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Enterprise Risk Management (ERM)

MASTER THESIS



How do organizations, such as Banks and Asset Management entities try to address challenges from non-performing exposures (loans), turn threats and crisis situations into strategic opportunities in times of crisis management.

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Supervisor

Dr. Anastasis Petrou

May 2020

Open University Cyprus Hellenic Open University

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Executive Summary

“Non-Performing Loans (NPLs) is one of the asset’s quality measurements used by the central banks and commercial banks. NPL includes distressed loans, defaulted loans and impaired loans. In accordance with the Basel II requirements, the ECB defines NPL as loans where principal and/or interest payments are overdue for more than 90 days, or interest was capitalized or refinanced by other agreement. In addition, it might be a situation when it becomes clear that the debtor is unlikely to fulfil its financial obligations without selling the collateral and, in this case, the overdue days are not important” (Kucinskis, K. et al, 2017).

The aim of this thesis is to understand how banks and asset management entities identify, deal with (in the short term) and support they require to ameliorate (in the long term) the consequences from non-performing exposures. According to Dimitrios Louzis, Angelos Vouldis and Vasilios Metaxas “The determinants of NPLs should not be sought exclusively among macroeconomic variables, which are exogenous to the banking industry. The distinctive features of the banking sector and the policy choices of each bank, particularly with respect to their efforts to improve efficiency and the risk management, are expected to influence the evolution of NPLs”. In order to identify how both entities deal with the non-performing loans (NPLs), the Qualitative method with the ‘open-type’ questionnaire was used. The questionnaire was divided into four [4] sections and was constructed so as to collect as much information as possible regarding the NPLs.

Based on the results, the following are considered as major causes of NPEs; the default by customers, the strategic defaulter and the lack of supervision. In addition, the inadequate credit appraisal system of the modern environment but also that of 2008-2013 contributed positively to the increase of NPEs in the economy. Moreover, the Moral Hazard statement and the Financial Illiteracy have affected positively the NPEs. The financial institutions in dealing with NPEs, were using similar measures such as the creation of dedicated teams within their organizations and selling of loan portfolios to asset management entities. Finally, we can conclude that the impact of NPEs on the balance sheets of the banks was negative.

Furthermore, for those determinants that have significant impact on NPLs have been analysed and presented. The aim of this section is to present how the economy of Cyprus reacted during the global financial crisis and afterwards. Few of the determinants that have been used are the GDP Growth rate, Inflation rate, Employment and Unemployment.

Finally, “NPLs are one of the most critical challenges that banks have to face (Nouy, 2017) to reduce cost (for example restructuring, litigation, and regulation costs) and avoid negative effects deriving from capital absorption and reduced reputation. Excessive NPLs negatively affect banks’ lending (volume and price) through different channels: a) Profitability, because NPLs require banks to raise provisions, b) Capital, because bad loans are associated with higher risk-weights and c) Funding, because investors increase premiums due to risk (IMF, 2015)” (Broccardo, E. et al, 2017)

Keywords: NPL, NPE, NPA, Asset management companies, Banking system, Bad Loans, Macroeconomic determinants, Microeconomic determinants, Technical recession, Business Fluctuations, Credit risk, Currency mismatches, Bank specific variables

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Chapter 1

Introduction

“Often, the banking problems do not arise from the liability side, but from a protracted deterioration in asset quality, be it from a collapse in real estate prices or increased bankruptcies in the nonfinancial sector”. (Kaminsky G. and Reinhart C., pg.474,1999)

1.1 Problem Statement

Over the past decade, the credit quality of loan portfolios across most countries in the world remained relatively stable until the financial crises hit the global economy in 2007-2008 (Beck, R. et al., 2013).

Often, the term “bank” is mistake for credit institution, even if, as it is known, banks are only a part, though significant, of the structure of credit institutions (Morosan, G. et al., 2018).

In the sense, banks are clearly a category of entities essential/fundamental for the functioning and prosperity of national economies and of the contemporary global economy, an important, link “in the chain” of socio-economic development, as they have a specific share in the total financial assets of the economy (Morosan, G. et al., 2018).

The Cyprus economy from the year 2000 and onwards, experienced a rapid growth in terms of new credit lending and expansion, due to the positive expansion/growth of the real estate sector and other macroeconomic determinants (e.g. low unemployment, interest rates and etc.). The Gross Domestic Product (GDP) of Cyprus in 2000 was £6.157Bn – Cyprus pounds (or €10.734Bn) and in 2008 was €27Bn, showing the positive outlook of the expansion/growth that the economy had.

In 2008 the global financial crisis began, caused by the deregulation of the financial industry in the U.S. The expansion of the previous years backed by cheap, wantonly issued subprime mortgages, available to even those with questionable creditworthiness (Amadeo, K., 2019). As a consequence of the deregulation of the financial industry in the

U.S, the Lehman Brothers filed for bankruptcy on Monday, September 15 of 2008. This act, to file for bankruptcy has caused chain reactions to the financial industry worldwide, a new financial crisis period has just begun.

Figure 1. Causes of the 2008 Global Financial Crisis



Author: Kelly Miller

Source: The Balance, 2019

As a result of the above, the banks started to experienced problems with the non-creditworthiness borrowers by not paying their credit facilities/loans. This issue in financial terms is called “Non-Performing Loan or Non-Performing Exposure”. The non-performing exposures oblige the banks to make provisions for potential future losses. These provisions are causing to the banks several credit issues such as inadequate capital to cover the credit losses and oblige them to postpone the credit growth (by providing new loans to the economy) that they were planning.

According to the latest data available from the Central Bank of Cyprus (CBC), the non-performing exposures in 2019Q3 amount to the 29% of all total facilities in the economy, amount to €9.624Bn (€9.624.240.000).

1.2 Research Aim, Objectives and Research Questions

A stable and effective banking system is a key factor for economic growth and development, contributing to the efficient allocation of resources as well as a lever for asset management and capital accumulation. The ability of banks to mitigate shocks and vulnerabilities they are exposed to, based on appropriate policies and regulations are very important (Donath, L. et al., 2014).

On the contrary, counter-party risk is an outcome directly related to the non-performing assets (NPAs) of a financial institution. Even though NPAs are permanent phenomenon in the balance sheets of the financial institutions, if not contained properly, they eventually lead to crisis that can pose big threats of contagion that can engulf the financial health of the system (Vighneswara, S., 2012).

According to the Global Financial Stability Report of 2009 issued by the International Monetary Fund (IMF), states that identifying and dealing with distressed assets and recapitalizing weak but viable institutions and resolving failed institutions, are the two out of the three important priorities which directly relate to NPAs (Vighneswara, S., 2012).

The effects of the non-performing exposures to the financial institutions differ from country to country, due to the different characteristics of the financial system in which they operate. Comparing the outcome derived from the bad management of NPEs from each country, we can state that the consequences on each country's economy are very similar, but the measures taken to tackle these consequences varied. The measures taken by each government to tackle the increased number of NPEs are not the same, because the exposure to each determinant that causing it, varies from country to country.

Research Aim: To understand how banks and asset management entities identify, deal with, gain support and ameliorate consequences from non-performing exposures.

Research Objectives:

1. To understand how banks and asset management entities identify non-performing exposures.
2. To evaluate how banks and asset management entities deal with non-performing exposures.
3. To analyze how the legal system supports banks and asset management entities to deal with consequences from non-performing exposures.

Research Questions:

- How do banks and asset management entities identify non-performing exposures?
- How do banks and asset management entities deal with non-performing exposures?
- How does the legal system authorities support the country's banks and asset management entities ameliorate consequences of non-performing exposures?

To identify how the banks and asset management entities identify and deal with the non-performing exposures we will use the qualitative method. For this case, we have created and distributed an electronic type questionnaire to identify the causes, the impact and the management of NPEs in both entities, banks and asset management companies.

The questionnaire includes many causes of NPEs as they have been identified during the literature review, as we will see in chapter 3.

Furthermore, as the dissemination period ends, the data will be collected, analyzed and interpreted in order to identify the causes of NPEs, and how both entities try to tackle the abovementioned problem. The results will be presented in graphs and critically analyzed in terms of findings and implications.

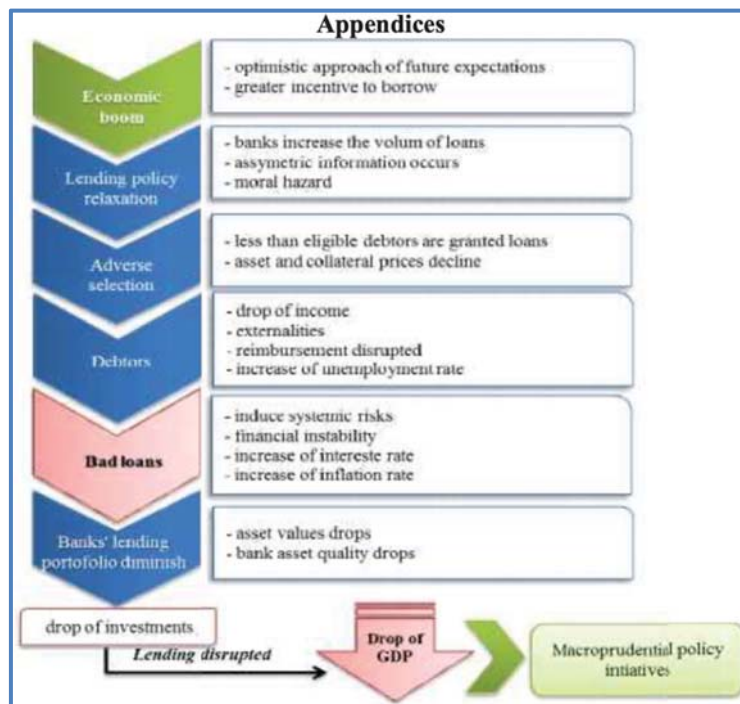
1.3 Overview of Economy Events

As we can observe from the previous section 1.2 Research Objective and from the literature review (Chapter 3), we can state that economic growth is possible under financial system stability in which banks play the major part, and therefore an upward trend of bad loans may disturb the entire economy (Donath, L. et al., 2014). In addition, mounting bad loans is an indicator of imminent financial and economic crises (Kaminski & Reinhart, 1999).

The two main sets of determinants that explain the persistence of bad loans in time is 1) Exogenous (macroeconomic environment) and 2) Endogenous (specific for the banking activity) (Donath, L. et al., 2014).

The economic crisis of 2007 – 2008 has revealed the fragility of banking systems, mainly induced a) by the lack of capital adequacy and inadequate liquidity, b) as well as hazardous state intervention, c) incomplete transparency of bail out measures and d) concentration of the bank market (Donath, L. et al., 2014).

Figure 2. The Financial Crisis Development



Authors: Donath, L., Cerna, V. & Oprea, I., 2014

The GDP of Cyprus in 2000 was £6.157Bn– Cyprus pounds (or €10.734Bn) and in 2006 was £9.075Bn– Cyprus pounds (or €15.506Bn) showing an increase of £4.772Bn, also the GDP of 2006 was 1.45x times the GDP of 2000 showing the positive outlook of the economy of Cyprus. The positive growth of the economy continued in 2008 with an increase of the GDP to €27.0Bn, an increase of €16.26Bn from 2000 or 2.52x times the GDP, and an increase of €11.49Bn from 2006 or 1.75x times the GDP.

In that year, the banking sector of Cyprus was estimated to be equivalent to nine times the country's GDP, when in the EU the average equivalent was close to 3.5x times of GDP.

Table 1. Major Banks in Cyprus in 2014

Financial Institution	Deposits (in billions)	Loans (in billions)
Bank of Cyprus	€13.3	€19.8
Cooperative Central Bank	€12.2	€10.4
Hellenic Bank	€6.1	€3.3
Eurobank	€3.0	€1.1
Piraeus Bank	€1.2	€840m
USB	€641m	€394m
CDB	€395m	€345m

Source: Central Bank of Cyprus

The credit rating of the Cyprus economy that period as provided by the credit agencies Moody's, Fitch and S&P is as showing in the following table.

Table 2. Credit Rating of the Cyprus Economy

Credit Rating Agency	Rating	Outlook	Date
Moody's	A2	Negative	30/05/2000
Moody's	A+	Stable	12/03/2001
Fitch	A+	Positive	04/11/2003
S&P	A	Positive	29/03/2007
Moody's	A1	Stable	10/06/2007
Fitch	AA-	Stable	12/06/2007
Moody's	Aa3	Stable	03/01/2008
S&P	A+	Stable	24/04/2008
S&P	A	Negative	16/11/2010
Moody's	Aa3	Negative Watch	13/01/2011

Source: Credit Agencies Log Entries

As we can conclude from Table 2 above, the rating agencies score the Cyprus economy as stable and positive from the year 2000 to 2008. In 2010 and onwards, the three credit rating agencies [Moody's, Fitch and S&P] rate the economy of Cyprus as negative and negative watch, with ratings as A+, A and Aa3. As a result of the above, we can conclude that the economy of Cyprus enters a recession period with unstable and unforeseeable outcomes.

Following the global financial crisis which had started in 2008 from the U.S, the government of Cyprus in 2012 became the fifth member state of the European Union that requested the monetary aid of Troika. Amid the political tremors, it fell to three institutions, the European Commission, the European Central Bank (ECB) and the International Monetary Fund (IMF) to engineer, administer and monitor aid packages, in an informal alliance dubbed the “Troika” (European Stability Mechanism, 2019). At the same period, as part of their internal policies and guidelines, the banks decided to expand further, by investing €5.7Bn in Greek bonds. This decision had increased the risk exposure to exogenous parameters further, which was fatal after the haircut of debt of the Greek economy by the Troika. This measure taken by Troika, to haircut the national debt of Greece, cost to the Cypriot banks’ losses of approximately €4.5Bn.

On 25th of March 2013, a €10Bn international bail-out by the Eurogroup, the European Commission, the European Central Bank and the International Monetary Fund was announced, in return the Cyprus government agreed to close the country’s second-largest bank, the Cyprus Popular Bank (Laiki Bank) (Central Bank of Cyprus, 2013). In addition to the bail-out by the Eurogroup and Troika, it was decided that the largest bank in Cyprus, the Bank of Cyprus (BoC) must impose a haircut on all uninsured deposits that were over €100.000. The total amount of haircut imposed by the Bank of Cyprus was estimated to be approximately of €4.0Bn, 47.5% of all insured deposits. After the bail-in of the depositors, the Bank of Cyprus has merged with the Cyprus Popular Bank. The Bank of Cyprus (BOC) took over most of their assets and debts, including €9.2Bn in Emergency Liquidity Assistance (ELA). The Ministry of Finance in their explanation of the above, state that the inadequate regulatory and supervisory framework, the reckless credit expansion, the high concentration and exposure on Greek government bonds and the over expanded banking system were few of the many causes that lead the economy of Cyprus to collapse.

Based on the terms that were imposed by the Memorandum of Understanding (MoU) signed by Troika and Cyprus, the recapitalization of the third-largest bank in Cyprus had to be carried out. The Cyprus government has purchased the 77% of the Cooperative Central Bank (CCB) in 2014 and 2015 during the recapitalization process at the amount of €1.7Bn. In the following years, the Government of Cyprus tried to liquidate the CCB to the highest bidder in a process that was controlled by the European Commission. According to their official announcement on June 19th of 2018, “The European Commission has approved, under EU rules, Cypriot measures to facilitate the liquidation of Cyprus Cooperative Bank (CCB) under national law. They involve the sale of some CCB assets and deposits to Hellenic Bank” (European Commission, 2018).

Hellenic Bank according to the official announcement, has paid €74m to the Government of Cyprus to acquire a balance sheet of €10.36Bn in total assets. The price that Hellenic Bank paid for the CCB was at 0.3x the book value of CCB. The assets that have been transferred to the new owner were 1) €4.1Bn of loans, 2) €0.5Bn of non-performing exposures, 3) €4.0Bn of Government bonds and 4) €1.6Bn in cash. On Wednesday, 5th of September 2018 the Central Bank of Cyprus in an official statement said that “The European Central Bank (ECB) has taken a decision on 31/08/2018 to proceed with the

withdrawal of the licence of the Cyprus Cooperative Bank Ltd (CCB) to operate as a credit institution. The withdrawal came into effect on 03/09/2018, date which the agreement between CCB and Hellenic Bank Public Limited (“Hellenic”) for the transfer of certain targeted perimeter of assets and liabilities to Hellenic was concluded”.

Figure 3. Official Announcement of Central Bank of Cyprus



Source: Central Bank of Cyprus, 2018

Finally, after the dissolution of the Cooperative Central Bank, a new company was created named “Cooperative Asset Management Company (SEDIPES)” where all the remaining assets of CCB were transferred. On 14th of August 2018, the Cooperative Asset Management Company has founded the subsidiary company KEDIPEs, “Cyprus Asset Management Company”, an asset management company which its main duty is to manage the non-performing exposures and the real estate assets of the ex-CCB. KEDIPEs in 2019Q4 had managed 1) €7.0Bn on non-performing exposures, 2) €0.5Bn loans, 3) €165m shares in companies and 4) €600m in real estate properties that were owned by the ex-CCB.

1.4 Structure

The optimal way to interact readers interest is how you organize and present your master thesis. As Leonard Bernstein said, “To achieve great things, two things are needed: a plan, and not quite enough time” (Biography, 2014). In our case we will replace the word “plan” with the word “structure”, for a better fit in our case. In this section we will describe the structure of the thesis, how the thesis will be consisted.

In Chapter 1, the thesis purpose is stated at the problem statement section. In this section, the purpose is defined, as how the NPEs affects the viability of the financial institutions and the prosperity of a country. In the following section Research Objective, the problem that we have under consideration is defined. We will explain how the financial institutions and the asset management entities, try to address the non-performing exposures. At the overview of economy events section, a short brief of the major events that occurred and had affected the economy of Cyprus are described. The briefing starts from 2007-2008,

these years the global financial crises started, and ends in 2019 (due to limitation of the availability of the data).

In Chapter 2, we will state and explain the most important definitions that both, financial institutions and asset management companies, are using to communicate with the Central Bank of Cyprus and other European authorities. “The global financial crisis revealed difficulties for supervisors and other stakeholders in identifying and comparing banks’ information across jurisdictions. In particular, Basel Committee on Banking Supervision recognized that there may be significant differences how banks identify and report their asset quality” (Bank for International Settlements, 2016).

Before and during the financial crisis, the financial institutions reported their assets in different ways, as they were supervised by the Central Bank of the country that they operated. On a later stage, the Basel Committee with other European authorities’ cooperation, revised the directives that concern how the financial institutions must report their assets quality.

In Chapter 3, Literature Review, we review how the financial institutions and asset management companies that operate in other countries dealt with similar issues and situations. In this chapter we identify and state the determinants that had affected both entities, the measures taken to solve the problem and the methodology used, and finally we present the conclusion of each article/journal/paper. In addition, at this chapter we identify the most significant determinants that had affected the economy of a country, and we will use these determinants to extract our results as presented in chapters 6 and 7.

