsky argued that stability is destabilizing. The evidence suggests that this instability arises from a phenomenal stable financial system, which in reality is not stable at all. It requires thus the reexamination and reassessment of the impact of any related economic and financial policy, particularly for the long run. Therefore, the very last conclusion is that Minsky is still here.

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ANNEXES

Annex 1: Sample Data

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Albania																															
BroM					39,76	48,44	46,22	59,93	62,24	66,02	65,46	69,82	66,85	65,44	68,22	71,42	76,37	78,47	75,48	76,18	79,08	82,28	84,29	85,11	85,65	84,79	85,80	81,70	77,24	77,95	90,07
dCred																				38,21	39,08	41,15	40,80	39,79	39,26	37,15	36,60	34,76	32,99	34,13	38,61
GDP	-9,58	-28,00	-7,19	9,56	8,30	13,32	9,10	-10,92	8,83	12,89	6,95	8,29	4,54	5,53	5,51	5,53	5,90	5,98	7,50	3,35	3,71	2,55	1,42	1,00	1,77	2,22	3,31	3,80	4,02	2,11	-3,96
CurAB	-5,83	-15,28	-7,77	1,26	-8,36	-0,48	-3,35	-12,05	-2,56	-4,84	-4,49	-5,54	-9,37	-7,25	-4,98	-7,10	-7,54	-10,78	-15,63	-15,38	-11,37	-12,93	-10,20	-9,27	-10,78	-8,60	-7,59	-7,54	-6,70	-7,91	-8,83
FDI	0,00	0,00	3,07	4,89	2,82	2,93	2,82	2,10	1,77	1,28	4,11	5,29	3,10	3,17	4,75	3,26	3,65	6,11	9,68	11,17	9,14	8,14	7,45	9,82	8,69	8,69	8,81	7,86	7,95	7,80	7,19
bnpl																					13,51	18,05	21,19	22,24	21,46	16,84	16,55	11,97	10,43	7,97	7,65
Capdc																															
TR																															
TDS		0,33	0,33	0,66	0,96	0,43	0,65	1,05	0,82	0,78	0,84	0,98	1,36	0,99	1,03	1,28	1,98	1,60	1,95	2,06	3,22	3,74	4,42	4,24	5,49	10,24	4,90	3,93	7,17	4,27	7,72
BCAR																					8,66	8,13	7,93	7,73	7,42	8,43	8,75	9,02	9,15	9,08	9,07
IntR	1,44	-25,47	-63,79	-42,57	-8,96	8,80	-10,29	19,30		19,11	15,58	15,26	11,25	8,62	8,35	9,46	10,21	9,30	8,55	10,00	7,97	9,89	9,74	9,51	6,32	7,27	7,41	4,70	4,39	4,96	5,41
Bosnia-Herzegovina																															
BroM								23,48	25,18	27,04	21,89	36,29	36,27	37,32	42,70	45,75	49,37	53,01	48,74	51,25	53,72	54,96	56,86	60,10	63,12	65,22	67,54	70,49	72,33	74,61	82,50
dCred																	47,78	60,22	65,61	64,07	61,85	60,55	61,72	60,83	60,22	58,66	57,86	58,31	57,50	57,96	58,48
GDP						20,80	88,96	34,39	15,60	9,60	12,77	2,42	5,03	3,87	6,33	3,90	5,41	5,86	5,44	-3,00	0,87	0,96	-0,82	2,35	1,15	3,09	3,15	3,17	3,74	2,83	-3,20
CurAB									-8,38	-10,70	-7,11	-12,81	-17,70	-19,19	-16,14	-16,43	-7,76	-9,19	-13,83	-6,45	-6,00	-9,48	-8,63	-5,33	-7,35	-5,09	-4,75	-4,84	-3,28	-2,80	-3,77
FDI									1,62	3,77	2,62	2,04	3,98	4,49	8,76	5,56	6,58	11,67	5,26	0,79	2,58	2,53	2,28	1,72	2,94	2,36	1,85	2,82	2,98	2,17	2,06
bnpl											21,22	17,91	11,02	8,39	6,07	5,28	4,00	3,02	3,09	5,87	11,42	11,80	13,47	15,12	14,17	13,71	11,78	10,05	8,77	7,41	6,12
Capdc																															
TR																															
TDS										3,16	5,24	4,99	2,50	2,45	2,27	2,65	2,94	2,63	2,41	2,55	3,27	7,84	6,67	7,55	8,00	11,82	7,27	7,54	10,17	7,67	8,43

BCAR												20,44	14,53	14,93	11,79	10,74	9,73	9,74	8,82	9,20	9,70	10,28	10,61	10,93	11,54	10,67	10,08	10,86	10,68	10,43	10,79	10,47
IntR														7,32	9,33	7,95	3,22	0,20	0,92	-0,33	7,73	6,39	4,88	6,48	7,28	5,59	4,36	3,78	2,64	1,01	0,64	2,89
Bulgaria																																
BroM		74,53	76,39	78,97	79,70	46,13	60,24	31,25	25,12	30,09	35,05	40,07	40,94	45,76	50,46	53,72	59,81	66,33	62,95	65,22	67,77	70,17	74,68	81,76	80,82	82,55	83,44	83,44	84,80	85,11	94,72
dCred		82,80	74,86	66,45	49,25	27,54	50,71	8,55	8,94	11,48	11,96	14,34	18,78	25,90	33,14	39,06	42,45	58,49	66,97	68,96	68,21	65,28	65,78	66,20	59,22	54,78	52,00	49,78	50,34	49,54	51,74
GDP	-9,12	-8,45	-7,27	-1,48	1,82	2,86	5,21	-14,12	3,79	-8,40	4,59	3,82	5,87	5,24	6,51	7,06	6,80	6,59	6,12	-3,27	1,54	2,10	0,75	-0,56	0,97	3,43	3,04	2,76	2,68	4,04	-4,39
CurAB	-8,29	-0,70	-3,48	-10,15	-0,33	-0,14	0,13	3,77	-0,41	-4,79	-5,31	-5,67	-1,95	-4,83	-6,39	-11,21	-17,05	-25,76	-21,81	-8,18	-1,90	0,47	-0,97	1,22	1,31	-0,24	2,89	3,36	0,84	1,83	-0,38
FDI	0,02	0,51	0,40	0,37	1,09	0,48	0,89	4,46	3,57	6,01	7,56	5,73	5,52	9,92	11,75	13,72	22,90	31,25	18,91	7,49	3,64	3,65	3,29	3,56	1,92	4,37	2,76	3,39	2,73	3,22	3,87
bnpl																			2,40	6,42	11,92	14,97	16,63	16,88	16,75	14,61	13,17	10,43	7,80	6,62	5,80
Capdc				0,11	0,50	0,31	0,05		0,96	0,75	0,97	0,58	4,40	8,30	10,72	17,03	30,03	48,80	16,31	16,63	14,55	14,31								23,22	25,34
TR				18,33	4,55	7,22	173,04		101,24	5,66	3,18	85,52	22,60	6,62	16,34	15,37	18,09	31,31	14,81	5,63	5,11	3,90								1,07	1,20
TDS	7,24	2,80	4,43	3,09	7,24	6,15	10,70	9,25	9,35	9,33	9,92	9,80	8,43	5,27	9,30	14,91	11,16	15,06	10,90	9,67	8,50	7,97	8,71	11,38	9,44	19,25	15,58	15,10	10,59	8,58	7,41
BCAR																			8,56	10,84	10,47	10,76	10,10	10,35	11,57	12,02	11,63	11,39	10,82	11,59	11,88
IntR			9,07	17,05	17,26	-23,99	139,96	-69,11	-14,83	9,85	3,69	4,71	5,16	6,22	3,12	1,94	2,00	-0,95	2,55	7,12	10,30	4,26	8,51	8,96	6,83	4,37	2,97	0,60	0,70	-0,65	0,13
Croatia																															
BroM						20,65	27,99	34,15	34,90	33,39	40,15	54,64	54,50	54,95	55,65	57,20	61,94	66,98	65,02	67,71	76,52	76,47	69,02	67,74	68,48	69,87	70,62	70,09	72,32	71,24	86,56
dCred						25,82	24,16	31,08	34,52	31,46	31,57	35,95	42,70	44,66	47,38	51,47	58,01	61,04	63,64	66,24	67,58	69,24	69,99	68,66	67,29	63,60	59,40	56,34	54,63	53,11	59,77
GDP							5,98	6,13	2,21	-0,88	2,90	3,03	5,72	5,53	4,15	4,31	4,94	4,91	1,90	-7,28	-1,25	-0,09	-2,28	-0,36	-0,35	2,53	3,53	3,41	2,90	3,48	-8,10
CurAB						-6,35	-4,53	-10,38	-5,31	-6,35	-1,55	-2,22	-6,14	-9,17	-6,13	-7,41	-7,69	-7,85	-10,58	-6,48	-2,46	-1,66	-0,36	-1,07	0,16	3,32	2,37	3,91	1,66	2,92	0,09
FDI						0,48	2,05	2,48	3,89	6,14	4,65	4,45	3,62	5,28	3,13	3,96	6,58	7,67	7,42	4,87	2,56	1,98	2,56	1,66	5,46	0,09	0,82	0,82	2,12	6,27	2,06
bnpl																	5,19	4,75	4,87	7,66	11,09	12,27	13,76	15,43	16,71	16,33	13,61	11,20	9,71	6,99	7,18
Capdc						3,93	12,38	17,57	11,35	10,60	12,57	13,44	29,95	17,51	26,12	28,22	57,03	115,99	38,34	42,20	42,36	35,71		36,48	34,35	36,71	38,59	40,50	32,95	36,08	38,86
TR					2,57	34,52	5,99	5,73	3,42	2,74	6,89	3,71	1,98	4,02	4,24	5,86	6,47	6,25	11,86	5,49	4,10	4,11							1,20	1,46	
TDS																															
BCAR																	9,66	11,88	12,85	13,24	12,85	12,62	13,00	12,62	12,78	11,84	12,12	12,43	12,35	12,45	12,68
IntR							17,93	8,03	6,98	11,05	7,41	5,11	8,67	6,97	7,83	7,83	5,82	4,86	4,33	8,34	9,36	7,85	7,94	8,41	8,42						
Checchia																															