At Chapter 4, the research methodology is critically presented. The herein research methodology employed a mixed methods perspective of qualitative and quantitative elements in data collection such as “open-type” questionnaire forms. During the literature review process of articles/journals with similar cases that occurred in other countries, we have gathered and compiled all the significant data as stated in the articles/journals and we have created a questionnaire form as presented in chapter 10.

Furthermore, in this chapter we define our targeted sample, as the banking institutions and asset management companies, since each entity uses different approaches to solve similar problems.

Finally, we state the limitations of the research methodology we have chosen, and how may the outcome will be affected by those limitations.

The next chapter is Chapter 5. In this chapter we interpreted the data that were gathered from questionnaires and we state the limitations as identified during the collection of the data. In order to have valid results, certain requirements must be met, such as how many responses should be collected in order the answers provided not to mislead, and false results presented.

Chapter 6 presents the results of each section of the questionnaire as gathered and analyzed. The questionnaire is divided into four sections, Background information as

section one, Causes of NPEs as section two, Impact of NPEs as section three and Management of NPEs as section four.

The results of each section will be presented graphically, and the author will comment on those results.

In Chapter 7, data of the economy of Cyprus are presented. During the literature review, the most important factors/determinants that have affected the economy of a country and concerns the non-performing exposures were gathered. These data concern the GDP growth rate, non-performing exposures rate, unemployment rate and so on.

At section one we describe the data collection sources and limitations. The data have been collected from the public authorities, Central Bank of Cyprus and Statistical Service, and few data, such as the unemployment and employment of EU countries and credit scoring have been collected from third parties such as Eurostat and Credit agencies. Furthermore, at section two we present and analyzed the data and in section three the author provides his comments on the results and the limitations of data that may exists.

Chapter 8 summarizes the conclusion and recommendations based on the results provided in the previous chapters. Based on the analysis of the literature review, the statistics compiled by the public authorities and third parties and the results of the questionnaire, we can conclude how the financial institutions and the asset management companies address the challenges from the non-performing exposures and turn threats into strategic opportunities. In addition, in this chapter the author states the limitations and future research proposals for the subject under consideration.

Chapter 2

Definitions

2.1 Explanation of the definitions according to Basel Committee, Central Bank of Cyprus and European Central Bank

One of the lessons learnt from the financial crisis is that supervisors and investors could not always understand and compare information about credit categorization presented by banks' financial statements. Banks used different (and often undisclosed or insufficiently disclosed) methodologies and assumptions for valuations, provisioning and risk weightings, increasing opacity and reducing comparability for the end users. This inconsistency increased uncertainty at the height of the crisis and frustrated supervisors and investors who tried to compare and assess banks' performance and risk (Bank for International Settlements, 2016).

In particular, differences in the definitions of terms used in the accounting and regulatory frameworks exists, such as the concept of impairment or the definition of default used for modelling purposes. In addition, many countries that belong to different jurisdictions had established local/national supervisory definitions for asset categorization, different from those used in the accounting framework and/or the definition of default, in order to achieve consistent supervisory reporting and disclosure on asset quality driven prudential considerations. The above differences have been identified during a survey conducted by the Basel Committee, including twenty-eight [28] supervisors as well as industry practices through a questionnaire and case studies that were sent to thirty-nine [39] banks (Bank for International Settlements, 2016).

Therefore, according to the above results derived from the survey, the Basel Committee, the European Central Bank (ECB) and the European Banking Authority (EBA), tried to re-state important definitions in order to achieve more transparency and continuity in the financial sector in all jurisdictions. Enhanced comparability of terminology and the resulting harmonization of practice, enables supervisors and market participants to better understand asset quality issues, including on a cross-border basis and relative to other jurisdictions. Common definitions help set a consistent basis for supervisors to understand the levels of problem loans as they discuss and consider supervisory responses (Bank for International Settlements, 2016).

Thus, below we will mention the most important definitions as stated by the three [3] authorities and are used by the banks and concerns the non-performing exposures [NPEs].

1. Non-Performing Exposures [NPEs]

The non-performing exposures should always be categorized for the whole exposure, including when non-performance relates to only a part of the exposure, for instance unpaid interest. For off-balance sheet exposures, such as loan commitments or financial guarantees, the whole exposure is the entire in cancellable nominal amount (Bank for International Settlements, 2016).

Definition

Non-performing exposures are all the exposures that are “defaulted” under the Basel Framework (paragraph 452 and following Basel II rules text) where applicable, or

- All exposures that are credit-impaired (in the meaning of exposures having experienced a downward adjustment to their valuation due to deterioration of their creditworthiness) according to the applicable accounting framework, or
- All other exposures that are not defaulted or impaired but nevertheless:
 - a) Are material exposures that are more than 90 days past due; or
 - b) Where there is evidence that full repayment based on the contractual terms, original or, when applicable, modified (e.g. repayment of principal and interest) is unlikely without bank’s realization of collateral, whether or not the exposure is current and regardless of the number of days the exposure is past due.

(Bank for International Settlements, 2016).

Paragraph 452 of the Basel II Framework

A default is considered to have occurred with regard to a particular obligor when either or both of the following events have taken place:

- The bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such a realizing security (if held).
- The obligor is past due more than 90 days on any material credit obligation to the banking group. Overdrafts will be considered as being past due once the customer has breached an advised limit or been advised of a limit smaller than current outstanding.

(Bank for International Settlements, 2016).

Footnote 89

In the case of retail and public sector entities obligations, for the 90-day figure, a supervisor may substitute a figure of up to 180 days for different products, as it considers appropriate to local conditions (Bank for International Settlements, 2016).

Recategorization of non-performing exposures as performing

An exposure ceases to be non-performing and can be recategorized as performing when all the following criteria are simultaneously met:

- The counterparty does not have any material exposure more than 90 days past due;
- Repayments have been made when due over a continuous repayment period as specified by the supervisor of at least three months. A longer repayment period can be required for non-performing forborne exposures;
- The counterparty's situation has improved so that the full repayment of the exposure is likely, according to the original or, when applicable, modified conditions and
- The exposure is not defaulted according to Basel II standard or "impaired" according to the applicable accounting framework.

(Bank for International Settlements, 2016).

2. Forbearance

Definition

Forbearance occurs when:

- A counterparty is experiencing financial difficulty in meeting its financial commitments; and
- A bank's grants a concession that it would not otherwise consider, whether or not the concession is at the discretion of the bank and/or the counterparty. A concession is at the discretion of the counterparty (debtor) to change the terms of the contract in its own favor (embedded forbearance clauses) due to financial difficulty.
- The identification of an exposure as forbearance does not affect its categorization as impaired for accounting purposes or as defaulted in accordance with the regulatory framework.

Forbearance includes concessions that are granted due to the counterparty's financial difficulty exposure in the form of a loan, a debt security or an off-balance sheet item (e.g. loan on any commitments of financial guarantees), regardless of the measurement method for accounting purposes (Bank for International Settlements, 2016).

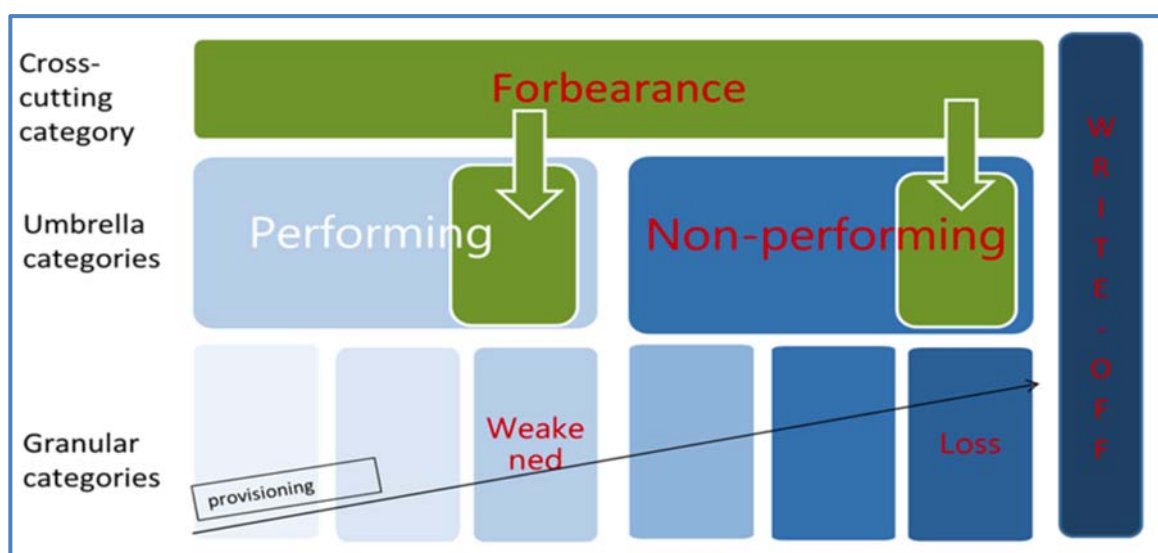
Criteria for exit from the Forborne Exposures category

A Forborne exposure will be identified as such until it meets both of the following exit criteria:

- a) When all payments, as per the revised contractual terms, have been made in a timely manner over a continuous repayment period of not less than one year (probation period for reporting). The starting date of the probation should be the scheduled start of payments under the revised terms, regardless of the performing or non-performing status of the exposure at the time that forbearance was granted; and
- b) The counterparty has resolved its financial difficulty.

(Bank for International Settlements, 2016).

Figure 4. Key Terms and their Interactions



Source: Bank of International Settlements, 2016

3. Past Due

Definition: Is an exposure where any amount due under the contract (interest, principal, fee or other amount) has not been paid in full at the date when it was due. An exposure should be considered past due from the first day of missed payment, even when the amount of the exposure or the past due amount, as applicable, is not considered material (Bank for International Settlements, 2016).

4. Material

Definition: Is an exposure that hits the materiality threshold in force in a given jurisdiction as defined by the supervisors. Nonetheless, a bank needs to have a categorization process in place for all exposures. The materiality threshold should be applied by reference to an aggregated exposure or past due amount determined by supervisors that is connected with the counterparty's debt and not the bank (Bank for International Settlements, 2016).

5. Unlikely Full Payment

Definition: Is an exposure where full repayment of principal and/or interest by the counterparty is unlikely without relying on the bank's realization of collateral or risk mitigants, even when it is not past due or has been past due for less than 90 days. The likelihood of repayment could also be assessed through a comprehensive analysis of the financial situation of the counterparty, using all inputs available, including but not limited to:

- i. patterns of payment behaviors in past circumstances,
- ii. new facts that change the counterparty's situation and
- iii. financial analysis.

(Bank for International Settlements, 2016).

6. Concessions

Definition: Concessions are special contractual terms and conditions provided by a lender to a counterparty facing financial difficulty so that the counterparty can sufficiently service its debt. The main characteristic of these concessions is that a lender would not extend loans or grant commitments to the counterparty, or purchase its debt securities, on such items and conditions under normal market conditions. Supervisors may set specific materiality thresholds for what constitutes a concession (Bank for International Settlements, 2016).

Concessions can be triggered by:

- a) changes in the conditions of the existing contract, giving considerably more favourable terms for the counterparty,
- b) a supplementary agreement, or a new contract to refinance the current transaction
- c) the exercise of clauses embedded in the contract that enable the counterparty to change the terms and conditions of its contract or to take on additional loans, debt securities or off-balance sheet items at its own discretion. These actions should only be treated as concessions if the bank assesses that the counterparty is in financial difficulty

(Bank for International Settlements, 2016).

7. Counterparty

Definition: A counterparty is a natural or legal person to which a bank has exposure (Bank for International Settlements, 2016).

8. Credit Risk

Definition: Credit risk is a measure of the creditworthiness of a borrower. In calculating credit risk, lenders are gauging the likelihood they will recover all of their principal and interest when making a loan. Borrowers considered to be a low credit risk, are charged lower interest rates. Lenders, investors, and other counterparties consult ratings agencies

to assess the credit risk of doing business with companies (Bank for International Settlements, 2016).

9. Market Risk

Definition: Market risk is defined as the risk of losses in, on and off-balance sheet positions arising from movements in market prices. The risks subject to this requirement are:

1. the risks pertaining to interest rate related instruments and equities in the trading book;
2. foreign exchange risk and commodities risk through the bank.

(Bank for International Settlements, 2016).

10. Operational Risk

Definition: Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk but excludes strategic and reputational risk.

Operational risk is inherent in all banking products, activities, processes and systems, and the effective management of operational risk has always been a fundamental element of a bank's risk management programme (Bank for International Settlements, 2016).

11. Concentration Risk

Definition: Concentration risk is the exposure(s) that may arise within or across different risk categories throughout an institution with the potential to produce:

- i. losses large enough to threaten the institution's health or ability to maintain its core operations; or
- ii. a material change in an institution's risk profile.

Two relationships between risk concentrations exist:

- i. Intra-risk concentration refers to risk concentrations that may arise from interactions between different risk exposures within a single risk category;
- ii. Inter-risk concentration refers to risk concentrations that may arise from interaction between different risk exposures across different risk categories. The interactions between the different risk exposures may stem from a common underlying risk driver or from interacting risk drivers.

(Bank for International Settlements, 2016).

12. Reputational Risk

Definition: Reputational risk means the current or prospective risk to the institution's earnings, own funds or liquidity arising from damage to the institution's reputation (Bank for International Settlements, 2016).

13. Conduct Risk

Definition: Conduct risk means the current or prospective risk of losses to an institution arising from inappropriate supply of financial services including cases of willful or negligent misconduct (Bank for International Settlements, 2016).

14. Counterbalancing Capacity

Definition: Counterbalancing capacity means the institution's ability to hold, or have access to, excess liquidity over short-term, medium-term and long-term time horizons in response to stress scenarios (Bank for International Settlements, 2016).

15. Credit Spread Risk

Definition: Credit spread risk means the risk arising from changes in the market value of debt financial instruments due to fluctuations in their credit spread (Bank for International Settlements, 2016).

16. Funding Risk

Definition: Funding risk means the risk that the institution will not have stable sources of funding in the medium and long term, resulting in the current or prospective risk that it cannot meet its financial obligations, such as payments and collateral needs, as they fall due in the medium to long term, either at all or without increasing funding costs unacceptably (Bank for International Settlements, 2016).

17. Interest Rate Risk

Definition: Interest rate risk (IRR) means the current or prospective risk to the institution's earnings and own funds arising from adverse movements in interest rates (Bank for International Settlements, 2016).

18. Macroprudential Requirement

Definition: Macro-prudential requirement or measure, means a requirement or measure imposed by a competent or designated authority to address macro-prudential or systemic risk (Bank for International Settlements, 2016).

19. Material Currency

Definition: Material currency means a currency in which the institution has material balance-sheet or off-balance sheet positions (Bank for International Settlements, 2016).

20. Risk Appetite

Definition: Risk appetite means the aggregate level and types of risk the institution is willing to assume within its risk capacity, in line with its business model, to achieve its strategic objectives (Bank for International Settlements, 2016).

21. Risk Score

Definition: Risk score means the numerical expression summarizing the supervisory assessment of an individual risk to capital, liquidity and funding representing the likelihood that a risk will have a significant prudential impact on the institution (e.g. potential loss) after considering risk management and controls and before consideration of the institution's ability to mitigate the risk through available capital or liquidity resources (Bank for International Settlements, 2016).

22. Risks to Capital

Definition: Risks to capital means distinct risks that, should they materialize, will have a significant prudential impact on the institution's own funds over the next 12 months. These include but are not limited to risks covered by Articles 79 to 87 of Directive 2013/36/EU (Bank for International Settlements, 2016).

23. Risks to Liquidity and Funding

Definition: Risks to liquidity and funding means distinct risks that should they materialize, will have a significant prudential impact on the institution's liquidity over different time horizons (Bank for International Settlements, 2016).

24. Supervisory Benchmarks

Definition: Supervisory benchmarks means risk-specific quantitative tools developed by the competent authority to provide an estimation of the own funds required to cover risks or elements of risks not covered by Regulation 2013/575/EU (Bank for International Settlements, 2016).

24. Sovereign Risk

Definition: Sovereign risk also known as country risk, is the risk of default in meeting the debt obligation by a country. It is the broadest measure of credit risk and includes country risk, political risk and transfer risk. One of the biggest unfortunate aspects of sovereign risk is that it is contagious in nature which means that what affects one country tends to affect other countries as well due to the globalized interconnected world. It is here to stay due to the inherent linkage between global economies (Bank for International Settlements, 2016).

25. Asset Management Company (AMC)

Definition: A special-purpose vehicle for cleansing bank balance sheets. A credit institution can transfer non-performing assets (NPA) to an AMC, subject to certain requirements and conditions being met. AMCs are often referred to as "bad banks" (European Central Bank, 2017).

26. Basel Committee on Banking Supervision (BCBS)

Definition: Committee of the Bank for International Settlements which provides a forum for regular cooperation on banking supervisory matters. Its objective is to enhance understanding of key supervisory issues and improve the quality of banking supervision worldwide (European Central Bank, 2017).

The most important regulatory frameworks are known as Basel II and Basel III. Representatives of central banks and supervisory authorities from different countries are members of the BCBS (European Central Bank, 2017).

27. Early Warning Indicators (EWI)

Definition: Quantitative or qualitative indicators, based on asset quality, capital, liquidity, profitability, market and macroeconomic metrics. In the context of the risk control framework, an institution can use progressive metrics (“traffic light approach”) or EWI to inform the institution’s management that a stress situation (“red triggers”) could potentially be reached (European Central Bank, 2017).

28. Foreclosed assets

Definition: For the purpose of this guidance, foreclosed assets are defined as assets held on the balance sheet of a credit institution obtained by taking possession of collateral, or by calling on similar credit enhancements. Those assets can be obtained through judicial procedures (“foreclosed” in strict sense), through bilateral agreement with the debtor (swap or sale) or other types of collateral transfer from debtor to creditor. Foreclosed assets comprise both financial assets and non-financial assets. Foreclosed assets include all collateral obtained irrespective of their classification for accounting purpose (e.g. including assets for own use and for sale) (European Central Bank, 2017).

29. Gross Domestic Product (GDP)

Definition: The standard measure of the value of final goods and services produced by a country during a period minus the value of imports (European Central Bank, 2017).

30. International Financial Reporting Standards (IFRS)

Definition: Set of international accounting standards stating how particular types of transactions and other events should be reported in financial statements (European Central Bank, 2017).

31. International Monetary Fund

Definition: International organization of which the primary purpose is to ensure the stability of the international monetary system – the system of exchange rates and international payments that enables countries (and their citizens) to transact with each other. The Fund’s mandate was updated in 2012 to include all macroeconomic and financial sector issues that have a bearing on global stability (European Central Bank, 2017).

32. Loan Loss Provision (LLP)

Definition: Reduction in the carrying amount of an asset to reflect its decrease in creditworthiness (European Central Bank, 2017).

33. Loan to Value (LTV)

Definition: Ratio used in the context of mortgage lending expressing the value of a loan compared to the appraised value of the underlying real estate (European Central Bank, 2017).

34. Non-Performing Assets (NPA)

Definition: Exposures (loans, debt securities, off-balance-sheet items) other than held for trading, that satisfy either or all of the following criteria:

- a) material exposure which are more than 90 days past-due;
- b) the debtor is assessed as unlikely to pay its credit obligations in full without realization of collateral, regardless of the existence of any past-due amount or the number of days past due.
- c) the foreclosed assets that were collected from the debtor.

(European Central Bank, 2017).

35. Non-Performing Loans (NPL)

Definition: Loans other than held for trading, that satisfy either or both of the following criteria:

- a) material loans which are more than 90 days past-due;
- b) the debtor is assessed as unlikely to pay its credit obligations in full without realization of collateral, regardless of the existence of any past-due amount or of the number of days past due.

Non-performing loans include defaulted and impaired loans. NPLs are part of NPEs (European Central Bank, 2017).

36. NPL WUs (Workout Units)

Definition: Dedicated and separate organizational units within the bank, solely occupied with NPL workout processes; those units can also comprise early arrears activities (i.e. exposures not yet classified as NPLs) or foreclosed assets (European Central Bank, 2017).

37. Net Present Value (NPV)

Definition: The nominal amount outstanding minus the sum of all future debt-service obligations (interest and principal) on existing debt, discounted at an interest rate different from the contracted rate (European Central Bank, 2017).

38. Open Market Value (OMV)

Definition: The price at which an asset would trade in a competitive auction setting. OMV is used interchangeably with Market Value (European Central Bank, 2017).

39. Probability of Default (PD)

Definition: Probability of default or PD means the probability of default of a counterparty over a one-year period (European Central Bank, 2017).

40. Performing Exposure (PE)

Definition: Exposures not covered by the NPE criteria as defined (European Central Bank, 2017).

41. Single Supervisory Mechanism (SSM)

Definition: The pillar of the EU banking union that is responsible for banking supervision. It comprises the ECB and the national supervisory authorities of the participating countries. Its main aims are to: (i) ensure the safety and soundness of the European Banking System, (ii) increase financial integration and stability and (iii) ensure consistent supervision (European Central Bank, 2017).

Chapter 3

Literature Review

3.1 Literature Review

“The more extensive a man’s knowledge of what has been done, the greater will be his power of knowing what to do” Benjamin Disraeli (1804-1881). One of the greatest powers of humankind is to record the history of many great civilizations, how they have been created, grown and parish through time. By studying all those great civilizations, what they had create, what problems they faced and how they solved them, gave to us the ability to avoid doing the same mistakes and to create a better future. They share their knowledge and they are helping us to solve similar kind of problems more efficiently, but the most important lesson that they gave to us, is how to avoid doing the same mistakes twice.

In this chapter we will review how the financial institutions and asset management companies that operate in other countries dealt with similar issues and situations. In addition, we will identify and state the determinants that have affected both entities, the measures taken and the methodology that they were used to solve the problems. Finally, we will present the conclusion of each journal. The journals that are presented below are a selection from the bibliography.

In the journal “Impact of Macroeconomic and Endogenous Factors on Non-performing Bank Assets” by Swamy (2012), the impact of macroeconomic and endogenous factors on non-performing assets during the period 1997-2009 was examined.

“The Global Financial Crisis, which has developed into the most severe crisis of the post-World War II crisis, has hit the real economy on a devastating scale resulting in the collapse of financial markets and institutions” (Swamy, 2012:27). According to the author, the financial crisis has risen the level of stress in the banking sector which is directly correlated with the non-performing assets of a banking institution.

Based on the journal, the banking sector in order to reduce the percentage of non-performing assets (NPA), which have a significant negative effect on the profitability of the financial institutions, financial stability must be achieved. To achieve the financial stability, three [3] key functions must occur simultaneously as follows:

1. Efficient and smooth facilitation of the inter-temporal allocation of resources from the surplus economic units to the deficit economic units,
2. Managing the forward-looking financial risks with appropriate pricing; and
3. To be prepared all the time to absorb the financial and real economic surprises and shocks, the core function of the payment system should therefore not fail as well.

As a result from the above, we can clearly state the two [2] main scopes of the journal are:

1. To identify the determinants of NPAs in the Indian Banking sector and,
2. If the NPAs affect in any way the ownership styles of the banks (nationalized or private owned bank's).

Therefore, to estimate the relationship of the determinants of NPAs and the ownership styles of the banks, the author used the "panel data" methodology consisting of fourteen [14] variables.

The variables (determinants) that were used in the model to identify the most significant ones, concerns the period of 1997-2009.

The variables that were used in the model are divided into two [2] categories as follows:

1. **Macroeconomic Variables**

- GDP growth rate.
- Inflation rate.
- Index of industrial production.
- Savings growth rate.
- Growth rate in per capital income in NNP.
- Market capitalization growth rate.

2. **Endogenous Variables**

- Bank assets (natural log).
- Capital adequacy ratio.
- Credit to deposit ratio (CDR).
- Bank lending rates.
- Operating expenses to total assets.
- Ratio of priority sector loans to total loans.
- Ratio of rural and semi-urban branches to total bank branches.
- Return on assets (ROA).

Based on the results extracted from the model, the NPAs are not affected by the GDP growth rate but instead they affected negatively by the Per capita income. The coefficient of asset has turned out to be negative and very significant, the CDR is negatively associated with NPAs, the Index of industrial production is negatively significant, the Market capitalization ratio is positively significant at the two [2] percent level, implying that transition to market orientation has impinged on the problem loans as the surpluses tend to move into the booming markets as investments, and thereby affecting the repayments

of bank loans. In addition, the ROA and Cost of Funds (CoF) are strongly associated with the NPAs negatively, and the lending rates have been found to be not so significant in affecting the NPAs.

Finally, the ownership styles of the banks according to the results affects the management and the impact of NPAs. More specifically, the private banks and the foreign banks appear to manage their NPAs more efficiently rather than the state bank group and nationalized banks, they lag behind their private counter parts in NPA management.

In the journal “Macroeconomic Determinants of Bad Loans in Baltic Countries and Romania” by Liliana Donath, Veronica Cerna and Ionela Oprea (2014), highlight the importance of an effective credit risk management due to the prolong deregulation of the financial markets. The purpose of the journal is to study the evolution of bad loans ratio in relation with selected macroeconomic indicators in the Baltic countries and Romania for the period of 2000-2013.

“A stable and effective banking system is a key factor for economic growth and development, contributing to the efficient allocation of resources as well as a lever for asset management and capital accumulation. The banking system stability is approached considering the ability of banks to mitigate shocks and vulnerabilities they are exposed to, based on appropriate policies and regulations” (Donath, L., et al, 2014:72). The authors emphasize the importance of the stability of the banking system because every credit exposure (every loan) provided to the customers is backed by a collateral, i.e. a residence, a field, an apartment etc. The financial crisis of 2007-2008 has revealed the fragility of banking systems, induced mainly by the lack of capital adequacy, inadequate liquidity, hazardous state intervention, incomplete transparency of bail-out measures and the concentration on the bank market.

Hence, as we can conclude from the above paragraph, the main scope/hypothesis of the article is that under an economic downturn, the level of bad loans is likely to grow, a higher impact being induced by a lower GDP, raising inflation and unemployment, and higher interest rates. The methodology applied by the authors in the study, is based on the quantitative analysis of data gathered for the Baltic countries, Estonia, Latvia and Lithuania by using the econometric models of multiple linear regression and Pearson correlation coefficient.

The International Monetary Fund (IMF) and Fofack (2005) consider a credit exposure as a bad loan when the amounts for which the interest and the principal are reimbursed with a delay that exceeds 90 days. Thus, the ability of the repayment of a loan through time is affected by two categories of determinants as follows:

1. The exogenous determinants that are linked to the general macroeconomic environment and,
2. The endogenous determinants that are linked to the banking activity.

The exogenous determinants of bad loans according to the authors are as follows:

- GDP growth rate.
- Exchange rate.
- Interest rate.
- Inflation rate.
- Market price of financial assets.

The endogenous determinants of bad loans according to the authors are as follows:

- Quality of the management.
- Inadequate level of the capital.
- Excessive lending.
- Low efficiency.

The methodology is analyzing the interdependence of the two [2] sets of determinants, the Macroeconomic indicators (GDP growth rate, inflation rate, unemployment rate and lending interest rates) as independent variables and bad loans ratio as dependent variable. All the variables, dependent and independent are expressed in percentage.

Therefore, due to the reason that the authors analyzed the two [2] sets of determinants for each country separately [four (4) in total], the results of each country are shown below as follows:

1. **Estonia**

- The Unemployment rate has positive correlation.
- The GDP growth rate has negative correlation.
- The Lending Interest rates have positive correlation.
- The Inflation rate is not significant but has negative correlation.

2. **Latvia**

- The GDP growth rate has negative correlation.
- The Unemployment rate has positive correlation.
- The Inflation rate has negative correlation.
- The Lending interest rates are not significant but have positive correlation.

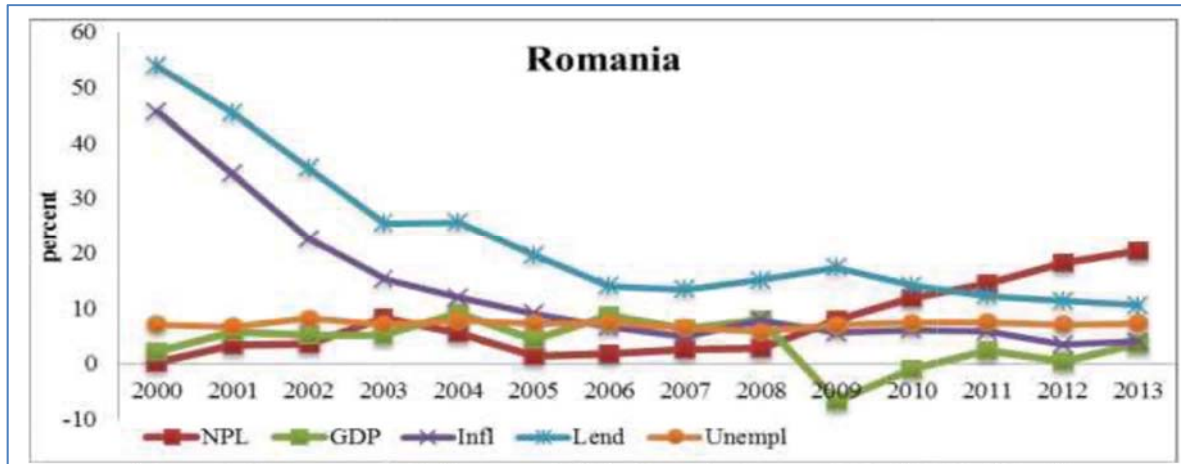
3. **Lithuania**

- The Unemployment rate has negative correlation.
- The GDP growth rate has negative correlation.
- The Inflation rate has negative correlation.
- The Lending interest rates have not significant influence on the level of NPLs.

4. Romania

- Statistical analysis of the determinants in the specific case was not relevant, the impact of selected macroeconomic determinants on NPL will be analyzed only through graphic correlation as shown below in figure 5.

Figure 5. Macroeconomic indicators and NPLs – Romania



Source: Macroeconomic Determinants of Bad Loans in Baltic countries and Romania, Donant, L., et al., 2014

Bofonti and Ropele (2011) main purpose in the article “Macroeconomic Determinants of Bad Loans: Evidence from Italian Banks”, is that they try to examine the macroeconomic determinants of banks’ loan quality in Italy, as measured by the ratio of new bad loans to the outstanding amount of loans in the previous period [t-1], for the period of 1990Q1-2010Q2.

The deterioration in banks’ loan quality has caused a built-up stock of bad loans that are causing a financial fragility within a country’s economy. “The global financial crisis and the subsequent recession in many developed countries have increased households’ and firms’ defaults, causing significant losses for banks” Bofonti & Ropele (2011). Thus, to ensure a sound financial system and prevent systemic crises a regular monitoring of loan quality is essential.

Therefore, the authors to determine which determinants affects the non-performing loan ratio significantly, they defined it as the main purpose of the methodology used. “As the macroeconomic developments may have different impact on loan quality depending on the type of borrower, a separate analysis for households and firms were used.” The methodology that was used is the “single-equation time series regressions”, that checks if certain macroeconomic indicators can affect the level of the quality of the bad loans in a bank institution. This methodology was specifically selected because firstly, it is relatively easy to handle and to interpret and secondly, the estimated specifications can be easily employed to predict the new bad loans (NBL) ratios using projections of the explanatory variables. At a later stage, the significant models were used to predict the future NBL ratio.

According to the Central Bank of Italy, the bad loans are classified as the outstanding exposures to borrowers who are not expected to meet their obligations towards a banking institution.

The authors divide the macroeconomic determinants of the NBL ratio into six [6] categories relating to:

1. The General state of economy.
2. The Conditions of price stability.
3. The Cost of servicing debt.
4. The Debt burden.
5. The Financial and real wealth.
6. The Outlook for economic growth.

For the General state of economy, the GDP annual growth rate and the seasonally adjusted unemployment rate were used (UNEMPL). The determinants for the Price stability are the annual consumer price inflation (INFL) and the annual growth rate of the M3 aggregate (M3). As a determinant for the Debt servicing cost category is the 3-month Euribor rate (NINT). For the Burden of debt, the authors used the determinant of the ratio of loans to disposable income (DISP) for the household category, and for the firms category, they used the ratio of net interest expense to gross operating profit (GOP) and the ratio of financial debt to the sum of financial debt and equity (leverage). As a determinant of changes in Financial and real wealth category, they used the growth rate of the Italian stock prices index (STOCKS) and the house price index (HOUSING). Finally, for the Outlook of economic growth the authors used the yield curve (SLOPE), the annual growth rate of durables consumption (DURABLES) and the gross fixed investment (INVEST).

Therefore, the results provided by the authors are divided into two [2] categories as stated above, (i) the NBL ratio for lending to households and (ii) the NBL ratio for lending to firms. Below we present the empirical results for each category:

1. NBL Ratio for Lending to Households

- The authors performed three [3] regressions using the variables of GDP, unemployment and the 3-month Euribor rate. In each model, the estimated coefficients of these variables are statistically significant and have the expected sign. The GDP has negative correlation with the NBL instead of unemployment and 3-month Euribor rate that have positive correlation. In particular, the model has goodness of fit neatly of 0,8 which is very important and significant. As a result of the high goodness of fit, the authors expanded the model including the variables of Housing, M3, Inflation, Durables, Slope, Stocks and DISP. The variables of Housing, M3 and Durables have negative correlation with NBL and the variables of Stocks, INFL and Slope are statistically insignificant.

2. NBL Ratio for Lending to Firms

- The same procedure as mentioned above was followed to identify the significant lending variables that affect the NBL ratio for the firms. The variables used in the specific case were the UNEMPL, NINT, GOP and LEVERAGE. All the variables used, were statistically significant. In particular, the UNEMPL and NINT have positive correlation with the NBL, and the variables of GOP and LEVERAGE have negative correlation with the NBL. As we can conclude from the results provided, the variables of UNEMPL and GOP have the highest goodness of fit neatly of 0,8. For the specific model, the authors run an additional regression analysis with the addition of the variables of DURABLES, INVEST, INFL, M3, SLOPE and STOCKS. All the estimated coefficients are statistically significant at the level of one [1] percent.
- Analytically, the GDP, DURABLES, INVEST and STOCKS have negative correlation; the M3, INFL and SLOPE have positive correlation with the NBL ratio.

One of the many Working Papers of IMF regarding the financial crisis is the “Nonperforming Loans and Macrofinancial Vulnerabilities in Advanced Economies” by Mwanza Nkusu (2011). In this article the main objective of the author, is to determine which macrofinancial vulnerabilities exists from the linkages between the nonperforming loans (NPL) and the macroeconomic performance in advanced economies. To achieve that objective, the author uses a sample of twenty-six [26] advanced countries for the period of 1998-2009.

“The deterioration in the quality of banks’ loan portfolio has been at the centre of episodes of costly banking system distress and economic crises, in both developing and advanced economies...Its devastating effects, as well as its origination from a sharp increase in mortgage loan defaults in the United States, underscore the linkages between financial and macroeconomic shocks and have renewed interest in the relationship between credit market frictions and the risk of financial instability” (Nkusu, 2011:3).

To determine the macrofinancial vulnerabilities from the linkages between the nonperforming loans and macroeconomic performance the author used two [2] methods:

1. The Single Equation Panel Regression and
2. The Panel Vector Autoregressive (PVAR) Approach which rely on the Impulse Response Functions (IRFs) to examine the interrelations among variables.

The single equation panel regression was used to determine which determinants of NPL are significant, and the panel vector autoregressive was used to identify how the variables that were used in the system respond to shocks that affects other variables. For both models a wide range of variables were used, eleven [11] in total and are as follows:

1. Stock price index (logarithm).
2. House price index (logarithm).
3. Change in the house price index.

4. Change in the equity price index.
5. Annual change in GDP.
6. Annual change in the Consumer price index.
7. Policy rate of interest.
8. Nominal effective exchange rate index.
9. Ratio of non-performing loans to gross loans.
10. Credit to the private sector in percent of GDP.
11. Rate of unemployment.

In addition, the twenty-six [26] countries that the author collected the data are Austria, Australia, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Based on the results provided by the author and presented below, the findings of the panel regressions are in line with the expectations. “They confirm that a deterioration in the macroeconomic environment proxied by slower growth, higher unemployment or falling asset prices, is associated with debt service problems, reflected into rising NPL. Conversely, a favorable macroeconomic environment is associated with subdued NPL as was observed in the run up to the 2008 crisis. Asset quality tends to reinforce the business cycle and therefore procyclical” (Nkusu, 2011:18).

“The IRFs reveal the important and central role of NPL in the macrofinancial linkages. Over a four-year forecast period, of all the variables included in the VAR, NPL is the only one that has both effects on and responses to- every single variable that are statistically significant. Moreover, the effects and the responses are intuitive. Adverse shocks to asset prices, macroeconomic performance, and credit to the private sector all cause loan quality to worsen. NPL’s responses are persistent and for the most significant” (Nkusu, 2011:18).

At last but not least according to the author, the NPL problem is a permanent feature of banks’ balance sheets and any policy and reform can increase sharply the provisions of nonperforming mortgages.