BroM				58,53	60,96	68,01	63,17	59,60	56,31	55,31	60,58	62,32	53,10	53,93	53,09	55,23	58,05	61,67	66,87	68,51	69,12	69,81	72,68	75,90	76,64	77,73	79,85	82,71	83,07	82,54	92,29
dCred				61,59	65,75	65,03	63,36	64,56	56,79	51,47	44,94	37,11	23,66	24,33	25,68	29,22	33,84	38,68	43,23	44,98	46,33	48,32	49,41	50,61	49,46	49,54	51,06	50,91	51,34	50,28	53,21
GDP		-11,61	-0,51	0,06	2,91	6,50	4,27	-0,52	-0,36	1,38	4,00	3,04	1,57	3,58	4,81	6,60	6,77	5,57	2,69	-4,66	2,43	1,76	-0,79	-0,05	2,26	5,39	2,54	5,17	3,20	3,03	-5,80
CurAB				1,14	-1,71	-2,28	-6,13	-5,82	-1,96	-2,25	-4,35	-4,83	-5,19	-5,78	-3,72	-2,05	-2,56	-4,70	-1,86	-2,35	-3,52	-2,19	-1,51	-0,52	0,22	0,45	1,76	1,35	0,51	0,36	3,61
FDI				1,60	1,84	4,27	2,13	2,07	5,54	9,69	8,07	8,32	10,34	2,02	5,36	10,01	4,56	7,26	3,72	2,54	4,86	1,82	4,52	3,48	3,86	0,90	5,53	5,14	3,34	4,26	2,62
bnpl																			2,82	4,49	5,46	5,29	5,35	5,26	5,64	5,44	4,52	3,68	3,10	1,69	1,91
Capdc				4,26	12,71	15,27	21,14	17,40	15,61	16,24	15,76	12,02	12,48	15,49	22,44	25,44	28,40	36,24	17,28											10,42	10,85
TR				13,64	25,10	29,88	44,42	52,81	45,31	37,17	68,23	42,31	57,74	56,54	66,97	98,43	64,86	54,84	78,90											14,56	15,89
TDS																															
BCAR																19,53			5,45	6,05	6,45	6,46	6,85	7,18	7,27	7,49	7,23	6,46	6,52	6,82	7,34
IntR				-5,73	0,69	3,66	2,40	4,52	2,73	5,48	5,22	2,20	3,89	4,60	1,90	5,68	4,91	2,17	4,16	3,32	7,42	5,74	3,90	3,56	2,01	3,26	2,73	2,25	0,95	-0,20	-1,01
Estonia																															
BroM																															
dCred															40,31	56,58	76,24	83,75	89,67	101,39	92,81	78,03	72,92	69,48	67,27	68,97	69,80	64,13	62,22	59,78	64,85
GDP							4,94	13,05	4,34	-0,43	10,09	6,00	6,77	7,60	6,80	9,53	9,77	7,58	-5,13	-14,63	2,44	7,26	3,23	1,46	3,01	1,85	3,16	5,79	4,13	4,10	-2,95
CurAB						-3,50	-8,32	-10,90	-8,43	-5,12	-5,26	-5,19	-10,58	-12,92	-11,99	-8,63	-14,97	-14,80	-8,86	2,68	1,74	1,31	-1,88	0,30	0,65	1,76	1,25	2,28	0,81	2,52	-0,46
FDI						4,59	3,47	5,32	10,50	5,66	7,32	9,48	4,59	10,51	8,95	21,67	10,33	13,51	8,12	9,51	13,28	4,82	7,76	4,37	6,69	-3,13	3,85	6,45	4,04	9,87	11,54
bnpl																			1,94	5,20	5,38	4,05	2,62	1,47	1,39	2,77	2,18	2,38	1,55	1,97	1,64
Capdc																															
TR																															
TDS																															
BCAR																			7,14	8,66	9,01	8,20	9,05	9,87	10,68	15,05	14,67	13,73	13,25	12,63	10,96
IntR																															
Hungary																															
BroM	45,55	54,63	53,32	49,50	46,52	46,60	44,98	43,99	45,66	44,91	45,21	45,45	45,95	46,44	49,77	52,56	55,18	56,67	60,35	60,71	62,37	58,54	60,30	57,18	56,70	58,72	58,35	59,07	58,32	69,94	
dCred		37,68	32,15	27,33	25,50	21,71	21,36	23,52	23,38	25,51	31,88	32,64	34,36	36,46	38,90	43,20	47,22	53,16	59,31	59,76	60,17	58,33	50,27	46,07	42,55	35,11	33,41	32,44	32,39	33,46	38,27
GDP			-3,06	-0,58	2,95	1,49	0,08	3,14	3,90	3,07	4,48	4,07	4,74	4,08	5,00	4,30	3,95	0,28	1,01	-6,60	1,08	1,86	-1,26	1,81	4,22	3,70	2,19	4,27	5,36	4,55	-4,68

CurAB	1,16	0,91	-10,62	-9,39	-3,69	-3,97	-4,52	-7,64	-8,37	-8,84	-6,12	-6,45	-8,25	-9,07	-9,87	-7,28	-7,28	-7,02	-0,68	0,26	0,62	1,54	3,44	1,14	2,34	4,55	1,93	0,26	-0,67	-1,48
FDI	4,21	3,82	5,86	2,65	10,35	7,05	8,80	6,70	6,90	5,82	7,55	5,39	4,87	4,36	24,28	16,14	50,37	47,42	-2,13	-15,71	7,56	8,39	-2,64	9,26	-4,21	54,17	-8,48	-40,08	60,06	108,42
bnpl																		3,23	8,24	10,04	13,68	16,04	16,83	15,62	11,66	7,42	4,17	2,47	1,51	3,95
Capdc												19,21	19,53	27,46	28,77	36,23	32,94	11,66	22,91	20,95	13,22	16,11	14,59	10,29	14,13	17,53	22,04	18,02	20,11	17,85
TR												51,14	53,19	49,90	68,04	73,89	102,36	149,27	90,58	95,52	83,37	52,81	54,67	49,02	42,07	40,48	32,90	34,18	26,36	40,41
TDS																														
BCAR																														
IntR		9,50	3,42	6,62	4,64	4,41	1,25	4,84	7,60	2,75	0,96	1,92	3,94	7,36	5,76	4,26	3,46	5,13	6,56	4,93	6,27	5,94	3,39	0,72	0,12	0,76	-2,45	-3,22	-2,84	-4,10
Latvia																														
BroM																														
dCred																				94,68	80,18	64,69	58,23	51,34	48,31	46,70	42,12	36,61	34,37	34,35
GDP						2,59	8,84	6,34	2,76	5,68	6,33	7,09	8,42	8,28	10,72	11,97	9,94	-3,24	-14,25	-4,47	2,56	7,04	2,01	1,90	3,89	2,37	3,31	3,99	2,48	-3,62
CurAB					-0,28	-4,68	-5,29	-9,06	-8,68	-3,65	-5,99	-5,47	-7,21	-11,64	-11,68	-20,96	-20,70	-12,51	7,80	1,72	-3,43	-3,72	-2,78	-1,69	-0,61	1,56	1,31	-0,20	-0,67	2,91
FDI					4,22	5,55	7,27	5,18	4,62	4,07	2,07	1,68	2,69	4,10	4,76	7,91	8,74	4,00	-0,57	1,98	5,53	3,84	3,28	3,33	2,98	1,19	3,78	1,24	3,17	2,80
bnpl																		3,04	20,27	22,29	14,05	8,72	6,41	4,60	4,64	6,26	5,51	5,29	5,00	3,09
Capdc																														
TR																														
TDS																														
BCAR																		10,20	11,47	10,42	8,21	8,71	8,91	8,58	9,03	8,49	9,72	11,06	8,50	9,25
IntR																														
Lithuania																														
BroM																														
dCred																				58,63	49,50	46,52	43,02	40,82	41,56	42,69	40,98	40,37	39,05	37,64
GDP						5,16	8,31	7,48	-1,14	3,70	6,53	6,75	10,57	6,57	7,73	7,41	11,11	2,61	-14,84	1,65	6,04	3,84	3,55	3,54	2,02	2,52	4,28	3,99	4,57	-0,13
CurAB					-7,81	-8,62	-9,70	-11,55	-10,88	-5,86	-4,69	-5,05	-6,81	-7,82	-7,34	-10,66	-15,36	-13,60	2,25	0,20	-3,66	-1,60	1,70	3,41	-2,45	-1,10	0,64	0,23	3,46	7,36
FDI					0,92	1,82	3,58	8,17	5,15	3,30	3,62	4,63	1,16	3,89	4,95	7,49	6,55	3,61	-0,96	2,97	4,32	1,58	1,65	0,74	2,50	2,74	2,90	2,42	6,28	7,92
bnpl																							11,59	8,19	4,95	3,66	3,18	2,27	1,04	0,97

Capdc																										
TR																										
TDS																										
BCAR														34,60	28,82	33,86	32,46	45,08	11,63	11,26	9,89	7,75	8,25	7,80	6,22	5,93
IntR																										
Moldova																										
BroM	19,22	18,34	21,56	19,34	20,45	22,29	25,14	28,99	30,86	36,75	42,03	43,70	51,18	50,35	54,09	43,04	41,58	47,05	52,52	49,42	43,91	43,87	43,08	43,22	42,76	52,15
dCred																29,50	29,93	33,70	35,74	31,05	29,13	25,55	22,76	23,22	24,83	27,78
GDP		-5,88	1,65	-6,54	-3,37	2,11	6,10	7,80	6,60	7,40	7,50	4,80	3,00	7,80	-6,00	7,10	5,82	-0,59	9,04	5,00	-0,34	4,41	4,69	4,30	3,68	-6,97
CurAB	-4,83	-11,32	-14,24	-19,70	-5,80	-7,62	-1,81	-1,19	-6,57	-1,78	-7,56	-11,34	-15,25	-16,11	-8,92	-6,90	-10,12	-7,39	-5,16	-5,98	-5,98	-3,57	-5,74	-10,58	-9,29	-7,49
FDI	3,82	1,40	4,08	4,45	3,23	9,90	6,99	5,06	3,72	5,81	6,38	7,59	12,18	12,00	4,85	4,26	4,43	2,88	2,55	3,64	2,92	1,08	1,55	2,56	4,23	1,32
bnpl															16,39	13,34	10,68	14,50	11,58	11,73	9,92	16,41	18,25	12,49	8,50	7,38
Capdc																										
TR																										
TDS		4,80	6,68	11,71	18,02	11,63	9,60	13,51	7,32	10,35	7,52	8,97	7,21	7,61	6,77	5,27	5,19	5,93	6,42	5,61	5,10	5,05	4,30	5,08	5,03	5,82
BCAR															15,85	15,72	15,58	12,42	10,65	10,98	13,06	12,97	12,83	12,87	12,56	12,88
IntR		6,89	18,51	19,52	-3,04	5,06	14,81	12,47	3,85	11,99	9,07	4,15	2,52	10,82	17,98	-12,71	5,77	5,58	8,05	4,38	4,18	8,14	3,87	5,49	2,70	2,61
Montenegro																										
BroM								11,27	12,05	13,35	22,52	41,28	66,22	51,58	48,66	48,13	46,92	51,96	50,58	53,71	56,47	56,98	59,20	56,29	52,14	59,36
dCred								8,05	11,29	14,63	17,95	35,96	80,00	86,52	76,21	66,47	55,29	55,06	53,73	51,99	50,37	49,27	48,92	49,56	49,02	59,97
GDP				4,90	-9,40	3,10	1,10	1,90	2,48	4,43	4,18	8,57	6,81	7,22	-5,80	2,73	3,23	-2,72	3,55	1,78	3,39	2,95	4,72	5,08	4,06	-15,31
CurAB													39,78	49,65	27,69	20,57	14,63	15,62	11,46	12,43	10,93	16,17	15,72	17,13	14,36	25,93
FDI													25,47	21,45	37,27	18,30	12,25	15,12	10,00	10,83	17,27	5,18	11,57	8,82	7,53	11,06
bnpl												2,89	3,20	7,28	13,55	20,93	15,29	17,30	20,31	18,59	14,58	11,35	8,29	7,36	5,09	5,87
Capdc														76,30		77,79	77,22	92,65								
TR														2,40		1,38	2,18	1,15								
TDS												1,53	4,53	1,53	1,65	2,37	19,20	23,37	25,88	24,58	31,09	28,65	23,51	30,45	27,30	33,06