Figure 6. Determinants of Non-Performing Loans

Dependent variable	NPL OLS (1)	DNPL PCSE (2)	DNPL PCSE (3)	DNPL PCSE (4)	DNPL PCSE (5)	NPL AB_GMM (6)
Explanatory variables						
NPL first lag	0.875*** (0.136)	-0.351*** (0.071)	---	---	---	0.608*** (0.104)
NPL 2nd lag	-0.239* (0.105)	---	-0.355*** (0.048)	---	-0.168*** (0.022)	---
GRW (GDP growth)	-0.179*** (0.034)	---	---	---	---	-0.157*** (0.042)
GRW _{t-1} (lagged GDP growth)	---	-0.168*** (0.039)	-0.087* (0.045)	-0.040* (0.071)	-0.042* (0.022)	---
DUNEMP (unemployment change)	---	0.245*** (0.081)	0.204*** (0.086)	0.219*** (0.000)	0.207*** (0.043)	---
DLHOUSEPR (change house prices)	-0.026* (0.011)	-0.047*** (0.010)	-0.027*** (0.009)	-0.026*** (0.000)	-0.021*** (0.005)	-0.065** (0.020)
DLEQUITYPR (change equity prices)	-0.009*** (0.002)	-0.011*** (0.003)	-0.014*** (0.003)	-0.006*** (0.000)	-0.007*** (0.001)	-0.013*** (0.007)
IPOL (policy rate)	0.071 (0.080)	---	---	---	---	0.256** (0.121)
Constant	1.596*** 0.408	1.896*** (0.329)	1.523*** (0.281)	0.335*** (0.000)	0.056*** (0.022)	---
Number of observations	244	267	244	264	241	241
R-squared	0.863	0.493	0.543	0.357	0.403	---
AR(1), p-value	---	---	---	---	---	0.045**
AR(2), p-value	---	---	---	---	---	0.175

Note: DNPL is the first-difference of NPL. Standard errors are below coefficient estimates. ***, **, and * denote significance at 1 percent, 5 percent, and 10 percent, respectively. Models (1) through (4) include fixed effects, whereas model (5) does not. Models (2) through (5) are based on panel-corrected standard errors (PCSE). Arellano-Bond one-step GMM estimator with robust standard errors is used in model (4). AR(1) and AR(2) are the Arellano-Bond tests for first- and second-order autocorrelation in first-differenced errors.

Source: Nonperforming loans and Macrofinancial vulnerabilities in advanced economies, Nkusu, 2011

“After the initial fall in the early 2000s, the share of non-performing loans (NPLs) to total gross loans has been relatively stable across most countries in the world. However, after the financial crisis hit global economy in 2007-2008, NPL shares rose considerably. Growth of NPL shares varied significantly across different groups of countries” (Tanaskovic & Jandric, 2015:48).

In the article “Macroeconomic and Institutional Determinants of Non-Performing Loans” by Svetozar Tanaskovic and Maja Jandric, aim to analyze the macroeconomic and institutional empirical determinants of growth of NPL ratios for the period of 2006-2013. For this research, a sample of eleven [11] countries from Central and Eastern and South-Eastern Europe (CESEE) was used. The sample included the Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Hungary, Lithuania, Montenegro, FYR Macedonia, Romania, Serbia and Slovenia. The authors took into consideration this sample because in 2006 the share of NPLs was 3.83% and in 2013 grew up to 18.1% of total gross loans, this increase was uneven across the sample.

“Many empirical studies confirm that the share of nonperforming loans is linked to economic cycles” (Tanaskovic & Jandric, 2015:49), thus the authors divide the determinants into three categories as:

1. Macroeconomic factors.
2. Institutional factors.
3. Bank level factors.

“There is a vast and significant empirical evidence that confirm countercyclical behavior of the NPLs. A slowdown in the economy is likely to decrease the employment rates, available income decreases, and borrowers have greater difficulties in servicing their debts” (Tanaskovic & Jandric, 2015:50).

As a result from the above, the capitalization of a bank is affected negatively because the high risk will be reflected as a risk premium on banks’ funding, causing the financing rates to decline rapidly. In addition, a high rate of NPLs in bank’s balance sheet can lead to a decrease of a bank’s capital and capacity to lend domestic and/or foreign investment opportunities.

The second category of determinants concerns the bank-level factors which are correlated with the bad management, moral hazard and “skimping” Klein (2013). The poor management practices are positively correlated with low cost efficiency, which in our case of NPLs, can be characterized as poor loan underwriting, monitoring and control of NPLs in an organization. The concepts of Moral Hazard and skimping according to the article, can increase the riskiness of the loan portfolio, which means higher NPL rate in a bank’s portfolio.

The third category of determinants concerns the institutional factors, which concerns the institutional environment that a banking system is operating. The effects of the institutional environment according to Breuer (2006) and Boudriga et al. (2010) are statistically significant. Therefore, the inefficient audit and judicial system, as well as the undeveloped supporting institutions, can influence the market competitiveness and deteriorate the condition of the debtors and lenders (Tanaskovic & Jandric, 2015).

In order to analyze the effect of the determinants on NPL ratio, authors choose to use the ‘Static Panel model approach’ with the logarithm of share of NPLs to total loans as the dependent variable. The authors choose to use this model in conjunction with the ‘Fixed effect estimation’ in three separated models. As model one [1], they present the effects of macroeconomic indicators on the level of NPLs, as model two [2], they present the combined effects of macroeconomic and institutional indicators on the NPL level and as model three [3], they present only the explanatory variables that are statistically significant for the NPLs.

The determinants that were used in the models are as follow:

1. Macroeconomic Factors

- Level of GDP.
- Ratio of foreign currency loans to sell loans.
- Exchange rate level.
- Average lending rate for new loans.
- Annual inflation.

2. Institutional Factors

- Strength of auditing and reporting standards.
- Financial market developments.
- Soundness of banking system.

Therefore, as a result from the above use of all models, the authors state the following outcomes: “The coefficient of GDP is negative and statistically significant as expected. Along with GDP, the foreign currency loans ratio and the level of exchange rate are positively related with the increase of NPL ratio and are statistically significant in all three models. The inflation rate is reported as statistically insignificant for the sample. At the group of institutional variables, only the variable of financial market level of development is reported as statistically significant with the level of NPLs” (Tanaskovic & Jandric, 2015:58-59).

In February of 2013, Roland Beck, Petr Jakubik and Anamaria PiloIU in their research journal “Non-Performing Loans. What Matters in Addition to the Economic Cycle?”, try to study the effect of the macroeconomic determinants on the Non-Performing loans. Thus, to identify the effect of the macroeconomic determinants (positive or negative), the authors use a sample of seventy-five [75] countries for the period of 2000-2010.

Figure 7. Countries Sample

Argentina	Macedonia, FYR
Armenia	Malaysia
Australia	Mexico
Austria	Moldova
Belgium	Morocco
Bolivia	Netherlands
Brazil	Norway
Bulgaria	Oman
Canada	Pakistan
Chile	Paraguay
China	Peru
Colombia	Philippines
Costa Rica	Poland
Croatia	Portugal
Czech Republic	Romania
Denmark	Russian Federation
Dominican Republic	Saudi Arabia
Ecuador	Singapore
Egypt, Arab Rep.	Slovak Republic
Estonia	Slovenia
Finland	South Africa
France	Spain
Gabon	Sweden
Georgia	Switzerland
Germany	Thailand
Ghana	Tunisia
Greece	Turkey
Hong Kong, China	Uganda
Hungary	Ukraine
India	United Arab Emirates
Indonesia	United Kingdom
Ireland	United States
Israel	Uruguay
Italy	Venezuela, RB
Japan	
Korea, Rep.	
Kuwait	
Latvia	
Lebanon	
Lithuania	
Luxembourg	

Source: Non-Performing Loans. What matters in addition to the economic cycle? Beck, R. et al., 2013)

“Over the past decade, the credit quality of loan portfolios across most countries in the world remained relatively stable until the financial crisis hit the global economy in 2007-2008. Since then, average bank asset quality deteriorated sharply due to the global economic recession. The fact that loan performance is tightly linked to the economic cycle is well known and not surprising. Yet the deterioration of loan performance was very uneven across countries” (Beck, R. et al., 2013:2). Therefore, according to the findings of this journal as stated below, the changes in economic activity were the largest driver of the deterioration of bank asset quality during the global crisis of 2008-2010.

“Models linking credit risk to economic activity are not new in the literature. Theoretical papers that develops business cycle models in which the financial sector is introduced typically, find a link between asset quality and economic activity. The classical literature, studying the interactions between the macroeconomic environment and financial fundamentals, goes back to the models developed by King and Plosser (1984), Bernanke and Gertler (1989), Kiyotaki and Moore (1997) and Bernanke, Gertler and Gilchrist (1998). A more recent paper published by Pesaran, Schuermann, Treutler and Weiner (2006), develops a framework that links the value changes of a credit portfolio to a dynamic global macro-econometric model, and concludes that the relationship between the firms and the business cycle is the main driver of default probabilities. The empirical literature on the interaction between the macroeconomic conditions and the asset quality is vast and diverse. A common finding of these studies is the positive relationship between asset quality and economic growth. Nevertheless, the measures of asset quality analyzed in many of these papers differ” (Beck, R. et al., 2013:7).

In the contrary of the abovementioned models used by many researchers, this journal uses the Panel Data Technique, to analyze and quantify the impact of macroeconomic and financial variables, that may affect the asset quality of loans in the last decade. This method was chosen for two reasons,

1. It captures the country-specific effects and the unobservable differences between countries and,
2. Using this method, one can control for the biases generated by potential heterogeneity and omitted variable problems.

The authors used two subcategories of the panel data technique to capture as many effects as they can from the interaction of the macroeconomic determinants on the non-performing loans. The models that were used are:

1. The Static Panel Estimation.
2. The Dynamic Panel Estimation.

The Static Panel Estimation was used to measure the effect of different macroeconomic indicators on asset quality using fixed effects estimations. This method also takes into account the time-constant unobserved heterogeneity between countries.

The Dynamic Panel Estimation was used to capture the persistence of the NPL growth, including the lagged logarithm difference of the dependent variable. In addition to this model, to evade problems of correlation amongst errors and to obtain additional efficiency, the Generalized Method of Moments (GMM) with instrumental variable was used, as addressed by the Arellano-Bond two-step difference GMM estimation with robust standard errors.

In both panel estimation models, the determinants used were identical. As dependent variable was used the ratio of NPLs to total gross loans. As independent variables were used:

- The real GDP.
- Credit.
- The Lending Interest rates.
- The Share prices.
- The Nominal Effective Exchange rate (NEER).
- The International Claims (relative to GDP).

Furthermore, the authors decide to use the effect of dummy variable onto two [2] variables, (a) on the nominal effective exchange rate and (b) on the international claims relative to GDP. The decision to use a dummy variable on both determinants was based on (1) the concept to capture the impact of exchange rate dynamics on asset quality of countries with different levels of foreign currency denominated loans and (2) to capture the value of international claims on one country if the international claims to GDP ratio is above the median or not.

Consequently, according to the results of both models as provided by the authors, the independent variables used, were able to explain the development of non-performing loan ratios in the advanced and emerging economies. More specifically, the authors recommendation was based on the results provided by the second model, the Dynamic Panel Estimation with the GMM method using the Arellano-Bond estimations, due to the high persistence of NPL growth. Therefore, we can conclude the following results:

1. A rise in real GDP growth leads to a decline in non-performing loan ratio.
2. The lagged GDP growth affects the NPL growth in a positive way. This result support the notion that the banks' asset quality deteriorates with a lag in response to a positive growth due to loosen credit standards applied during the boom period.
3. The nominal effective exchange rate (NEER) have significant impact on NPLs. A positive coefficient for the NEER, suggests that a depreciation of the domestic currency would lead to a decline in non-performing loan ratio.
4. The share prices have statistically significant negative impact on non-performing loan.
5. For the effect of share prices on NPLs, the authors decided to estimate a model including all above variables except of NEER. The result of this model was that the share prices and lending interest rates become statistically significant.

Additionally, the authors decided to analyze in more depth the impact of the exchange rate on NPLs, when it is interacted with a dummy variable that takes the value of one for the countries with levels of international claims to GDP above the median and zero otherwise. The results that have been derived from this analysis are:

- In a model where the lending interest rates and share prices are not under control, the NEER has significant positive relationship on NPLs in countries with low level of claims.
- In a model where the lagged interest rates are under control, the NEER has significant positive relationship on countries with lower NPLs and high international claims.
- If in the model that was described above, we include the determinants of share prices, the statistical significance of the NEER is no longer exist.
- In another model where the lending interest rates are included as controlled variable and the insignificant lags of the NEER excluded, a depreciation of the NEER is associated with a statistically significant decrease of NPLs in countries with low international claims.

Finally, the authors investigate whether the impact of share prices on NPLs also depends on specific country characteristics, if the stock market is large relative to the size of the economy. A dummy variable was used, taking the value of one for countries with a stock market capitalization relative to GDP above the median of the sample and zero otherwise. The results of using this model are as follows:

- Using the NEER without interaction terms, the authors estimate that the share price increase is associated with statistically lower NPLs in countries where the stock market is large relative to GDP.
- When the lagged lending interest rates added to the above model, the authors estimate that the share price increase is associated with lower NPLs in countries with large and small stock markets, but the coefficient is larger in the case of countries with a large stock market.

“During the last two decades, a significant increase of credit growth provided by financial institutions was recorded. This growth is attributed to the deregulation process of financial markets and the development of information technologies in the banking industry, which led to the enhancement of financial intermediation. In addition, deregulation process strengthened competition among banks both in domestic and other in European markets. Thus, one of the most common indicators that used to identify credit risk is the ratio of non-performing loans (NPL)” (Makri, V. et al., 2014:193).

In this article, titled as “Determinants of Non-Performing Loans: The Case of Eurozone” the authors, Vasiliki Makri, Athanasios Tsagkanos and Athanasios Bellas (2014) main purpose was to investigate the factors that affecting the NPL in Eurozone. More specifically, their main target was to investigate the determinants of NPL ratio exclusively on the pre-crisis period. The sample that the authors gather, is consisted by one hundred

and twenty [120] observations, concerning fourteen [14] countries that were part of the Eurozone for the period of 2000-2008.

In order to identify what factors affected the NPL ratio of the sample, negatively or positively, the authors used the Dynamic Panel Regression method in conjunction with the Generalized Method of Moments (GMM) estimation. Also, the authors used the above methods to investigate the effect of banking and macroeconomic factors on NPLs for two separate periods t (without time lag) and $t-1$ (with time lag).

In addition to the above, the authors to obtain a deeper insight of the relevance of the explanatory variables, they used three [3] different versions of the estimated equations as follows:

1. They examined only micro variables as regressors.
2. They examined only macro variables as regressors, and
3. They examined both variables, macro and micro as regressors.

The variables that were used in the models divided into two [2] categories as:

1. **Banking Specific Variables**

- Aggregate non-performing loans to total gross loans (NPL).
- Bank capital and reserves to total assets (CAP).
- Loans to deposit ratio (LTD).
- Return on assets (ROA).
- Return on equity (ROE).

2. **Macroeconomic Variables**

- Public debt as percentage of GDP (DEBT).
- Government budget deficit or surplus as percentage of GDP (FISCAL).
- Annual percentage of GDP growth rate (GDP).
- Annual inflation growth rate (INFL).
- Percentage of unemployment (UNEMP).

Therefore, after the application of the above variables into the models stated, with time lag and without time lag, the authors derived to the below interesting observations:

1. The variable NPL_{t-1} showed a statistically significant positive correlation in all models, revealing the persistence of problem loans in Eurozone.
2. A significant negative correlation between NPL and ROE was observed. This result, indicates that a deterioration of profitability ratio leads to an increase in non-performing loans, confirming the risk-taking behavior of banks. This relationship shows that bad management leads to riskier activities and weak performance.
3. A significant negative correlation between NPL and CAP was observed. This relationship shows that a risky loan portfolio is marked by high NPL percentage.

4. A positive correlation between the NPL and public debt was observed. This relationship highlights that fiscal problems in Eurozone countries might lead to an important increase of problem loans.
5. A strong positive correlation between loan quality and unemployment was observed. This relationship reveals that lack of employment weakens borrower's ability to pay their loan instalments.
6. A negative correlation between GDP and NPL was observed only in Model 3. This observation reveals that during booming periods the loan quality is improved and adversely.

In the contrary from all the literature stated above, the article of "Non-performing Loans and Purchase of Loans by Public Asset Management Companies in Malaysia and Thailand" by Masahiro Inoguchi (2016), try to examine, identify and state what the interaction of non-performing loans and asset management companies is in Malaysia and Thailand during the financial crisis of 1997.

"Since the 1997 Asian financial crisis, governmental authorities throughout South-East Asia have continued to pursue reform of their banking systems. In South-East Asia, a sound banking system is particularly important, because a significant number of companies rely heavily on bank loans for financing" (Inoguchi, 2016:603). Therefore, the governments of Malaysia and Thailand decide a number of measures to tackle NPLs in their respective jurisdictions, although the periods of establishment differ. More specifically, both countries to reduce the number of NPLs, decide to purchase them from the banking system, by establishing two asset management companies,

1. The Pengurusan Danaharta Nasional Berhad (or Danaharta) in Malaysia in 1998 and,
2. The Thai Asset Management Corporation (TAMC) in Thailand in 2001.

Given that the Malaysian and Thai economies had recovered by 1999, the paper focuses on three [3] factors relating to the decline of NPLs in both countries,

1. The purchase of loans by facilities that manage non-performing assets.
2. The influence of bank characteristics, and
3. Macroeconomic indicators that showed the decline of NPL ratios in both countries

(Inoguchi, 2016:605).

As a result from the above, the author examined the influence of the bank characteristics, the purchase of non-performing loans by asset management companies and the macroeconomic indicators regarding the decline of the NPL rate in both countries, Malaysia and Thailand.

To examine the influence of the independent determinants on the NPL ratio, the author used the Panel Regression Analysis along with the Generalized Method of Moments (GMM). To estimate the influence of specific determinants, the author used dummy variables. The models that were used, took into consideration data for domestic

commercial and investment banks for Malaysia and domestic commercial banks for Thailand. The dataset concerned the period of 1998-2005 and 1998-2006 respectively.

The sample comprises of fourteen [14] Malaysian commercial and investment banks and ten [10] Thai commercial banks. The period that the author took into consideration for using the dummy variables is during loan transfers that did not take place, in 2001-2005 for Malaysia and in 1998-2000 for Thailand. In addition, the author performed separate regression models including both commercial and investment banks and commercial banks only.

For all the models, as dependent variable was used the NPL ratio and as independent variables were used,

- The Bank Size (SIZE).
- The Return on Assets (ROA).
- The Equity (EQUITY).
- The value of loans sold to the public asset management company (AMC).
- The real GDP growth rates (GROWTH) and
- The rate of change in the real estate price index (LAND).

All the above independent variables are lagged by one period.

In addition to the above, the author included dummy variables as constants and as slope coefficients. He specified these dummies variables for periods in which asset management companies did not purchase NPLs. Thus, the variable “Dum” was a dummy variable which took the value of one in a period without any purchase of NPLs by the asset management company and zero otherwise. For the model of dummy variable, the Dynamic Panel Regression method with the Generalized Method of Moments (GMM) was used.

Consequently, after the application of the variables in the models, the author derived to the following observations:

1. **Model 1** – NPL ratio of domestic banks in Malaysia and Thailand

For Malaysia

- For the Malaysian banks the coefficient for loans sold to Danaharta was not significant.
- The coefficients of Growth were negative.
- The coefficients of Land were positive.
- The coefficients of Equity and ROA were significant and positive.
- The coefficients of Size were significant and negative.
- For the Malaysian commercial banks, the coefficients of Equity and ROA were significant and negative.

For Thailand

- The coefficients of loans purchased by TAMC were significant and negative.
- The coefficient of Real estate price index was significant and negative.
- The coefficients of GDP growth rate were significant and negative.
- The coefficients of Equity and ROA were insignificant.
- The coefficients of Size were significant and negative.

2. **Model 2** – Regressions for the dummy period in which banks did not sell loans to neither Danaharta nor TAMC

For Malaysia

- The coefficients of Size were significant and negative.
- The coefficients of Size dummy were significant and negative.
- The constant dummy variables were significant and positive.
- This shows that during the period 2001-2005 which the asset management company did not purchase NPL, the NPL ratio increased.

For Thailand

- The coefficients of loans purchased by TAMC were significant and negative.
- The coefficients of Land were significant and negative.
- The coefficient of Land dummy was significant and positive.
- The coefficient of Growth dummy was significant and negative.
- This implies that the real GDP ratio was more central to the decline in NPL ratios during the period 1998-2000, the period before TAMC began buying NPL, than in the period after.

3. **Model 3** – Results of the dynamic panel regressions

For Malaysia

- The coefficients of loans sold to Danaharta by commercial and investment banks were significant and negative.
- The coefficients of Size were significant and negative.

Commercial Banks

- The coefficients of loans sold to Danaharta were significant and negative.
- The estimated coefficients of Equity, ROA, Size and Growth were significant and negative.
- This implies that low-risk commercial banks had lower NPL ratios, and the higher economic growth was important for the decline in NPL for Malaysian commercial banks.

For Thailand

- The coefficients of loans purchased by TAMC were significant and negative.
- The coefficient of GDP growth rate was significant and negative.
- The coefficients of the real estate price index were significant and negative.
- The coefficients of ROA were significant and negative.
- The estimated coefficients of Size were insignificant.
- This implies that high economic growth, an increase in real estate prices and an increase in loans sold to TAMC, reduced the NPL ratio of the banks.

4. **Model 4** – Dynamic Regressions for the dummy period in which banks did not sell loans to the asset management companies

For Malaysia

Commercial & Investment Banks

- The estimated slope coefficients of Size and the dummies of Size were significant and negative.
- The constant dummy variables of Size were significant and positive.

Commercial Banks

- The coefficients of ROA, Equity and Size were significant and negative.
- The constant dummy variables of ROA and Equity were significant and positive.
- Two of the constant dummy variables of Size were significant and negative.

For Thailand

- The coefficients of loans purchased by TAMC and ROA were significant and negative.
- The estimated coefficients of Land were significant.
- The coefficient of the dummy variable of Growth was significant and negative.
- This implies that the real GDP was important for the decrease in NPL ratios during 1998-2000.

5. **Models 5 & 6** – Panel regressions on the number of NPL and the value of total bank loans

For Malaysia

Commercial and Investment Banks

- The coefficients of loans sold to Danaharta were not significant in the regression on the number of NPL.
- Two of the coefficients of loans sold to Danaharta were significant and positive in the test of the value of total loans.
- The coefficients of Size were significant and positive in both regressions. Although, the values of the coefficients in the regression for total loans were larger than those in the test of NPL.

Commercial Banks

- The coefficients of AMC and Size were significant and positive in both regressions of NPL and Total Loans. However, the values of the coefficients of Size in the regression of total loans were larger than those in the test for NPL.
- The coefficients of ROA and Equity were significant and negative in the regression on NPL.
- The coefficients of ROA and Equity were insignificant in the regression of total loans.

For Thailand

- The coefficients of loans purchased by TAMC were significant and negative in both regressions of NPL and Total Loans.
- The coefficients of the macroeconomic variables were significant and negative, except of one Land coefficient in the regression for the number of NPL.
- The coefficients of the macroeconomic variables were insignificant in the test for loans.

“The emergence of bad debts is due to the borrowers or debtors who do not want to pay its obligations due to the factors that influence it. According to (Gustifa, 2013) cases of non-performing loans can be caused by several factors, such as external factors and internal factors form the cooperation itself. The external factor that can affect the occurrence of bad loans is the economic conditions in micro and macro (Messai & Jouini, 2013), while the internal factors that may result in bad credit are unclear crediting procedures and weak supervision system” (Sakti and Anisykurlillah, 2017:433).

In this journal with title “Analysis of Factors Affecting Non-Performing Loan on Cooperation” by Andik Dwi Sakti and Indah Anisykurlillah (2017), the authors main purpose was to obtain empirical evidence about the effect of eight [8] independent

variables on the non-performing loans of Sharia Cooperation (KJKS) in Semarang city. The sample of this study was eighty-two [82] cooperation customers who had non-performing loans at Sharia Cooperation (KJKS).

“The study of Sakti & Anisykurlillah (2017) uses the agency and signaling theory. The agency theory explained that agents and principles have different interests (Jensen & Meckling, 1976), where the company or individual as an agent will try to make the company look good so it will get funding that is debt or credit. Then the creditor as principal, wants the company that to be financed must be in good condition with the capacity or willingness to pay its obligations, this was helped by the 5C analysis of credit.

Signaling theory explains that a positive signal will affect others (Ross, 1997). In this research, a good financial report was a good signal for creditors to provide funds as loans. Cooperation as an institution, it will provide funds as a loan by looking the signals from viewing character, capacity, capital, collateral and condition of the prospective loan applicants. If they have a good signal then the cooperation it will be able to provide the funds” (Sakti & Anisykurlillah, 2017:436).

Thus, in the light of the above, the authors used the regression analysis and more specifically the multiple regression analysis to determine the influence of the independent variables to the dependent variable. As dependent variable in the study was set the non-performing loans, while the independent variables were as follows:

1. Character.
2. Capacity.
3. Capital.
4. Collateral.
5. Condition.
6. Loan Term.
7. Loan Repayment Rate.

The regression model used in the journal, was checked if it was free from deviations either in the form of normality, multicollinearity, heteroscedasticity or autocorrelation. As per the authors, the model was normally distributed, free from multicollinearity and from heteroscedasticity.

In the Table 3 below, we can observe the eight [8] null hypothesis, one for each independent variable, the significance value and if the null hypothesis is rejected or accepted.

Table 3. Null Hypothesis testing and Results

No	Hypothesis	B	α	Sig.	Result
H ₁	There was a negative influence between Character on Non-performing Loan.	-0.266	0.05	0.000	Accepted
H ₂	There was a negative influence between Capacity on Non-performing Loan.	0.167	0.05	0.117	Rejected
H ₃	There was a negative influence between Capital on Non-performing Loan.	-0.364	0.05	0.000	Accepted
H ₄	There was a negative influence between Collateral on Non-performing Loan.	-0.091	0.05	0.205	Rejected
H ₅	There was a negative influence between Condition on Non-performing Loan.	-0.038	0.05	0.565	Rejected
H ₆	There was a negative influence between Loan term on Non-performing Loan.	0.103	0.05	0.273	Rejected
H ₇	There was a positive influence between Rate of Loan Repayment on Non-performing Loan.	0.336	0.05	0.002	Accepted
H ₈	There was a significant influence between Character, Capacity, Capital, Collateral, Condition, Loan term and Loan repayment rate to Non Performing Loan.	F = 11.000	0.05	0.000	Accepted

Source: Analysis of factors affecting non-performing loan on cooperation, Sakti and Anisykurlillah, 2017

Furthermore, based on the descriptive analysis and the results of the independent variables, the authors stated the follow observations:

1. Character

- The results showed that the customer character at KJKS was in high category. This meant that the character of cooperation customers had a high degree of honesty.
- A good character gave a positive signal to the cooperation that credit made to the customer. The customer would be able to paid on time the loan, so there would be no non-performing loans.

2. Loan Repayment Rate

- Has a positive effect on non-performing loans. This means that a higher loan repayment rate given to the customer, the higher the possibility of having non-performing loans in the cooperation.
- The results indicated that the rate of customer repayment of KJKS was in the high or addiction category.
- The study was in accordance with the research conducted by (Gustifa, 2013) which stated that loan repayment rate or interest rate had a positive effect on non-performing loans in the savings and loan cooperation.

3. Loan Term

- Has no effect on non-performing loans.
- Based on the average value, it indicated that customers loan term was in the high or difficult category.
- The study was in line with the research undertaken by (Gustafi, 2013) which stated that the loan term had no significant effect on non-performing loans in the savings and loan cooperation.

4. Condition

- Has no effect on non-performing loans.
- Based on the average result of the model, indicated that customers condition was in the category of medium. Meant that the customers condition was in fairly stable category, where in the government policy indicator and state of the customer trader, less influence occur on the customer's condition.
- The study was in line with the research undertaken by (Novitasari, 2010) and (Afandi, 2010), stated that the condition had no significant effect on non-performing loans.

5. Capacity

- Has no effect on non-performing loans.
- Based on the average result of the model, indicated that the capacity of customers was in the category of medium or enough. Meant that the capacity of customers strength of their business and experience to adjust to changes in the economic conditions were still low.
- The average level of education of the respondents was 55.4% as senior high school graduates and 25.3% as junior high school graduates.
- The study was in line with the research undertaken by (Novitasari, 2010), which stated that capacity had no significant effect on non-performing loans.

6. Capital

- Based on the average result of the model, indicated that the capital of customers was in the category of moderate or medium. The existence of appropriate customer capital would give a good signal to the cooperation, that the debtor would be able to return its obligation on time.
- The study was in line with the previous research conducted by (Novitasari, 2010) and (Afandi, 2010), stated that capital has a significant effect on non-performing loans.
- The study was also in line with the study of (Ernawati, 2014) which resulted that capital has a negative and significant effect on non-performing loans.

7. Collateral

- Based on the average result of the model, indicated that customers collateral was in high or appropriate category.
- Most customers thought that the guarantee given to the cooperation was only a requirement to get credit or financing only.
- The customers did not think long despite the guarantee given was good and appropriate. If they would not pay their obligations, then the guarantee would be confiscated.
- The study was in line with the research undertaken by (Novitasari, 2010), stated that the collateral had no significant effect on non-performing loans.

Finally, the conclusions of this journal were (1) the level of non-performing loans can be minimized with the character of an honest customer and (2) the capital that the customer was capable, as well as the level of loan repayment rate set by the cooperation.

Chapter 4

Methodology

4.1 Research Methodology

“In recent years, there has been an upsurge of interest in what are called qualitative research methods. This new interest in qualitative research methods, stems largely from a relativist worldview that rejects experimental methodology and its undergirding assumptions. These qualitative methods are concerned with the lived experience of human beings. For example, a favored approach is to elicit from people narratives concerning their life experiences. Many adherents of qualitative methods suggest that the reported experience of people should be the most important, if not the sole approach, to psychological phenomena” (Morgan & Bhugra, 2010:142).

In 2007, Creswell and Plano Clark defined the qualitative research as a “process of understanding based on a distinct methodological tradition of inquiry that explores a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting”. In addition to the above, Murray (2010) state that “one of the central tenets of qualitative research is the ‘bottom-up’ approach in which the perspective of research participants is central to the process of data collection, analysis and theory development.”

As Chigbu (2019) state, the qualitative research stands out from the other types of research, is that it strives to establish multiple realities (of ideas, understandings, situations, issues, events, scenarios) within a social laboratory (society), where it is almost impossible to modify factors involved in the research. From the context of social science, it means that qualitative research is a research method that produce outcomes that were not derived from using statistical procedures or other methods of quantification. This definition suggested that qualitative research can lead to outcomes or findings in the form of narratives, storylines, numbers or quantities, scenarios, theories, hypothesis, etc. What it makes the qualitative method an approach, is its procedures (before producing the outcomes) were not done using quantitative (or mixed) methods. It can take the form of grounded theory, narrative, ethnographic, phenomenological and case-based studies.

“Then, from World War II to the 1960s-70s, qualitative research entered what has been named the ‘modernist phase’, because early qualitative researchers tried to formalize their methodological approach and make it fit the principles of quantitative research validity. This search for rigor and credibility was exemplified in 1967 in a landmark book, *The Discovery of Grounded Theory*. The authors, Glaser and Strauss (1967), described the different steps of an inductive approach to build theories and provided a structured for sampling, collecting data and systematic analysis” (Bedos, C. et al, 2009:114). Throughout the years, the qualitative research has evolved to include various traditions and approaches, for example Tesch (2007) has identified twenty-one [21] types of qualitative research. Moreover, Chingbu (2019) and Creswell (2007) described six [6] and five [5] respectively relevant approaches as follows:

1. The Narrative.
2. The Case Study.
3. The Grounded Theory.
4. The Phenomenological.
5. The Ethnographic, and
6. The Historical.

As Table 4 shows below, these approaches could be used in different research enquiries, and could have differentiated analysis methods.

Table 4. Qualitative research types and their methodological and epistemological features.

Types	Approach to Research or Enquiries	Data Collection Methods	Data Analysis Methods	Forms in Scientific Writing	Epistemological Foundations
Narrative	Explores situations, scenarios and processes	Interviews and documents	Storytelling, content review and theme (meaning development)	In-depth narration of events or situations	Objectivism, postmodernism, social constructionism, feminism and constructivism (including interpretive and reflexive) in positivist and post-positivist perspectives
Case study	Examination of episodic events with focus on answering “how” questions	Interviews, observations, document contents and physical inspections	Detailed identification of themes and development of narratives	In-depth study of possible lessons learned from a case or cases	
Grounded theory	Investigates procedures	Interviews and questionnaire	Data coding, categorisation of themes and description of implications	Theory and theoretical models	
Historical	Description of past events	Interviews, surveys and documents	Description of events development	Historical reports	
Phenomenological	Understand or explain experiences	Interviews, surveys and observations	Description of experiences, examination of meanings and theme development	Contextualisation and reporting of experience	
Ethnographic	Describes and interprets social grouping or cultural situation	Interviews, observations and active participation	Description and interpretation of data and theme development	Detailed reporting of interpreted data	

Source: Visually Hypothesising in Scientific Paper Writing: Confirming and Refuting Qualitative Research Hypotheses Using Diagrams, Chingbu, U., 2019

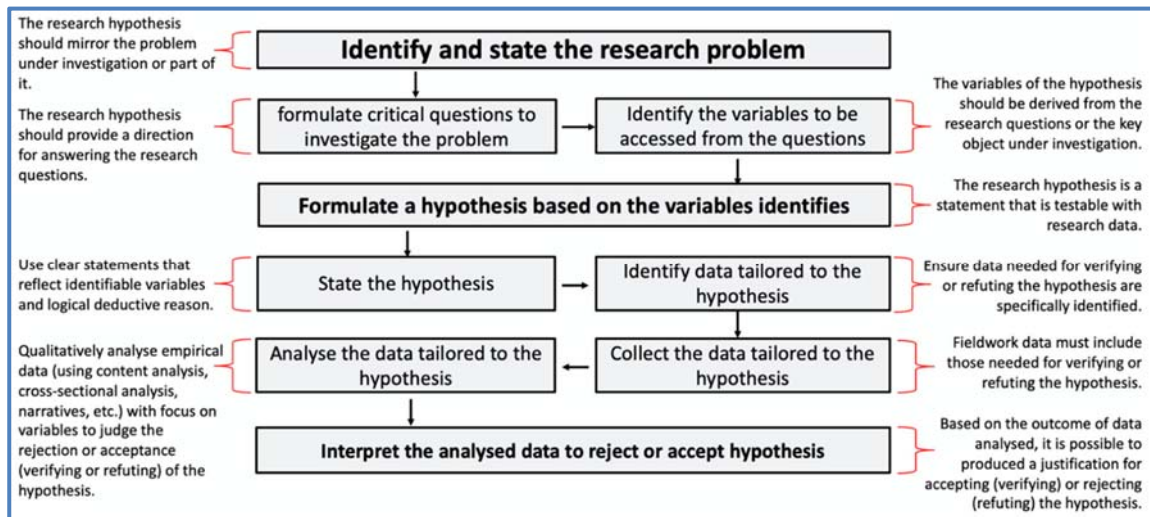
“All of the different types of qualitative research can fall partly or fully (or as a mix) within the epistemological foundations of objectivism, postmodernism, social constructionism, feminism and constructivism (interpretive and reflexive) in positivist and post-positivist perspectives. For instance, the grounded theory can take a constructivist path in explaining why a phenomenon evolves in a certain way and take an objectivist perspective in assessing a case study. The case study type of qualitative research (unlike the grounded theory) can take a combination of various perspectives (such as objectivism, postmodernism, social constructionism, feminism and constructivism) to provide in-depth insight into a specific case in research. The history type of qualitative research can take both objectivist and constructivist lenses to describe past events as a means of grasping the current patterns of future scenarios. The phenomenological type of qualitative research can be influenced by various epistemological perspectives (including social constructionism and constructivism) to describe how group experience affects specific social conditions. The narrative type of qualitative research can employ objectivism or subjectivism (or feminism) to compile (or review) information over periods of time. By way of output, it can outline findings in a storyline (narrative) manner to present learning points for improving a research problem (or situation). The ethnographic type of qualitative research is widely applicable to objectivism, postmodernism, social constructionism, feminism and constructivism. This is because it strives to gain insight into a situation (usually cultures) to learn and explain the culture’s characteristics” (Chigbu, U., 2019).

In our case, we will use Economic Ethnography in an effort to identify how both entities, banks and asset management companies identify and deal with the NPEs/NPLs; and how the judicial authorities support and offer (as highlighted by our research) a reflective and interpretive account of such efforts and support. Therefore, we have created a questionnaire, consisting of four [4] sections, Section One – Background Information, Section Two – Causes of NPEs, Section Three – Impact of NPEs and Section Four – Management of NPEs, with total of twenty-eight [28] questions. The questions that were incorporated in the questionnaire are characterized as closed and open-ended type. By using both types of questions, we sought to understand how the participants handled many of the problems/issues in their daily routine, and how these issues affected their final decision. The main challenge of doing any research (qualitative or otherwise) is not to reinvent the wheel but rather to continue the development and modification of the entire vehicle to which that wheel belongs (i.e. our collective understanding of some phenomenon) (Cunningham, C., et al, 2013).