BCAR																		9,28	7,00	8,77	9,59	9,32	10,06	9,02	8,16	8,89	8,62	8,57	8,54	8,35	10,01	9,88
IntR																	7,74	0,95	-5,89	1,50	6,79	7,80	8,38	9,37	7,17	8,29	6,57	2,73	3,25	3,20	4,07	6,09
Romania																																
BroM	62,20	49,40	35,16	28,79	26,13	28,99	32,84	31,30	33,16	33,48	32,14	26,13	29,53	28,37	33,03	33,82	32,30	34,81	32,25	35,75	38,36	38,62	37,51	38,04	39,07	40,21	41,14	40,79	40,04	39,91	46,17
dCred				0,00	0,00	0,00	10,99	8,29	11,67	7,99	7,13	8,65	10,09	14,13	15,78	20,06	26,01	34,00	35,91	37,01	39,15	39,33	37,75	33,99	31,05	29,93	28,13	26,47	25,73	24,74	26,05
GDP		-12,92	-8,77	1,53	3,93	6,23	3,91	-4,85	-2,03	-0,38	2,46	5,22	5,70	2,34	10,43	4,67	8,03	7,23	9,31	-5,52	-3,90	1,91	2,04	3,77	3,61	2,95	4,70	7,32	4,47	4,19	-3,93
CurAB	-8,34	-3,49	-5,99	-4,45	-1,42	-4,74	-6,96	-5,91	-7,00	-3,61	-3,64	-5,52	-3,31	-5,73	-8,51	-8,67	-10,67	-13,70	-11,66	-4,73	-5,10	-5,06	-4,81	-0,96	-0,28	-0,79	-1,60	-3,11	-4,61	-4,88	-5,08
FDI	0,00	0,14	0,31	0,36	1,13	1,12	0,71	3,42	4,87	2,90	2,78	2,86	2,48	3,19	8,59	6,60	9,02	5,79	6,38	2,66	1,93	1,29	1,79	2,02	1,93	2,43	3,32	2,81	3,04	2,95	1,45
bnpl																		2,59	2,75	7,89	11,85	14,33	18,24	21,87	13,94	13,51	9,62	6,41	4,96	4,09	3,83
Capdc									0,86	0,87	0,98	2,73	5,40	5,89	14,62	16,11	20,68	17,55	7,07	7,51	8,54	7,65		12,88	11,20	10,43	9,61	11,16	8,64	10,45	10,23
TR									42,42	32,19	15,54	9,47	5,75	6,48	7,55	8,96	6,36	9,10	8,09	12,62	11,81	20,89			6,93	9,49	9,52	9,95	11,68	7,83	11,50
TDS	0,05	0,42	1,86	1,38	2,09	2,68	12,46	9,42	5,87	10,46	6,76	6,38	7,07	6,34	6,58	7,23	7,33	6,99	8,60	9,45	11,24	10,46	12,50	15,34	12,38	13,48	10,14	9,85	9,24	7,80	8,28
BCAR																		10,68	9,05	8,57	8,88	8,07	8,02	7,96	7,38	8,18	8,92	8,89	9,34	10,20	9,99
IntR				-43,05	-20,35	4,71	7,73	-26,69	4,85	10,78	7,45	5,40	10,36	1,85	8,80	6,78	3,05	-2,13	-0,89	12,67	10,12	8,05	7,28	6,89	6,55	3,40	3,18	0,85	0,59	0,34	2,50
Serbia																															
BroM								9,83	10,17	11,03	14,98	14,45	17,36	18,90	21,16	24,85	29,19	35,85	34,11	39,50	41,86	41,54	43,09	41,66	44,84	46,34	48,52	47,80	51,37	52,08	60,61
dCred								20,72	22,89	26,18	43,47	29,71	15,23	16,76	20,77	26,42	26,26	31,80	36,82	40,15	47,19	44,87	46,58	40,98	40,79	40,64	40,89	40,29	41,40	42,00	45,52
GDP							6,26	7,21	3,34	-9,42	6,13	6,88	6,38	4,39	9,03	5,53	5,11	6,44	5,66	-2,73	0,73	2,04	-0,68	2,89	-1,59	1,81	3,34	2,10	4,50	4,33	-0,94
CurAB																		-17,43	-20,19	-6,20	-6,44	-10,33	-10,91	-5,77	-5,60	-3,46	-2,92	-5,26	-4,86	-6,86	-4,08
FDI																		10,25	7,77	6,49	4,05	10,01	2,94	4,26	4,25	5,91	5,79	6,55	8,04	8,29	6,54
bnpl																															
Capdc														6,35	12,47	25,27	48,84	68,57	29,38	31,65	9,94	8,23									
TR														39,37	13,43	9,70	10,29	10,45	7,74	4,76	7,55	9,43									
TDS								0,21	0,33	0,23	1,80	0,83	1,39	1,83	3,47	4,56	6,82	7,73	9,33	10,44	10,52	11,00	14,41	18,17	18,32	11,07	15,26	11,78	11,55	14,11	9,74
BCAR																															
IntR								-1,50	-6,64	-19,19	-1,27	-25,68	-13,58	-8,80	-4,32	-9,74	-6,44	-3,96	-2,80	-0,94	-0,92										
Slovakia																															

BroM																														
dCred																	33,75	37,38	40,68	44,89	44,50	46,10	46,39	47,96	49,81	52,65	57,10	60,25	62,02	62,77	67,21
GDP				1,90	6,21	5,84	6,62	5,93	4,08	-0,11	1,17	3,25	4,51	5,50	5,28	6,62	8,49	10,83	5,57	-5,46	6,29	2,64	1,36	0,65	2,72	5,22	1,93	2,98	3,79	2,61	-4,36
CurAB				-3,51	3,33	1,51	-7,49	-7,08	-7,12	-3,79	-2,37	-5,66	-5,54	-0,60	-7,59	-8,16	-7,70	-5,35	-6,22	-3,38	-4,64	-4,93	0,94	1,82	1,19	-2,09	-2,71	-1,94	-2,17	-3,35	0,19
FDI				1,20	1,34	0,91	1,26	0,64	2,17	1,11	7,47	4,98	11,93	2,07	7,07	6,25	8,06	5,84	4,60	1,70	2,33	5,46	1,88	1,02	-0,36	1,72	5,29	4,43	2,13	2,17	-0,31
bnpl																5,03			2,33	4,79	5,37	5,31	5,16	5,16	5,20	4,71	4,35	3,63	3,12	2,96	2,57
Capdc				15,90	14,56	4,65	4,33	4,91	2,18	1,51	1,49	1,77	2,63	2,76	4,19	3,91	8,24	7,98	5,33	5,70	4,59	5,46	5,73	5,70	5,32						
TR										2,45	2,78	4,10	2,30	1,40	0,80	0,07	0,05	0,45	0,39	3,43	7,41	8,34	1,43	0,96	0,19						
TDS																														
BCAR																5,82			5,87	7,15	7,20	7,39	7,97	7,56	7,69	7,68	7,32	7,46	7,35	7,26	7,29
IntR																														
Slovenia																														
BroM																														
dCred															0,19	52,29	60,01	71,06	76,40	83,07	85,06	81,85	79,27	65,35	54,50	49,89	46,64	45,06	43,32	42,46	43,37
GDP							3,20	5,05	3,28	5,33	3,67	3,22	3,51	2,96	4,36	3,80	5,75	6,98	3,51	-7,55	1,34	0,86	-2,64	-1,03	2,77	2,21	3,19	4,82	4,42	3,25	-4,23
CurAB						-0,35	0,26	0,24	-0,53	-3,07	-2,70	0,15	1,04	-0,73	-2,59	-1,88	-1,76	-4,19	-5,28	-1,08	-0,76	-0,84	1,29	3,29	5,10	3,82	4,79	6,25	5,96	5,99	7,38
FDI						0,70	0,81	1,61	0,97	0,47	0,67	2,40	7,87	1,81	2,22	2,68	1,75	3,92	1,94	-0,69	0,66	1,70	0,07	0,21	2,04	4,01	3,23	2,46	2,84	3,97	0,91
bnpl																													6,01	3,36	3,02
Capdc								9,03	13,48	12,57	15,28	16,58	23,75	24,07	28,12	21,82	38,45	60,04	21,15	24,01	19,56	12,26	13,90	14,72	15,04	14,00	11,76	13,00	13,42	14,62	15,77
TR								27,71	27,00	29,73	20,61	27,90	16,61	7,01	7,97	6,03	6,96	10,18	11,46	8,51	5,13	8,10	6,18	5,79	9,79	6,04	6,25	6,00		1,89	5,47
TDS																															
BCAR																													10,69	10,61	9,52
IntR																															
Ukraine																															
BroM			50,11	32,47	26,71	12,71	11,49	13,43	15,16	16,77	17,95	21,67	27,82	34,37	35,16	42,44	46,20	52,74	52,05	51,45	53,35	50,81	52,99	59,70	60,29	49,99	46,23	40,55	35,89	36,16	44,13
dCred																			84,56	87,35	75,75	68,48	66,98	70,69	75,23	56,66	47,31	38,31	34,51	30,03	28,38
GDP	-6,35	-8,70	-9,90	-14,20	-22,90	-12,20	-10,00	-3,00	-1,90	-0,20	5,90	8,80	5,34	9,52	11,80	3,07	7,57	8,22	2,24	-15,14	4,09	5,45	0,15	0,05	-10,08	-9,77	2,44	2,36	3,49	3,20	-4,00

CurAB			-2,21	-2,39	-2,66	-2,66	-3,09	5,25	4,15	3,37	7,23	5,58	10,28	2,84	-1,45	-3,53	-6,79	-1,43	-2,14	-6,04	-7,85	-8,67	-3,44	5,53	-2,00	-3,10	-4,91	-2,68	3,39
FDI	0,27	0,30	0,30	0,55	1,17	1,24	1,77	1,57	1,84	2,01	1,58	2,74	2,55	8,75	5,01	6,85	5,69	3,92	4,57	4,26	4,48	2,37	0,63	-0,22	4,42	3,28	3,80	3,77	0,20
bnpl														57,99	59,76	48,12	3,88	13,70	15,27	14,73	20,37	16,35	23,32	35,39	38,95	54,82	54,41	50,53	43,47
Capdc																			27,55	15,15		11,57	9,17	6,28	4,77	4,64	3,37		
TR																			7,30	4,59									
TDS	0,02	0,32	0,63	2,39	2,86	2,74	4,91	9,30	12,38	6,63	8,48	7,85	6,89	6,92	8,90	8,47	10,37	20,01	19,87	16,69	16,24	20,18	15,79	31,25	13,05	11,55	11,10	8,90	11,17
BCAR														9,53	9,26	8,75	10,36	12,16	12,39	12,55	12,11	12,21	10,32	6,91	6,08	6,49	6,03	6,94	7,19
IntR	-90,60	-91,72	-66,73	-56,83	8,27	26,29	37,93	21,63	11,00	20,03	19,09	9,00	1,81	-6,38	0,28	-7,28	-8,93	7,31	1,93	1,55	9,64	11,83	1,57	-12,28	1,83	-4,68	3,13	10,69	3,62

Source: World Bank Open Database, 2022

Annex II: Econometric Analysis: Multiple regression

```
        panel variable:  ID (strongly balanced)
        time variable:  t, 1990 to 2020
                delta:  1 unit
```

```
. set matsize 10000
. . global ID ID
. . global t t
. . global ylist dCred
. . global xlist BroM bnpl BCAR TR FDI IntR CurAB Capdc TDS
. summarize $ID $t $ylist $xlist
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ID	496	8.5	4.614426	1	16
t	496	2005	8.953302	1990	2020
dCred	307	45.53393	19.13278	0	101.388
BroM	294	50.81189	19.10843	9.82958	94.7228
bnpl	194	10.87514	10.33831	.9691552	59.75663
BCAR	187	10.54256	4.828695	5.445594	45.08002
TR	152	22.51249	29.31262	.0495104	173.0357
FDI	415	5.295905	8.618138	-40.08106	108.4205
IntR	266	2.670045	16.71733	-91.72148	139.9636
CurAB	413	-4.98498	6.451654	-49.64724	10.28114
Capdc	171	18.53839	17.5676	.0455499	115.9892
TDS	207	8.193904	6.502965	.0156867	33.06272

```
. xtdescribe
      ID:  1, 2, ..., 16                                     n =         16
       t:  1990, 1991, ..., 2020                             T =         31
           Delta(t) = 1 unit
           Span(t)  = 31 periods
           (ID*t uniquely identifies each observation)

Distribution of T_i:   min      5%     25%       50%       75%     95%     max
                        31      31      31        31        31      31      31

     Freq.  Percent    Cum. |  Pattern
 ---------------------------+---------------------------------
       16    100.00  100.00 |  1111111111111111111111111111111
 ---------------------------+---------------------------------
       16    100.00         |  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

```
. xtsum $ID $t $ylist $xlist

Variable         |      Mean   Std. Dev.       Min        Max |    Observations
-----------------+--------------------------------------------+----------------
ID       overall |       8.5   4.614426          1         16 |     N =     496
         between |             4.760952          1         16 |     n =      16
         within  |                   0        8.5        8.5 |     T =      31
                 |                                            |
t        overall |      2005   8.953302       1990       2020 |     N =     496
         between |                   0       2005       2005 |     n =      16
         within  |             8.953302       1990       2020 |     T =      31
                 |                                            |
dCred    overall |  45.53393   19.13278          0    101.388 |     N =     307
         between |             12.76581   21.07233   71.65937 |     n =      16
         within  |             14.58283    -11.914   86.43127 | T-bar = 19.1875
                 |                                            |
BroM     overall |  50.81189   19.10843    9.82958     94.7228 |     N =     294
         between |             13.59807   33.37785      72.233 |     n =      11
         within  |             13.87877   12.19912   82.49177 | T-bar = 26.7273
                 |                                            |
bnpl     overall |  10.87514   10.33831   .9691552   59.75663 |     N =     194
         between |             7.673876   2.657441   34.44115 |     n =      15
         within  |             6.746577  -19.68216   36.19062 | T-bar = 12.9333
                 |                                            |
BCAR     overall |  10.54256   4.828695   5.445594   45.08002 |     N =     187
         between |              2.91127   7.215229   18.73493 |     n =      14
         within  |             3.933503  -2.267005   36.88765 | T-bar = 13.3571
                 |                                            |
TR       overall |  22.51249   29.31262   .0495104   173.0357 |     N =     152
         between |             20.73828   1.777516   62.63934 |     n =      10
         within  |             21.06498  -13.76955   168.5081 | T-bar =    15.2
                 |                                            |
FDI      overall |  5.295905   8.618138  -40.08106   108.4205 |     N =     415
         between |               3.7047   1.971186   15.15264 |     n =      16
         within  |             7.961814  -48.02344   100.4781 | T-bar = 25.9375
                 |                                            |
IntR     overall |  2.670045   16.71733  -91.72148   139.9636 |     N =     266
         between |             4.746332  -7.555815   8.059481 |     n =      11
         within  |              16.1998  -84.32676   136.8472 | T-bar = 24.1818
                 |                                            |
CurAB    overall | -4.98498    6.451654  -49.64724   10.28114 |     N =     413
         between |             4.896502  -20.86231   .7611863 |     n =      16
         within  |             5.102211   -33.7699   7.642123 | T-bar = 25.8125
                 |                                            |
Capdc    overall |  18.53839    17.5676   .0455499   115.9892 |     N =     171
         between |             21.88004   5.401313   80.98783 |     n =      10
         within  |             11.91625  -9.925484   102.1364 | T-bar =    17.1
                 |                                            |
TDS      overall |  8.193904   6.502965   .0156867   33.06272 |     N =     207
         between |             4.631867   2.648003   18.58097 |     n =       8
         within  |             5.313366  -8.857799   29.24348 | T-bar =  25.875
```

***Pooled OLS estimator**

```
. reg $ylist $xlist

      Source |       SS           df       MS      Number of obs   =        24
-------------+----------------------------------   F(9, 14)        =     34.29
       Model |  7889.58929         9  876.621032   Prob > F        =    0.0000
    Residual |  357.935658        14  25.5668327   R-squared       =    0.9566
-------------+----------------------------------   Adj R-squared   =    0.9287
       Total |  8247.52494        23  358.588041   Root MSE        =    5.0564

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |   .5074399   .1053816     4.82   0.000     .2814188    .7334611
        bnpl |   1.882003   .3157288     5.96   0.000     1.204832    2.559174
        BCAR |    6.06861   1.183018     5.13   0.000     3.531289    8.605931
          TR |  -.4593867   .4013813    -1.14   0.272    -1.320264    .4014905
         FDI |   1.110276   .5158947     2.15   0.049     .0037922     2.21676
        IntR |   1.058014   .3543678     2.99   0.010     .2979712    1.818058
       CurAB |  -1.635558   .2862074    -5.71   0.000    -2.249412   -1.021704
       Capdc |  -.6062476   .1120525    -5.41   0.000    -.8465763   -.3659189
         TDS |   .6628327   .2882528     2.30   0.037     .0445919    1.281074
       _cons |  -68.72556   12.61626    -5.45   0.000    -95.78475   -41.66636
------------------------------------------------------------------------------
```