Thus, based on the literature review that describes similar issues with ours, we choose to use the Qualitative research methodology and more specifically the Economic Ethnography using open-ended type questionnaire (this type of questionnaire falls within the qualitative research methodology and not in the quantitative as per the literature), in order to collect as many as possible individual characteristics that have significant impact (negative or positive) on NPEs. By combining both, characteristics identified in the literature review and characteristics collected through the questionnaire, we will

recommend the optimal methods used by the participants and have affected the NPEs (negative or positive).

Figure 8. The General process of developing a qualitative hypothesis



Source: Visually Hypothesising in Scientific Paper Writing: Confirming and Refuting Qualitative Research Hypotheses Using Diagrams, Chigbu, U., 2019

4.2 Economic Ethnography Methodology

Grounded theory is general methodology for developing theory that is grounded in data systemically gathered and analyzed. Theory evolves during actual research, and it does this through continuous interplay between analysis and data collection. A central feature of this analytic approach is “a general method of [constant] comparatives analysis” (Glaser & Strauss, 1967, p.vii); hence the approach is often referred to as the constant comparative method (for the original formulation, see Glaser, 1965-1967) (Strauss and Corbin, 1997).

Grounded theory was presented initially by Glaser and Strauss in the “Discovery of Grounded Theory” (1967). This book had three avowed purposes. The first was to offer the rationale for theory that was grounded-generated and developed through interplay with data collected during toward “closing the embarrassing gap between theory and empirical research” (p.vii). Grounded theories and their possibilities were posed against dominant functionalist and structuralist theories (represented by those of such theorists as Parsons, Merton, and Blau), which Glaser and Strauss regarded as inordinately speculative and deductive in nature. The second purpose was to suggest the logic for specifics of grounded theories. The third aim was to legitimate careful qualitative research, as by thee 1960s this had sunk to a law status among an increasing number of

sociologists because it was not believed capable of adequate verification (Strauss and Corbin, 1997).

Although ethnographic methods derive from the discipline of sociocultural anthropology, because of their potential for producing insights into human actions and behaviors they have come to be embraced by sociologists, psychologists, and other social scientists interested in gaining insights into human behavior. Ethnographic methods fall into broader category of qualitative methodologies and are aimed at understanding cultural practices, human beliefs and behaviors, and sociocultural changes over time (Adams, 2012). As a result, the ethnographic methods are based on the concept of Grounded theory.

Economic ethnography is mainly a qualitative approach in economics which focuses on economic events (such as NPEs/NPLs) but instead of doing statistical/quantitative analysis as traditionally done in Economics/Finance it focuses on qualitative and other culturally/politically embedded understandings through use of an open-ended questionnaire. Furthermore, this analysis is used to document and understand the communication of meaning, as well as to verify theoretical relationships based on hypotheses [if used]. Its distinctive characteristic is the reflective and highly interactive nature of investigators, concepts, data collection and analysis.

4.3 General Information of Sample

Patton (2002) defined sampling in qualitative research as ‘purposeful’ (or purposive), which differs from representative or random sampling in quantitative research: purposeful sampling means that the researcher strategically and purposefully selects cases that are information-rich. Further to this, Patton delineated sixteen [16] different sampling strategies that can be used in the qualitative research, each sampling strategy serve a certain purpose. As we can conclude from the above, the sampling strategies are as follows:

1. Extreme or Deviant Case Sampling.
2. Theory-Based Sampling, Operational Construct Sampling and Theoretical Sampling.
3. Intensity Sampling.
4. Confirming and Disconfirming Cases.
5. Maximum Variation (Heterogeneity) Sampling.
6. Stratified Purposeful Sampling.
7. Homogenous Sampling.
8. Opportunistic or Emergent Sampling.
9. Typical Case Sampling.
10. Purposeful Random Sampling.
11. Critical Case Sampling.
12. Sampling Politically Important Cases.
13. Snowball or Chain Sampling.
14. Convenience Sampling.
15. Criterion Sampling.
16. Combination or Mixed Purposeful Sampling.

For each sampling strategy the sample size differs according to the purpose of the research. Bedos et al (2009) state that there are no rules for sample size in qualitative research; and most of the researchers rely on the principle of saturation. Saturation refers to the point at which additional data do not improve the understanding of the phenomenon under study: it is reached, for instance when new participants merely reiterate what has been said in previous interviews without contributing any further insights (Morse, 1995). Therefore, researchers are unable to define the sample size before the start of the data collection process. As mentioned by Kuzel (1992), recommends 12-20 interviews for a maximum variation sample and only 6-8 for a homogenous sample; Guest, Bunce and Johnson (2006) in their research used 12 people as their saturation point. In addition, the researchers suggest a sample size of less than 50 people, which remains small compared to quantitative research.

The Central Bank of Cyprus (CBC) on February 14th of 2020, issued the aggregate non-performing facilities (NPFs) as 30/09/2019 formal letter, which amount to €9.62bn. This aggregate amount of NPFs is handled by the domestic banks and asset management companies. Therefore, our target group is a specified group that was rapidly developed in the last five years in Cyprus. Our main purpose is to gather as many as possible replies from both sectors, banks and asset management companies in order to have diversified results. Thereupon, based on the above literature review by Kuzel and Morse the minimum sample size that must be collected is approximately fifty [50] replies.

The questionnaire that was used for the specific purpose was created electronically using google forms and distributed via electronic communication [email]. The total respondents were seventy-nine [79]. In the next two chapters 5 and 6 we will analyze in-depth the results of the questionnaire.

4.4 Data Limitations

One of the most important axioms in life can be considered the Yin and Yang theory concept. The “Yin and Yang is a complex relational concept in Chinese culture that has been developed over thousands of years. Briefly put, the meaning of yin and yang is that the universe is governed by a cosmic duality, sets of two opposing and complementing principles or cosmic energies that can be observed in time. The Yin is characterized as an inward energy that is feminine, still, dark and negative. On the other hand, Yang is characterized as outward energy, masculine, hot, bright and positive” (Jun Shan, 2020).

The concept of Yin and Yang can be applied in our case as the disadvantages and advantages of the qualitative method, in this paragraph we will mention only the disadvantages of the method in general. Firstly, due to the small size of the sample, the qualitative research has limited ability to predict and generalize the results as provided. Second, the data collection and analysis are technically difficult, time consuming and therefore potentially expensive.

Also, at the qualitative research method the experiment environment is more controlled and thus the result provided will be limited. A balance thus has to be drawn between generalizability and practical relevance (Cronbach, 1980). At last but not least, in the qualitative research method the researcher is an integral part of the data set; part of the process (Grafanaki, 1996), and cannot be considered separately from the culture, the context, or the other participants. The data that the researcher has collected may be characterized as biased.

Chapter 5

Research Results

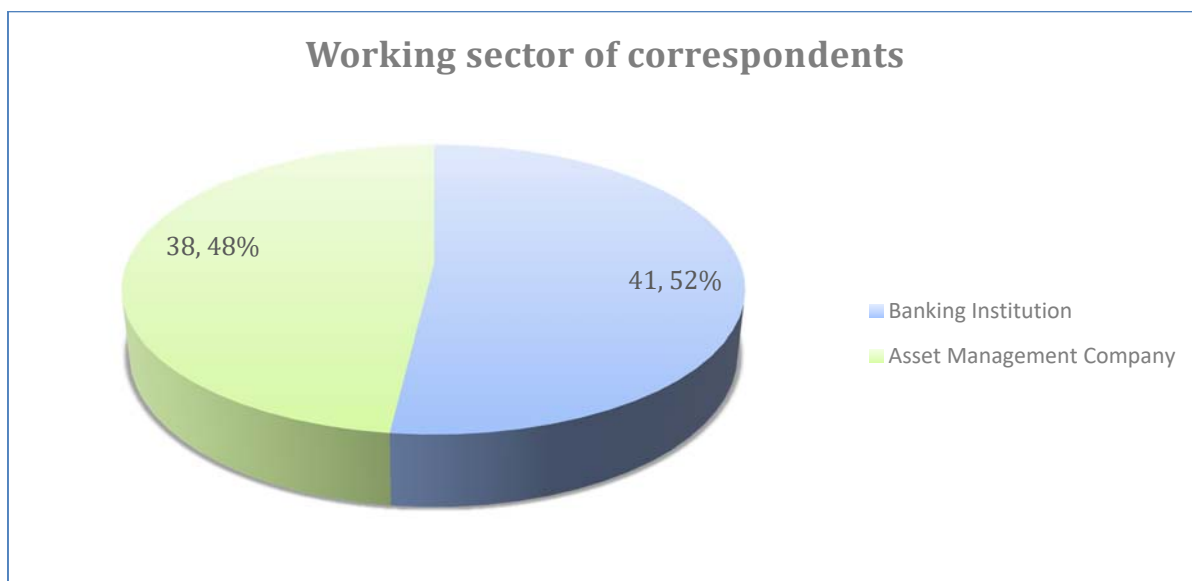
5.1 Data Collection of the Questionnaire

According to Murray (2010) in her journal “Principles of Social Psychiatric”, the process of designing and conducting a qualitative study conforms to the principles of all scientific inquiry: review of existing evidence, identification of a gap in current knowledge, selection of appropriate methods, collection and analysis of data and reporting of findings. However, in qualitative studies the procedures will vary according to the particular theoretical approach.

“The term ‘research design’ is not without problems. Burns and Grove (1993:261) write that the term is used in two ways: first to refer to the entire strategy for an individual study, from identifying the research problem to final plans for data collection and second, as a ‘blueprint’ or a broad pattern or guide that can be applied to many studies. Hakim writes that research design deals ‘primarily with aims, uses, purposes, intentions and plans within the practical constraints of location, time, money and availability of staff’” (Williams, 1998).

Concerning our case study of management of NPEs, the primary source of data were the banks and asset management entities and secondly the publicly available data. Thus, to gather as much as we can information from the primary sources, we have to forward the questionnaire to the responsible departments of banks and asset management entities. For that purpose, we have communicated with the Association of Cyprus Banks (ACB) to provide us with the contact details of the Human Resources [HR] departments of all entities. Thereafter, obtaining all the necessary approvals from the HR departments, we have forwarded the website link of the questionnaire [google form] that was created for the specific purpose [see Appendix 10]. During that period, I have been in touch with participants that were needed clarifications regarding few questions included in the questionnaire. Based on the Figure 9 below, the composition of respondents was thirty-eight [38] from Asset Management entities and forty-one [41] from Banking Institutions, seventy-nine [79] in total.

Figure 9. Working sector of the correspondents



Source: Author analysis

In addition to the above, the questionnaire consists of twenty-eight [28] questions related to the research subject. The main purpose of the questionnaire based on the literature review of similar cases and on the research methodology, was to identify how both entities, banks and asset management entities address the NPEs problem.

In the following chapter we will analyze and interpret each section of the questionnaire in more detail.

5.2 Data Limitations

Continuing our analysis of data limitations from the previous section 4.3, in this section we will state the data limitations that we have faced before, during and after the collection of data required for the questionnaire.

As stated above, in order to collect the data, firstly we had to get the necessary approvals from the management of each organization. Thereafter receiving all the necessary approvals from the management, many candidates that were informed about the questionnaire they were not willing to participate in the research.

In addition, at the stage of requesting to grant the approvals from the management of each organization, few organizations refused to give us their approvals. As a result, the sample of our analysis, the research candidates were decreased.

Furthermore, from all the organizations that we requested to provide us with their authorization to distribute the questionnaire to the respective departments that dealt with the management of non-performing exposures, few of them have provided us with

their authorization and few not. Few of the organizations that have given us with their authorization responded faster than others. More specifically, we have requested from the organizations to give us their authorization to distribute the questionnaire in their responsible departments in early December, some of the organizations responded in two days but some of them responded in three or four weeks later. Some of the late responds received were positive and some were negative. Thus, an additional decrease in the research candidates occurred.

Moreover, the management of NPEs in Cyprus is a new industry that has expanded rapidly in a short time. This new industry has attracted companies that operate globally and have substantial budget to purchase a market share of NPEs [purchase of non-performing loans]. All these companies have different procedures to manage NPEs, by applying their know-how procedures that have gained from other economies to the Cyprus economy. Therefore, due to the reason that to gain the appropriate know-how to manage the NPEs was very costly, these organizations were not willing to share any information to the public but only to public authorities [Central Bank of Cyprus]. As a result, the information that was available to the public at that time and consequently to similar types of research was limited.

By the same token of the above, the Central Bank of Cyprus, the supervisory body of all the organizations that deal with the management of NPEs [banks and asset management entities], is not making public available all the data gathered concerning the NPEs. The reason that the data collected was not distributed publicly, is because to analyze these amounts of data is time consuming. For example, the data concerning the NPEs for Q4 of 2019 was not available in February of 2020.

Finally, additional data that concerns the management of NPEs such as the historical interest rates and the NPEs percentage for each bank and asset management entity is not available publicly in Cyprus, despite the fact that many European countries have all the above information and many more available publicly.

Chapter 6

Research Results for Each Section

6.1 General Information about the Questionnaire

In this chapter we will analyze the results of the questionnaires as completed by the respondents from the banking institutions and asset management entities.

The purpose of the questionnaire was:

1. To collect information and draw conclusions on the determinants and causes, for the creation and management of non-performing exposures in the monetary financial institutions and in the asset management entities, and
2. To establish how the future growth/development of the monetary financial institutions was affected.

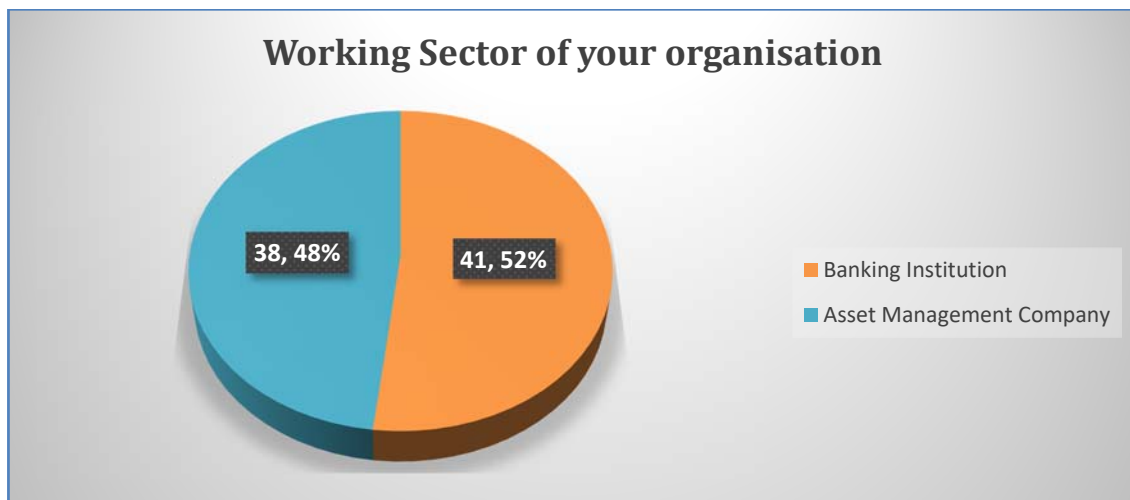
The questionnaire that was distributed was anonymous and no personal details were saved. Regarding the response rate, the survey was filled by seventy-nine [79] employees of banking institutions and asset management entities together.

6.2 Section One – Background Information

The main purpose of this section was to gather all the necessary information regarding the background of the participant. The section is comprised of four [4] questions, Q1-Q4, as we observe in the analysis below.

Regarding the working sector of the participants, 48% (38 respondents) were working in the asset management entities and 52% (41 respondents) were working in the banking industry.

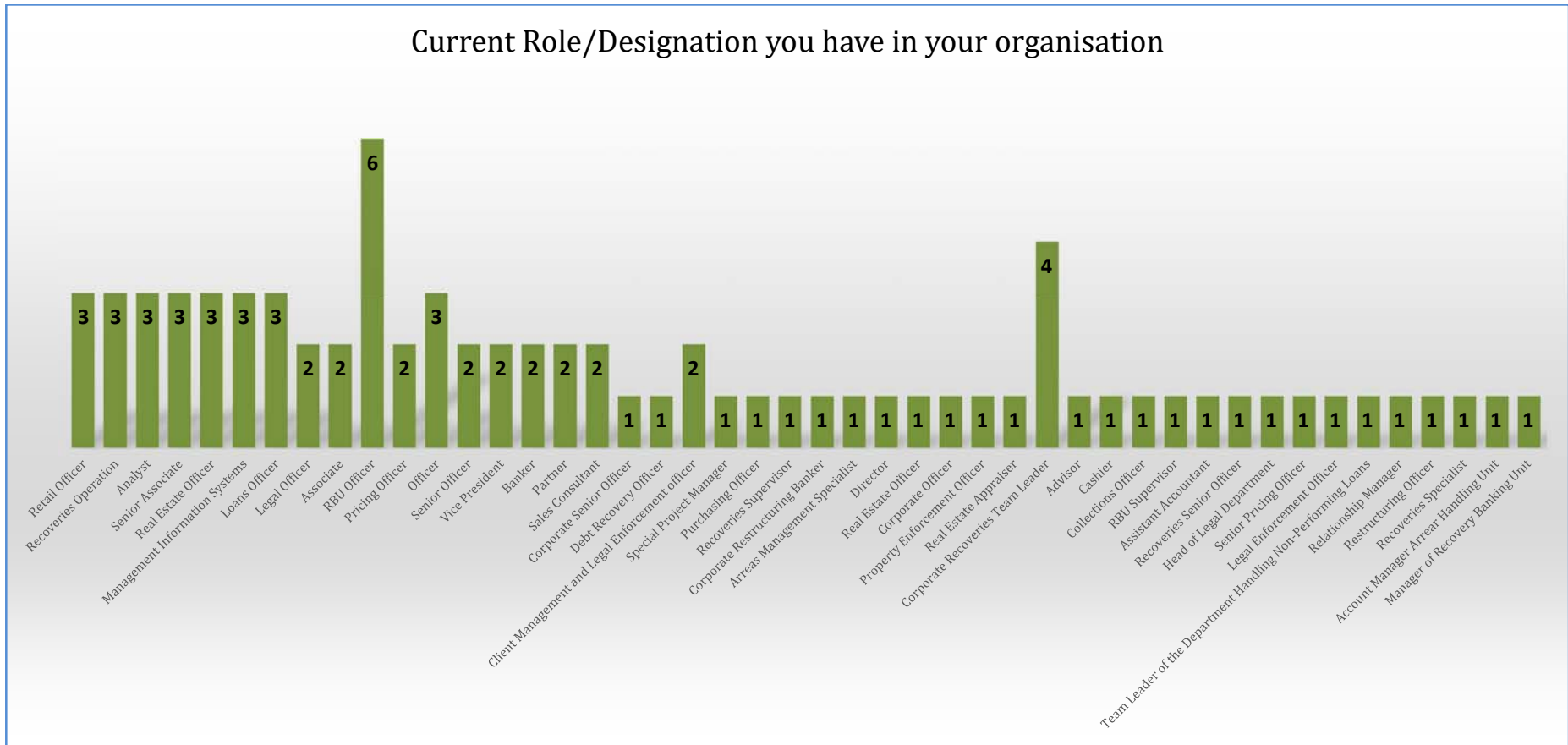
Figure 10. Responses on Question: “Working Sector of your Organization”



Source: Author analysis

In relation to the role that the participants had in their respective organizations, six [6] respondents were working as “RBU officer” and four [4] respondents were working as “Real Estate officer” and as “Corporate Recoveries Team Leader” respectively. Also, three [3] respondents were working in each of the following categories: “retail officer”, “recoveries operations officer”, “analyst”, “senior associate”, “management information systems officer”, “loans officer” and “officer” respectively. As “legal officer”, “associate”, “pricing officer”, “senior officer”, “vice president”, “banker”, “partner”, “sales consultant” and “client management and legal enforcement officer” two [2] respondents for each designation role were observed. Finally, one [1] respondent was working as “corporate senior officer”, “debt recovery officer”, “special project manager”, “purchasing officer”, “recoveries supervisor”, “corporate restructuring banker”, “arrears management specialist”, “director”, “corporate officer”, “property enforcement officer”, “real estate appraiser”, “advisor”, “cashier”, “collection officer”, “RBU Supervisor”, “assistant accountant”, “recoveries senior officer”, “Head of legal department”, “senior pricing officer”, “legal enforcement officer”, “Team leader of the department of handling non-performing loans”, “relationship manager”, “restructuring officer”, “recoveries specialist”, “account manager of arrear handling unit” and “manager of recovery banking unit” respectively.