*Population averaged estimator

```
. xtreg $ylist $xlist, pa

(resetting alpha to -0.0900) Iteration 1: tolerance = .02249216
(resetting alpha to -0.0900) Iteration 2: tolerance = 1.531e-12

GEE population-averaged model                   Number of obs     =         24
Group variable:                         ID      Number of groups  =          4
Link:                             identity      Obs per group:
Family:                           Gaussian                    min =          2
Correlation:                  exchangeable                    avg =        6.0
                                                              max =         12
                                                Wald chi2(9)      =    1384.69
Scale parameter:                  15.00744      Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |   .5209922   .0774505     6.73   0.000     .3691921    .6727923
        bnpl |   1.890579   .2465593     7.67   0.000     1.407332    2.373827
        BCAR |   6.129411   .9158934     6.69   0.000     4.334293    7.924529
          TR |  -.4672492   .3204601    -1.46   0.145    -1.095339    .1608409
         FDI |   1.143639   .4052871     2.82   0.005     .3492912    1.937988
        IntR |   1.071727    .280233     3.82   0.000     .5224806    1.620974
       CurAB |  -1.637153   .2272587    -7.20   0.000    -2.082572   -1.191734
       Capdc |  -.6144579   .0862512    -7.12   0.000    -.7835072   -.4454087
         TDS |   .6709947   .2273872     2.95   0.003      .225324    1.116665
       _cons |  -70.29383   9.093484    -7.73   0.000    -88.11673   -52.47093
------------------------------------------------------------------------------
```

***Fixed Effects estimator**

```
xtreg $ylist $xlist, fe
Fixed-effects (within) regression               Number of obs      =         24
Group variable: ID                              Number of groups   =          4

R-sq:                                           Obs per group:
     within  = 0.9293                                         min =          2
     between = 0.0046                                         avg =        6.0
     overall = 0.0557                                         max =         12

                                                F(9,11)           =      16.06
corr(u_i, Xb)  = -0.6248                        Prob > F          =     0.0000

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |  -.4045315   .1865928    -2.17   0.053    -.8152195    .0061566
        bnpl |   .6345208   .3788614     1.67   0.122    -.1993475    1.468389
        BCAR |  -1.265072   1.739054    -0.73   0.482    -5.092704     2.56256
          TR |   .0088643   .2608315     0.03   0.973    -.5652219    .5829506
         FDI |  -1.266958   .5477961    -2.31   0.041    -2.472649   -.0612671
        IntR |   .5012439    .270057     1.86   0.090    -.0931476    1.095635
       CurAB |  -1.226758   .2260175    -5.43   0.000    -1.724219   -.7292964
       Capdc |   .3989894   .2423629     1.65   0.128    -.1344477    .9324264
         TDS |  -.5312856   .3077333    -1.73   0.112    -1.208602    .1460308
       _cons |   66.23287   28.91846     2.29   0.043     2.583764     129.882
-------------+----------------------------------------------------------------
     sigma_u |  28.611773
     sigma_e |  2.9877849
         rho |  .98921304   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3, 11) = 9.70                     Prob > F = 0.0020
```

***Fist Difference Estimator**

```
reg D.($ylist $xlist), noconstant
```

```
      Source |       SS           df       MS      Number of obs   =        17
-------------+----------------------------------   F(9, 8)         =      1.22
       Model |   124.88257         9  13.8758411   Prob > F        =    0.3942
    Residual |   90.871562         8  11.3589452   R-squared       =    0.5788
-------------+----------------------------------   Adj R-squared   =    0.1050
       Total |  215.754132        17  12.6914195   Root MSE        =    3.3703

------------------------------------------------------------------------------
     D.dCred |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |
         D1. |   .0867635   .3027096     0.29   0.782    -.6112861    .7848131
             |
        bnpl |
         D1. |   .0681543   .4396445     0.16   0.881    -.9456677    1.081976
             |
        BCAR |
         D1. |  -.8236389   1.803023    -0.46   0.660    -4.981417    3.334139
             |
          TR |
         D1. |   .0023134    .275713     0.01   0.994    -.6334818    .6381086
             |
         FDI |
         D1. |   .2828269    .824247     0.34   0.740     -1.61789    2.183544
             |
        IntR |
         D1. |   .0585978   .2790313     0.21   0.839    -.5848494    .7020451
             |
       CurAB |
         D1. |    .310876   .5831282     0.53   0.608     -1.03382    1.655572
             |
       Capdc |
         D1. |   .1807118   .2067626     0.87   0.408    -.2960837    .6575073
             |
         TDS |
         D1. |  -.5105901   .2857657    -1.79   0.112    -1.169567    .1483868
------------------------------------------------------------------------------
```

Random Effects Estimator

```
xtreg $ylist $xlist, re theta
Random-effects GLS regression                   Number of obs     =         24
Group variable: ID                              Number of groups  =          4

R-sq:                                           Obs per group:
     within  = 0.7558                                         min =          2
     between = 0.9994                                         avg =        6.0
     overall = 0.9566                                         max =         12

                                                Wald chi2(9)      =     308.59
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

------------------- theta --------------------
  min      5%       median        95%      max
0.0000   0.0000     0.0000     0.0000   0.0000

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |   .5074399   .1053816     4.82   0.000     .3008957    .7139842
        bnpl |   1.882003   .3157288     5.96   0.000     1.263186     2.50082
        BCAR |    6.06861   1.183018     5.13   0.000     3.749938    8.387282
          TR |  -.4593867   .4013813    -1.14   0.252    -1.24608    .3273061
         FDI |   1.110276   .5158947     2.15   0.031     .0991413    2.121411
        IntR |   1.058014   .3543678     2.99   0.003     .3634664    1.752563
       CurAB |  -1.635558   .2862074    -5.71   0.000    -2.196514   -1.074602
       Capdc |  -.6062476   .1120525    -5.41   0.000    -.8258664   -.3866288
         TDS |   .6628327   .2882528     2.30   0.021     .0978676    1.227798
       _cons |  -68.72556   12.61626    -5.45   0.000    -93.45298   -43.99813
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  2.9877849
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

*Hausman test for fixed versus random effects model

```
. quietly xtreg $ylist $xlist, fe
. estimates store fixed
. quietly xtreg $ylist $xlist, re
. estimates store random
. hausman fixed random
```

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
BroM	-.4045315	.5074399	-.9119714	.1539857
bnpl	.6345208	1.882003	-1.247482	.209407
BCAR	-1.265072	6.06861	-7.333682	1.274668
TR	.0088643	-.4593867	.468251	.
FDI	-1.266958	1.110276	-2.377235	.1842098
IntR	.5012439	1.058014	-.5567706	.
CurAB	-1.226758	-1.635558	.4088003	.
Capdc	.3989894	-.6062476	1.005237	.2149046
TDS	-.5312856	.6628327	-1.194118	.1077501

```
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       30.30
                Prob>chi2 =      0.0004
                (V_b-V_B is not positive definite)
```

*Breusch and Pagan Lagrangian multiplier test

```
. xttest0

        dCred[ID,t] = Xb + u[ID] + e[ID,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                   dCred |    358.588       18.93642
                       e |   8.926859       2.987785
                       u |          0              0

        Test:   Var(u) = 0
                             chibar2(01) =     0.00
                          Prob > chibar2 =   1.0000
```

White's test for Ho: homoskedasticity

```
. estat imtest, white
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity
         chi2(23)     =     24.00
         Prob > chi2  =    0.4038


Cameron & Trivedi's decomposition of IM-test
---------------------------------------------------
              Source |       chi2     df      p
---------------------+-----------------------------
  Heteroskedasticity |      24.00     23    0.4038
            Skewness |       6.67      9    0.6711
            Kurtosis |       0.31      1    0.5762
---------------------+-----------------------------
               Total |      30.99     33    0.5677
---------------------------------------------------
```

Autocorrelation detection – multicollinearity

```
  . pwcorr (Pearson) dCred BroM bnpl BCAR TR FDI IntR CurAB Capdc TDS

             |    dCred     BroM     bnpl     BCAR       TR      FDI     IntR
-------------+------------------------------------------------------------------
       dCred |   1.0000
        BroM |   0.6264   1.0000
        bnpl |  -0.1092  -0.2679   1.0000
        BCAR |   0.0466  -0.1530  -0.0147   1.0000
          TR |  -0.0618   0.1149   0.0185   0.2533   1.0000
         FDI |   0.0349   0.0856  -0.0612  -0.1362   0.1854   1.0000
        IntR |   0.2130   0.1668  -0.0267   0.1582   0.3607   0.0077   1.0000
       CurAB |  -0.0275   0.0792   0.0140   0.0206   0.0857  -0.2742  -0.0286
       Capdc |   0.3771   0.2747  -0.0543   0.3884  -0.0822   0.1602  -0.0597
         TDS |   0.2773   0.0942   0.1026  -0.2018   0.0066   0.1689   0.1725


             |    CurAB    Capdc      TDS
-------------+---------------------------
       CurAB |   1.0000
       Capdc |  -0.3848   1.0000
         TDS |   0.0041   0.1210   1.0000
```

Multicollinearity test (2)

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
       CurAB |      8.86    0.112882
         FDI |      8.77    0.114066
       Capdc |      7.85    0.127422
          TR |      3.61    0.277315
        BroM |      2.60    0.384771
        bnpl |      2.57    0.389427
        BCAR |      2.46    0.406377
        IntR |      1.97    0.506437
         TDS |      1.89    0.528385
-------------+----------------------
    Mean VIF |      4.51
```

Prais-Winsten AR(1) regression -- iterated estimates

```
      Source |       SS           df       MS      Number of obs   =        24
-------------+----------------------------------   F(9, 14)        =    106.80
       Model |   17522.898         9  1946.98867   Prob > F        =    0.0000
    Residual |  255.212578        14  18.2294699   R-squared       =    0.9856
-------------+----------------------------------   Adj R-squared   =    0.9764
       Total |  17778.1106        23   772.96133   Root MSE        =    4.2696

------------------------------------------------------------------------------
       dCred |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        BroM |   .4616968   .0789723     5.85   0.000      .292318    .6310755
        bnpl |   1.874977   .2303416     8.14   0.000     1.380943     2.36901
        BCAR |   6.358889   .8406221     7.56   0.000     4.555934    8.161844
          TR |  -.8322332   .3408436    -2.44   0.028     -1.56327   -.1011965
         FDI |   1.364104    .438823     3.11   0.008     .4229218    2.305285
        IntR |   1.201409   .2403246     5.00   0.000      .685964    1.716854
       CurAB |  -1.668823   .2632656    -6.34   0.000    -2.233471   -1.104174
       Capdc |  -.7128414   .0797668    -8.94   0.000    -.8839243   -.5417585
         TDS |   .6765298   .2389687     2.83   0.013      .163993    1.189067
       _cons |  -66.35223   8.778289    -7.56   0.000    -85.17979   -47.52467
-------------+----------------------------------------------------------------
         rho |  -.6307214
------------------------------------------------------------------------------
```

Durbin-Watson statistic (original)   1.829901 (no autocorrelation DW 1.696 - 2.304)
Durbin-Watson statistic (transformed) 1.764703 (no autocorrelation DW 1.696 - 2.304)

Stationary Data

```
Fisher-type unit-root test for dCred
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     16
Ha: At least one panel is stationary        Avg. number of periods =  19.19

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
------------------------------------------------------------------------------
                                 Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(32)   P       143.7444       0.0000
 Inverse normal            Z        -2.4397       0.0073
 Inverse logit t(84)       L*       -6.7546       0.0000
 Modified inv. chi-squared Pm       13.9681       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
Fisher-type unit-root test for BroM
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     11
Ha: At least one panel is stationary        Avg. number of periods =  26.73

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
```

```
Drift term:   Not included                 ADF regressions: 0 lags
------------------------------------------------------------------------------
                                 Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(22)   P        53.3542       0.0002
 Inverse normal            Z        -1.5366       0.0622
 Inverse logit t(59)       L*       -2.8443       0.0031
 Modified inv. chi-squared Pm        4.7268       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.

Fisher-type unit-root test for bnpl
Based on augmented Dickey-Fuller tests
--------------------------------------
Ho: All panels contain unit roots          Number of panels       =     15
Ha: At least one panel is stationary       Avg. number of periods =  12.93

AR parameter: Panel-specific               Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                 ADF regressions: 0 lags
------------------------------------------------------------------------------
                                 Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(30)   P        97.3479       0.0000
 Inverse normal            Z        -2.9321       0.0017
 Inverse logit t(74)       L*       -5.3540       0.0000
 Modified inv. chi-squared Pm        8.6946       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
Fisher-type unit-root test for BCAR
Based on augmented Dickey-Fuller tests
--------------------------------------
Ho: All panels contain unit roots          Number of panels       =     14
Ha: At least one panel is stationary       Avg. number of periods =  13.36

AR parameter: Panel-specific               Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                 ADF regressions: 0 lags
------------------------------------------------------------------------------
                                 Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(28)   P        95.7802       0.0000
 Inverse normal            Z        -3.9564       0.0000
 Inverse logit t(69)       L*       -5.8591       0.0000
 Modified inv. chi-squared Pm        9.0575       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
Fisher-type unit-root test for TR
Based on augmented Dickey-Fuller tests
--------------------------------------
Ho: All panels contain unit roots          Number of panels       =     10
Ha: At least one panel is stationary       Avg. number of periods =  15.20

AR parameter: Panel-specific               Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                 ADF regressions: 0 lags
------------------------------------------------------------------------------
```

```
                                Statistic      p-value
--------------------------------------------------------------------------------
 Inverse chi-squared(18)   P        91.4796       0.0000
 Inverse normal            Z        -4.5540       0.0000
 Inverse logit t(44)       L*       -8.1473       0.0000
 Modified inv. chi-squared Pm       12.2466       0.0000
--------------------------------------------------------------------------------
Fisher-type unit-root test for FDI
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     16
Ha: At least one panel is stationary        Avg. number of periods =  25.94

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
--------------------------------------------------------------------------------
                                Statistic      p-value
--------------------------------------------------------------------------------
 Inverse chi-squared(32)   P        68.9634       0.0002
 Inverse normal            Z        -4.1344       0.0000
 Inverse logit t(84)       L*       -4.1169       0.0000
 Modified inv. chi-squared Pm        4.6204       0.0000
--------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.


Fisher-type unit-root test for IntR
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     11
Ha: At least one panel is stationary        Avg. number of periods =  24.18

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
--------------------------------------------------------------------------------
                                Statistic      p-value
--------------------------------------------------------------------------------
 Inverse chi-squared(22)   P       160.9847       0.0000
 Inverse normal            Z        -8.1939       0.0000
 Inverse logit t(59)       L*      -13.0506       0.0000
 Modified inv. chi-squared Pm       20.9527       0.0000
--------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
--------------------------------------------------------------------------------

Fisher-type unit-root test for CurAB
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     16
Ha: At least one panel is stationary        Avg. number of periods =  25.81

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
--------------------------------------------------------------------------------
                                Statistic      p-value
--------------------------------------------------------------------------------
 Inverse chi-squared(32)   P        51.8621       0.0146
```

```
 Inverse normal            Z        -2.4324       0.0075
 Inverse logit t(84)       L*       -2.4047       0.0092
 Modified inv. chi-squared Pm        2.4828       0.0065
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------

Fisher-type unit-root test for Capdc
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     10
Ha: At least one panel is stationary        Avg. number of periods =  17.10

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
------------------------------------------------------------------------------
                                Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(20)   P        44.3289       0.0014
 Inverse normal            Z        -2.2586       0.0120
 Inverse logit t(49)       L*       -3.0481       0.0019
 Modified inv. chi-squared Pm        3.8467       0.0001
------------------------------------------------------------------------------

Fisher-type unit-root test for TDS
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =      8
Ha: At least one panel is stationary        Avg. number of periods =  25.88

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
------------------------------------------------------------------------------
                                Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(16)   P        36.9247       0.0021
 Inverse normal            Z        -2.6505       0.0040
 Inverse logit t(44)       L*       -2.8916       0.0030
 Modified inv. chi-squared Pm        3.6990       0.0001
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------
```