Figure 11. Responses on Question: "Current role/designation in your Organization"



Source: Author analysis

The third question of this section aimed to identify the departments that the respondents were working. The Corporate sector as it can be seen from figure 12 below, has fifteen [15] replies which correspond to 19% of the total respondents. The Retail and the Retail & Corporate sectors followed with thirteen [13] replies each, which corresponds to 16% of the total respondents. The Legal department with ten [10] replies accounted for 13% of the total respondents. The Recoveries unit (RBU) followed with seven [7] replies, corresponded to 9% of the respondents. The Property Management department/Real estate unit has six [6] replies which corresponded to 8% of the respondents. Moreover, both the Property Valuation department and the Management Information System department had three [3] replies each, which relates to 4% of the respondents. The Operations department and the Head of RBU had two [2] replies respectively which corresponds to the 3% of the respondents. Finally, the Collections department, the Accounting department, the IT Systems department, the Advisory department and the SMEs department had one [1] reply each, which relates to the 1% of the respondents.

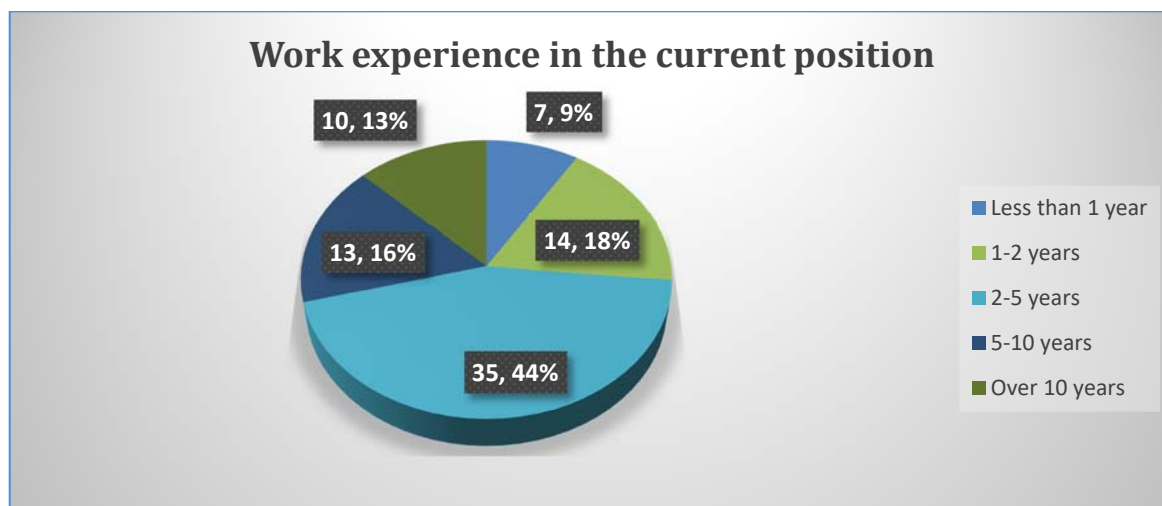
Figure 12. Responses on Question: "Department within your Organization"



Source: Author analysis

The last question of section one, was the working experience that the respondents had in their current position. Despite the fact that this industry of management of NPEs was new, the employees that comprise it have relatively many years of experience due to the fact that many of them have been transferred from the banking institutions to the asset management entities. The 44% of the population had 2-5 years of experience in their current position, the 18% had 1-2 years of experience, the 16% had 5-10 years of experience, the 13% had over 10 years of experience and finally only the 9% of the population had less than 1 year of experience.

Figure 13. Responses on Question: "Work Experience in the Current Position"



Source: Author analysis

6.3 Section Two - Causes of NPE/Non-Performing Loans

The main purpose of this section was to gather information regarding the causes of NPEs/Non-Performing Loans that a banking institution and/or an asset management entity according to the respondents had. This section it comprises of eight [8] questions, Q5-Q11, as it can be seen from the following analysis.

The first question of this section, or the fifth question of the questionnaire aimed to rank the major causes of NPEs in organizations as per their importance. The question consisted of ten [10] causes.

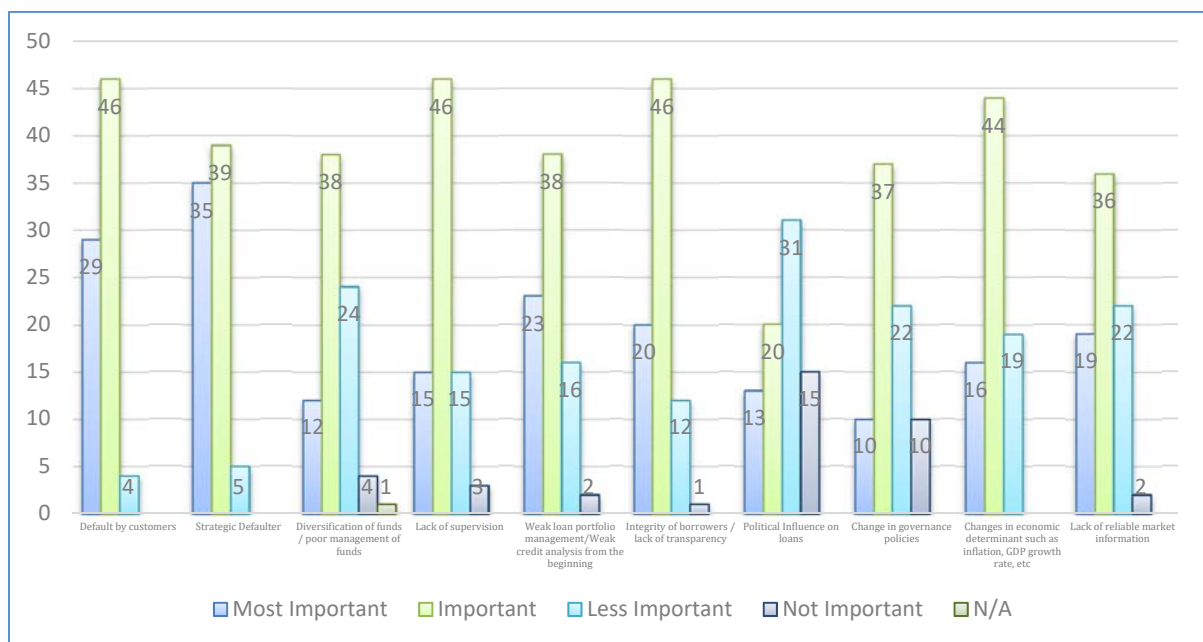
The first cause as we can observe was "Default by customers". The respondents replied as follows: "Less important" four [4] times, forty-six [46] as "Important" and twenty-nine [29] as "Most important". As we can conclude from the replies provided, this cause is considered as an important factor. The next cause as avowed in the question was the "Strategic defaulter". The "Less important" choice was observed [5] times, the "Important" and "Most important" choices were observed thirty-nine [39] and thirty-five [35] times respectively. As a result, this cause can be characterized as important. The "Diversification of funds/poor management of funds" is characterized also as important reason as the "Most important" and "Important" choices were observed twelve [12] and thirty-eight [38] times respectively. The "Less important" was observed twenty-four [24] times, the "Non important" four [4] times and the "N/A" was observed only one [1] time.

The fourth cause that may cause NPEs in an organization is the "Lack of supervision". The "Not important" choice was selected three [3] times, the "Less important" and "Most important" choices were observed fifteen [15] times respectively, and as "Important"

choice was observed forty-six [46] times. This cause can be characterized as important based on the analysis above. The next cause “Weak loan portfolio management/weak credit analysis from the beginning” can be characterized as an important cause of creating NPEs. The “Not important” choice was observed two [2] times, the “Less important” choice was observed sixteen [16] times, the “Important” choice was observed thirty-eight [38] times and finally the “Most important” choice was observed twenty-three [23] times. The “Integrity of borrowers/lack of transparency” cause had only one [1] reply as “Not important”, twelve [12] replies as “Less important”, forty-six [46] replies as “Important”, and twenty replies as “Most important”. Another cause that may create NPEs in an organization is the “Political influence on loans”. This cause can be characterized as not important because fifteen [15] replies were observed as “Not important”, thirty-one [31] replies as “Less important”, twenty [20] replies as “Important” and thirteen [13] replies as “Most important”.

The “Change in governance policies” can be characterized as an important cause because thirty-seven [37] of the replies denoted it as “Important”, twenty-two [22] replies as “Less important” and ten [10] replies as “Most important” and “Not important” respectively. Moreover, as important cause can be characterized the “Changes in economic determinant such as inflation, GDP growth rate, etc.”. The “Important” choice was observed forty-four [44] times, the “Most important” choice was observed sixteen [16] times and the “Less important” choice was observed nineteen [19] times. At last but not least, the “Lack of reliable market information” can be also characterized as an important cause. More specifically two [2] replies indicated it as “Not important”, twenty-two [22] replies as “Less important”, thirty-six [36] replies as “Important” and nineteen [19] replies as “Most important”.

Figure 14. Responses on Question: "What are the major causes for having NPEs in your Organization?"



Source: Author analysis

The next question, Question 5b was optional, it concerns any additional determinants (if applicable) were able to cause NPEs in an organization and were not included in the previous question. According to figure 15, the “Delay in restructuring decisions” and the “Change in the value of the collateral” are characterized as important causes. In addition to the above, “The uncertainty increases due to the conflict between the Parliament House of Representatives and the Government”, “The excessive fear of the economic climate by people, leading to decrease in spending in general within the economy”, “The poor political decisions of the government”, “If the customer has additional non-performing mortgages to other financial institutions”, “The risk appetite of the owner of the company is very important for the viability of the company and the repayment of the mortgage”, “The economic crisis”, “The cooperation status of the customer”, “The uncalculated risks taken by the borrower”, “Many banks were not ready to deal with the NPEs. They didn’t have the necessary expertise”, “The economic environment is so sensitive in this period of time that any change affects the value of collaterals very frequently”, “The mortgage amount that the customer has”, “The unexpected changes in the foreclosure laws”, “The economy of Cyprus was affected by many exogenous parameters that had led to the economic crisis”, “During the years 2014-2017, many customer provided both entities with misleading data and documents regarding their company’s financial statements. Those data was the fundamental data used to restructure the non-performing loans”, “The collateral value is affected by many variables” and finally “The real estate market is volatile in this particular time period due to the increase in supply of immovable properties in the market”, all the above statements have been recorded as additional determinants that can cause NPEs in an organization.

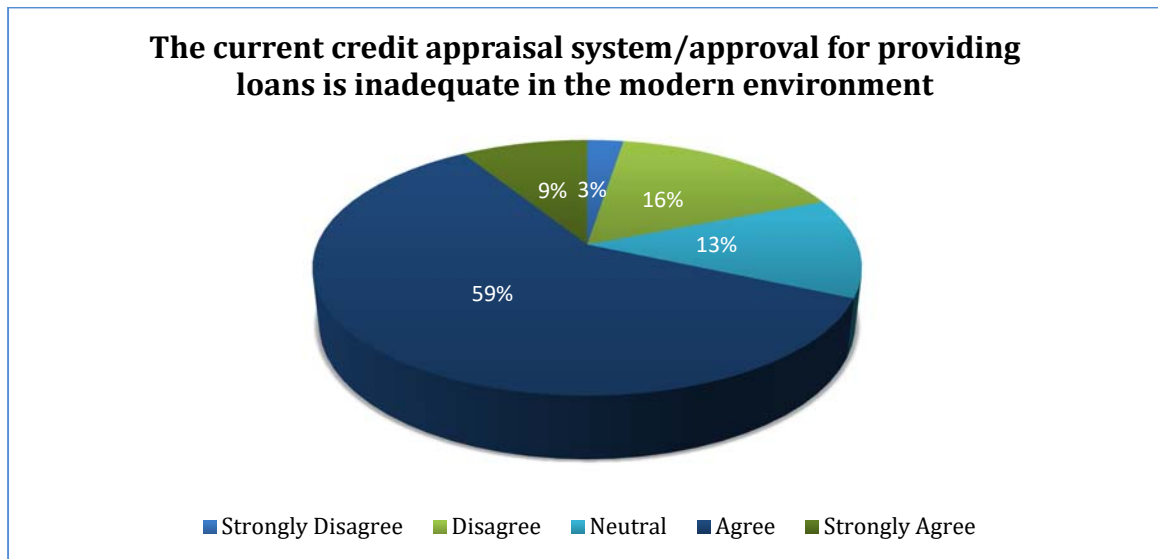
Figure 15. Responses on Question: "Please specify any other determinant if apply"



Source: Author analysis

The following question took into consideration the current credit appraisal system for providing loans in the modern environment, "is the system inadequate?"; 59% of the total participants "Agree" with the statement, 16% "Disagree" with the statement, 13% has "Neutral" opinion, 9% "Strongly Agree" and 2% "Strongly Disagree" with the statement. Our conclusion from the depicted results is that the current credit appraisal system for providing loans in the modern environment is inadequate.

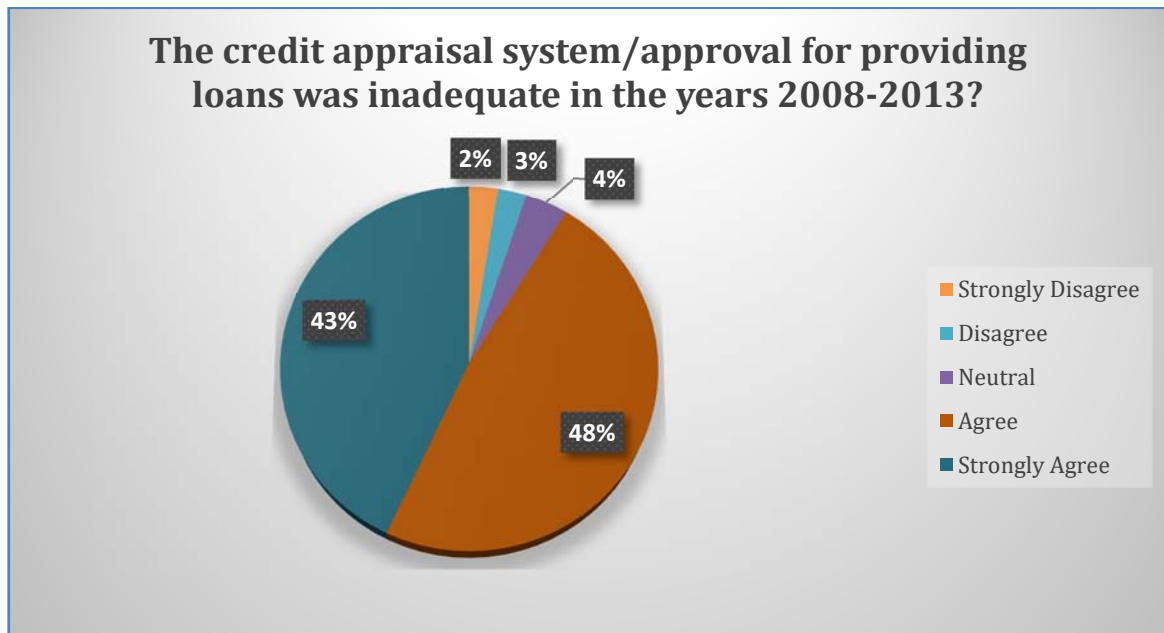
Figure 16. Responses on Question: "The Current credit appraisal system/approval for providing loans is inadequate in the modern environment"



Source: Author analysis

Question 7 of the questionnaire concerns the credit appraisal system for providing loans. The question's purpose was to check if the appraisal system was inadequate in the years 2008-2013. The 48% of the total participants "Agree" with the statement, 43% "Strongly agree", 4% has "Neutral" opinion, 3% "Disagree" and 2% "Strongly disagree" with the above statement. Hence, we can state that the specific statement based on the answers provided is consider correct.

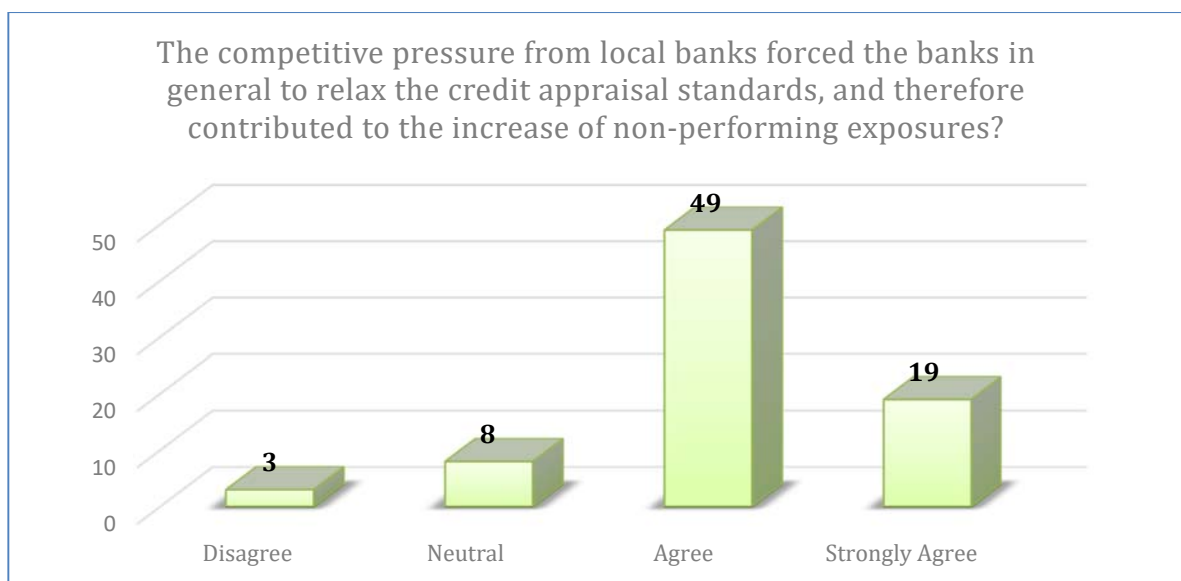
Figure 17. Responses on Question: "The Credit appraisal system/approval for providing loans was inadequate in the years 2008-2013?"