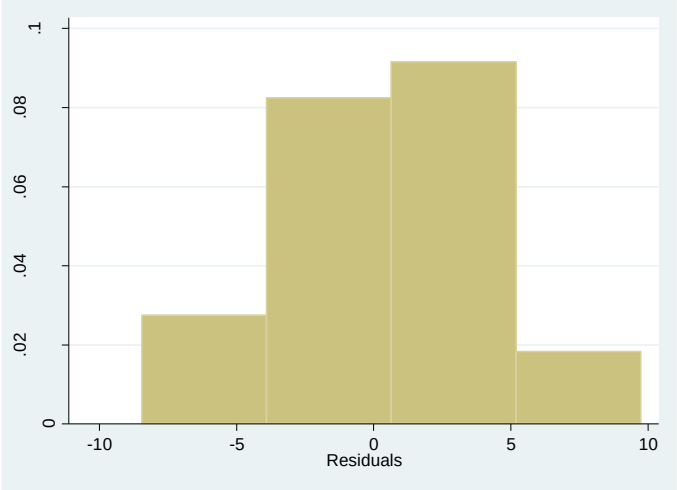
Skewness/Kurtosis tests for Normality

```
. predict resid, residuals
. sktest resid
```

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
		------ joint ------			
resid	24	0.6362	0.3556	1.16	0.5588

Histogram of normal distribution of the series



Annex III: Econometric Analysis: Single regression

GDP per capita and Domestic credit to private sector “dCred”

```
. xtset ID t
       panel variable:  ID (strongly balanced)
        time variable:  t, 1990 to 2020
                delta:  1 unit

. set matsize 10000
```

Pooled OLS estimator

```
. xi: regress GDP_cap dCred

      Source |       SS           df       MS      Number of obs   =       305
-------------+----------------------------------   F(1, 303)       =     20.19
       Model |  335.999991         1  335.999991   Prob > F        =    0.0000
    Residual |   5041.9736       303  16.6401769   R-squared       =    0.0625
-------------+----------------------------------   Adj R-squared   =    0.0594
       Total |  5377.97359       304  17.6907026   Root MSE        =    4.0792

------------------------------------------------------------------------------
     GDP_cap |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dCred |  -.0548796   .0122129    -4.49   0.000    -.0789125   -.0308467
       _cons |   5.119483   .6041839     8.47   0.000     3.930555    6.308411
------------------------------------------------------------------------------
```

```
. xtreg GDP_cap dCred, re

Random-effects GLS regression                   Number of obs     =       305
Group variable: ID                              Number of groups  =        16

R-sq:                                           Obs per group:
     within  = 0.0596                                         min =        11
     between = 0.2046                                         avg =      19.1
     overall = 0.0625                                         max =        30

                                                Wald chi2(1)      =     20.07
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000

------------------------------------------------------------------------------
     GDP_cap |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dCred |  -.0555772    .012406    -4.48   0.000    -.0798924    -.031262
       _cons |   5.159433   .6174516     8.36   0.000      3.94925    6.369616
-------------+----------------------------------------------------------------
     sigma_u |  .26159761
     sigma_e |  4.0827646
         rho |  .00408865   (fraction of variance due to u_i)
```

```
------------------------------------------------------------------------------
. est store random
. xtreg GDP_cap dCred, fe


Fixed-effects (within) regression               Number of obs      =       305
Group variable: ID                              Number of groups   =        16

R-sq:                                           Obs per group:
     within  = 0.0596                                         min =        11
     between = 0.2046                                         avg =      19.1
     overall = 0.0625                                         max =        30

                                                F(1,288)           =     18.27
corr(u_i, Xb)  = -0.2861                        Prob > F           =    0.0000

------------------------------------------------------------------------------
     GDP_cap |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dCred |  -.0687685     .01609    -4.27   0.000    -.1004374   -.0370996
       _cons |   5.753156   .7704208     7.47   0.000     4.236787    7.269525
-------------+----------------------------------------------------------------
     sigma_u |  1.0652361
     sigma_e |  4.0827646
         rho |  .06373553   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(15, 288) = 0.97                     Prob > F = 0.4924

. est store fixed
```

. Hausman fixed random

```
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |     fixed        random       Difference          S.E.
-------------+------------------------------------------------------------
       dCred |   -.0687685    -.0555772       -.0131914         .010246
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        1.66
                Prob>chi2 =      0.1979
```

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

```
        GDP_cap[ID,t] = Xb + u[ID] + e[ID,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                 ---------+-----------------------------
                  GDP_cap |    17.6907       4.206032
                        e |   16.66897       4.082765
                        u |   .0684333       .2615976

        Test:   Var(u) = 0
                              chibar2(01) =     0.58
                            Prob > chibar2 =   0.2238
```

```
.  pwcorr  GDP_cap dCred

             |  GDP_cap    dCred
-------------+------------------
     GDP_cap |   1.0000
       dCred |  -0.2500   1.0000

. . prais GDP_cap dCred

Number of gaps in sample:  15   (gap count includes panel changes)
(note: computations for rho restarted at each gap)

Iteration 0:  rho = 0.0000
Iteration 1:  rho = 0.2013
Iteration 2:  rho = 0.2032
Iteration 3:  rho = 0.2032
Iteration 4:  rho = 0.2032
```

Prais-Winsten AR(1) regression -- iterated estimates

```
      Source |       SS           df       MS      Number of obs   =       305
-------------+----------------------------------   F(1, 303)       =     15.33
       Model |  246.153696         1  246.153696   Prob > F        =    0.0001
    Residual |  4864.50175       303  16.0544612   R-squared       =    0.0482
-------------+----------------------------------   Adj R-squared   =    0.0450
       Total |  5110.65544       304  16.8113666   Root MSE        =    4.0068

------------------------------------------------------------------------------
     GDP_cap |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dCred |  -.0554612    .014479    -3.83   0.000    -.0839533   -.0269691
       _cons |   5.056701   .7183845     7.04   0.000     3.643046    6.470355
-------------+----------------------------------------------------------------
         rho |   .2031911
------------------------------------------------------------------------------
```

Durbin-Watson statistic (original)   1.436410

Durbin-Watson statistic (transformed) 1.725816

.

```
. xtunitroot fisher dCred, dfuller trend lags(0)
(189 missing values generated)

Fisher-type unit-root test for dCred
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     16
Ha: At least one panel is stationary        Avg. number of periods =  19.19

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Included
Drift term:   Not included                  ADF regressions: 0 lags
------------------------------------------------------------------------------
                                 Statistic      p-value
------------------------------------------------------------------------------
 Inverse chi-squared(32)   P       143.7444       0.0000
 Inverse normal            Z        -2.4397       0.0073
 Inverse logit t(84)       L*       -6.7546       0.0000
 Modified inv. chi-squared Pm       13.9681       0.0000
------------------------------------------------------------------------------
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
------------------------------------------------------------------------------

. xtunitroot fisher GDP_cap, dfuller trend lags(0)
(62 missing values generated)

Fisher-type unit-root test for GDP_cap
Based on augmented Dickey-Fuller tests
---------------------------------------
Ho: All panels contain unit roots           Number of panels       =     16
Ha: At least one panel is stationary        Avg. number of periods =  27.13
```

AR parameter: Panel-specific Asymptotics: T -> Infinity

Panel means: Included

Time trend: Included

Drift term: Not included ADF regressions: 0 lags

		Statistic	p-value
Inverse chi-squared(32)	P	104.6419	0.0000
Inverse normal	Z	-6.6944	0.0000
Inverse logit t(84)	L*	-7.0273	0.0000
Modified inv. chi-squared	Pm	9.0802	0.0000

P statistic requires number of panels to be finite.

Other statistics are suitable for finite or infinite number of panels.