Source: Author analysis

In response to the statement, "The competitive pressure from local banks forced the banks in general to relax the credit appraisal standards, and therefore contributed to the increase of non-performing exposures", 49 participants "Agree", 19 participants "Strongly agree", 8 participants have "Neutral" opinion and 3 participants "Disagree" with the statement. Therefore, we can state that the competition among the banking institutions has ease the credit appraisal criteria for assessing the loan applications and contributed to the increase of non-performing exposures.

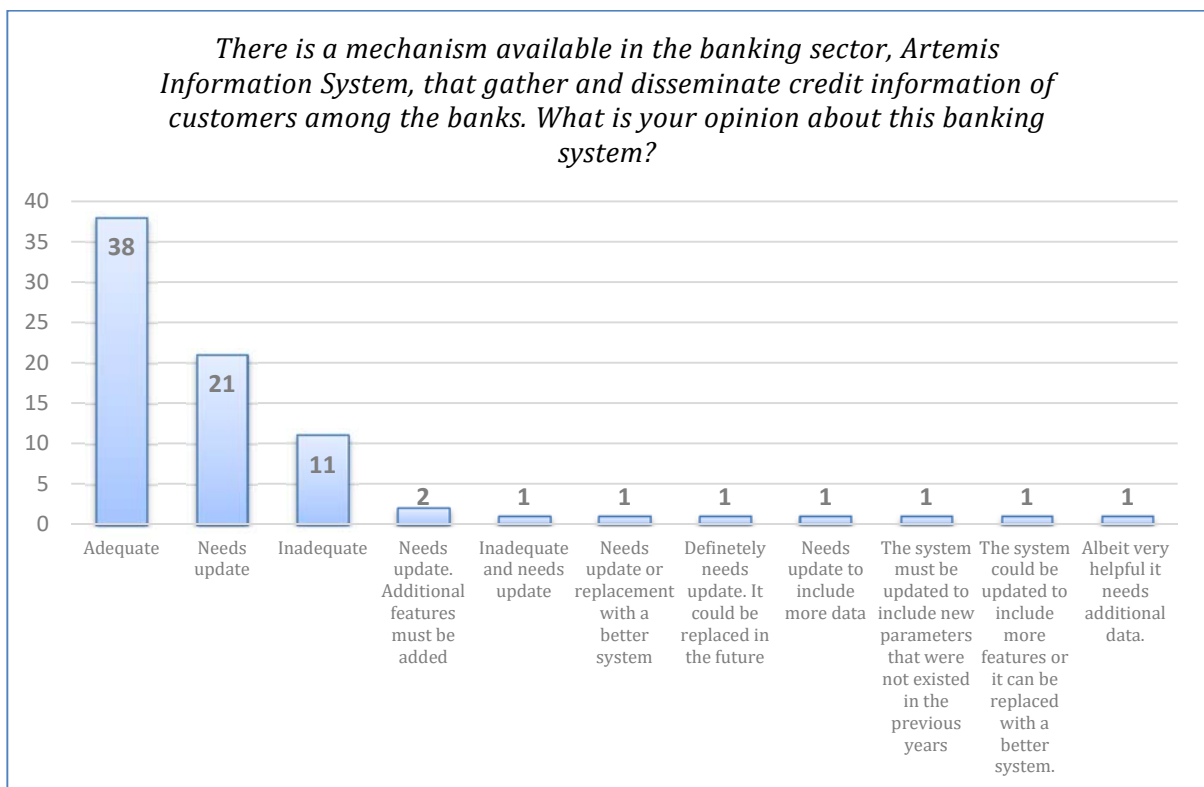
Figure 18. Responses on Question: "The competitive pressure from local banks forced the banks in general to relax the credit appraisal standards, and therefore contributed to the increase of non-performing exposures?"



Source: Author analysis

The next question referred to the Artemis Information System, the system that is responsible to gather and disseminate credit information of customers among the banks. According to 38 of the respondents, the system is “Adequate” as per the figure 19 below. Based on figure 19 below, 21 respondents said that the system “Needs update”, 11 respondents said that is “Inadequate”, 2 respondents said that “it needs update, additional features must be added” and 1 respondent said that “Is very helpful but it needs additional data”, “The system could be updated or replaced with a better one”, “The system must be updated to include new parameters that did not exist in the previous years”, “needs update to include more data” and finally the “system needs update or replacement with a better system in the future”. As a result, we can conclude that the Artemis Information System is adequate, but it will need an update to include more features.

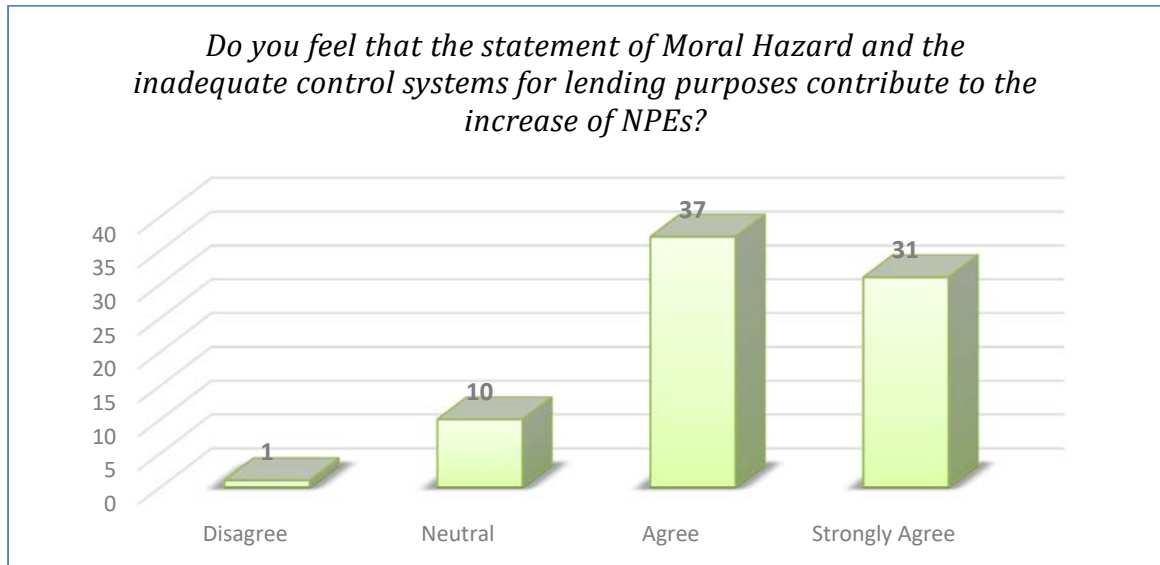
Figure 19. Responses on Question: "There is a mechanism available in the banking sector, Artemis Information System, that gather and disseminate credit information of customers among the banks. What is your opinion about this banking system?"



Source: Author analysis

One of the most important questions of the questionnaire was Question 10, which concerned the statement of “Moral Hazard”. The question stated that if the statement of Moral Hazard and the inadequate control system for lending purposes contribute to the increase of NPEs. The 47% and 39% of the respondents “Agree” and “Strongly agree” with the statement. On the other hand, 13% of the respondents have “Neutral” opinion and 1% of the respondents “Disagree” with the statement.

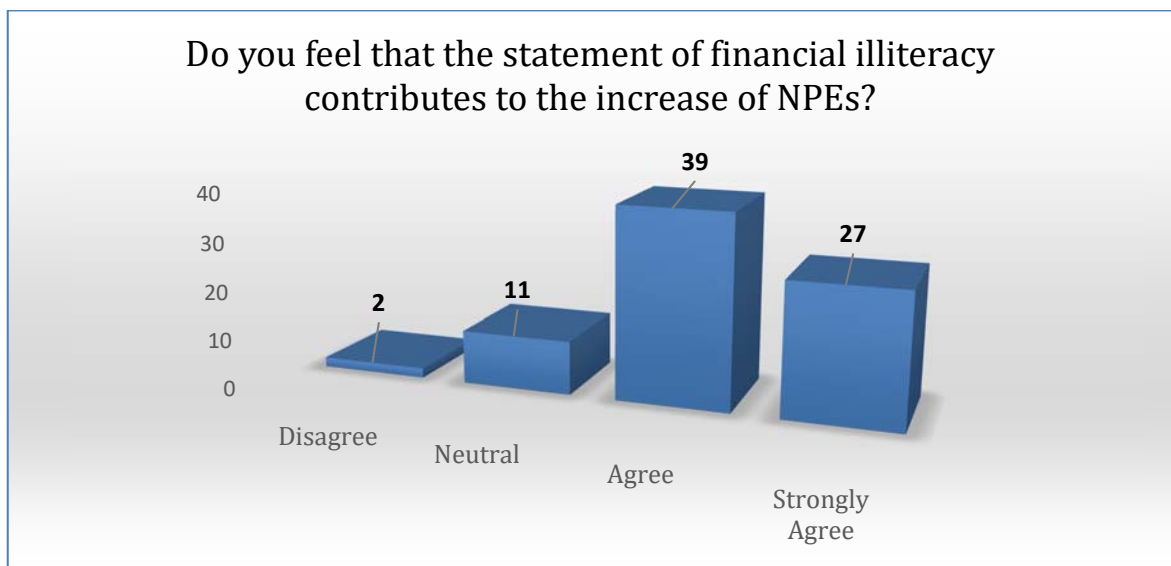
Figure 20. Responses on Question: "Do you feel that the statement of Moral Hazard and the inadequate control systems for lending purposes contribute to the increase of NPEs?"



Source: Author analysis

The last question of section two of the questionnaire was the second most important because financial illiteracy was taken into account. The question was about the financial illiteracy, if it has contributed to the increase of NPEs. The 77% and 14% of the respondents "Agree" and "Strongly agree" with the statement respectively. Also, 5% of the respondents had "Neutral" opinion and 4% of the respondents "Disagree" with the above statement.

Figure 21. Responses on Question: "Do you feel that the statement of financial illiteracy contributes to the increase of NPEs?"



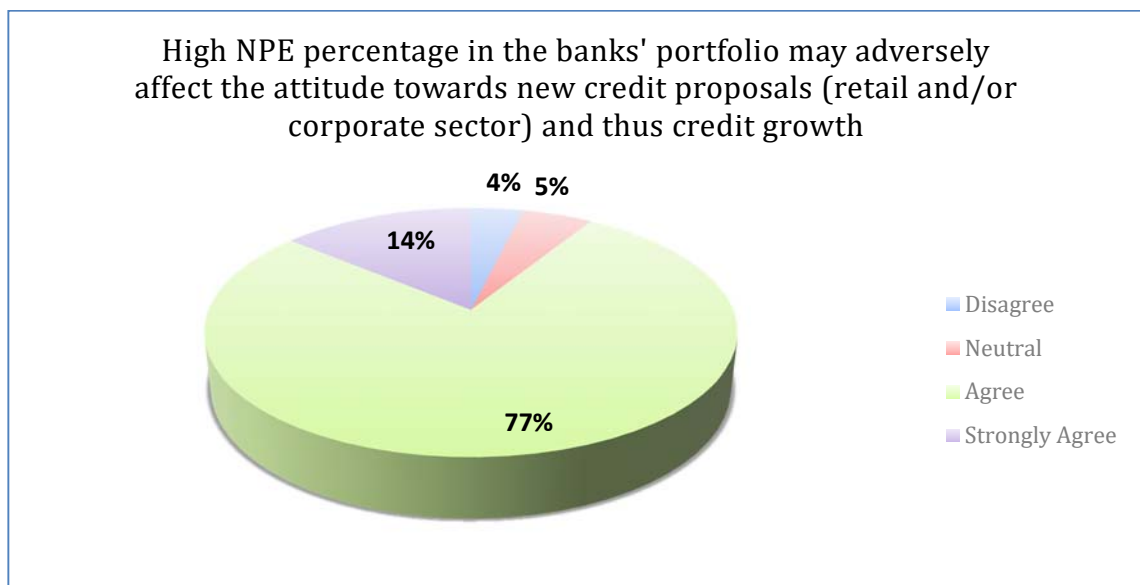
Source: Author analysis

6.4 Section Three – Impact of NPE/Non-Performing Loans

In this section, the main purpose was to gather all the important information regarding the impact of NPEs/Non-Performing Loans on banking institution and/or an asset management entity according to the respondents. The section comprised of six [6] questions, Q12-Q17, as it can be seen from the analysis below.

The first question of this section concerns the high NPE percentage in a banks' portfolio and if adversely affects the attitude towards new credit proposals and thus credit growth. The 77% of the respondents answered that they "Agree" with the statement, 14% that they "Strongly agree", 5% had "Neutral" opinion and 4% that they "Disagree" with the above statement. Consequently, from the results as stated above, the high NPEs percentage affects negatively the attitude towards new credit proposals, therefore the credit growth is affected negatively.

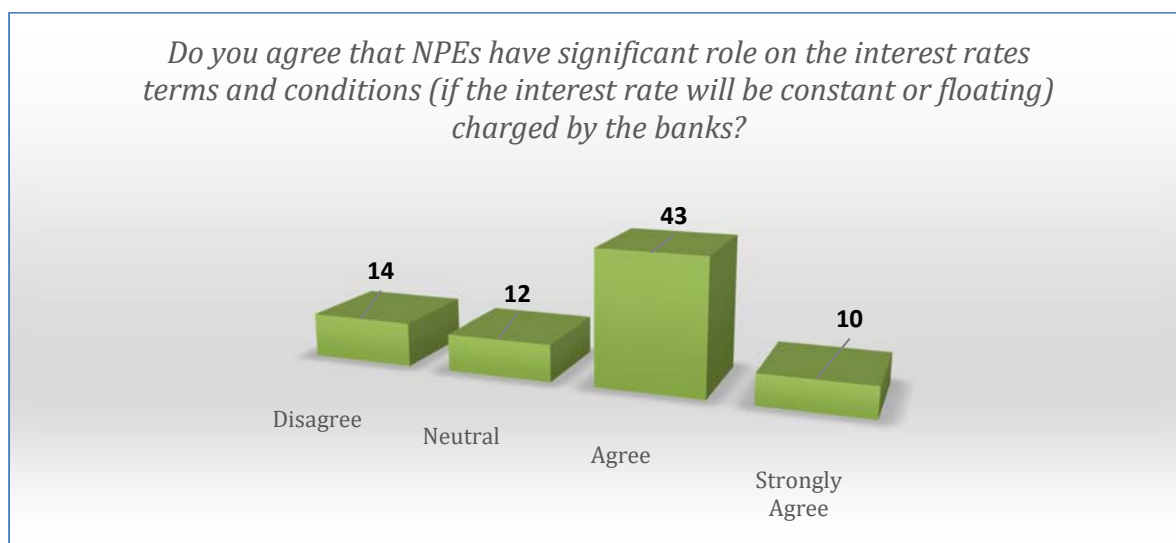
Figure 22. Responses on Question: "High NPE percentage in the banks' portfolio may adversely affect the attitude towards new credit proposals (retail and/or corporate sector) and thus credit growth"



Source: Author analysis

Question 13 tried to identify if the NPEs had significant impact on the interest rate terms and conditions as set by the banking institutions. More specifically, the question tried to identify if the interest rates set by the banking institutions will be constant or floating when NPEs exist. The 54% of the respondents answered that "Agree" with the statement, 18% answered that "Disagree", 15% had "Neutral" opinion and 13% answered that "Strongly agree" with the above statement.

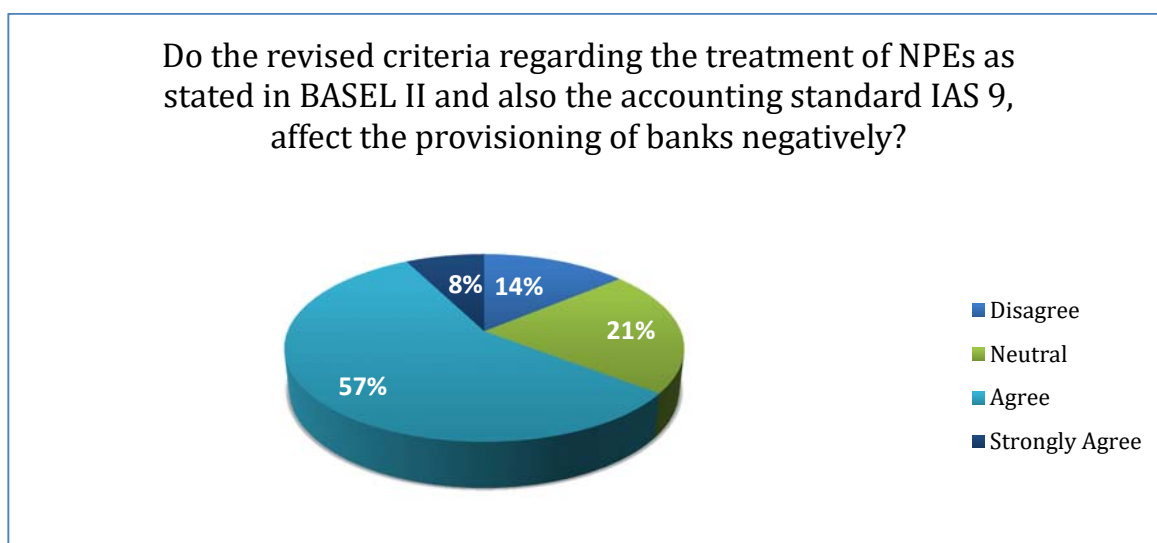
Figure 23. Responses on Question: "Do you agree that NPEs have significant role on the interest rates terms and conditions (if the interest rate will be constant or floating) charged by the banks?"



Source: Author analysis

The following question, Question 14 of the questionnaire, concerns the provisioning procedure of the banks regarding the revised criteria of treatment of the NPEs as stated in the BASEL II and taking into consideration the accounting standard IAS 9. The 57% of the respondents stated that they "Agree" with the statement that the revised criteria affects the provisioning procedure negatively. In addition, 21% of the respondents had "Neutral" opinion, 14% of the respondents "Disagree" and 8% of the respondents "Strongly agree" with the above statement. Therefore, the revised criteria regarding the treatment of NPEs as stated in BASEL II and taking into consideration the accounting standard IAS 9, based on the answers provided the provisioning of the banks is affected negatively.

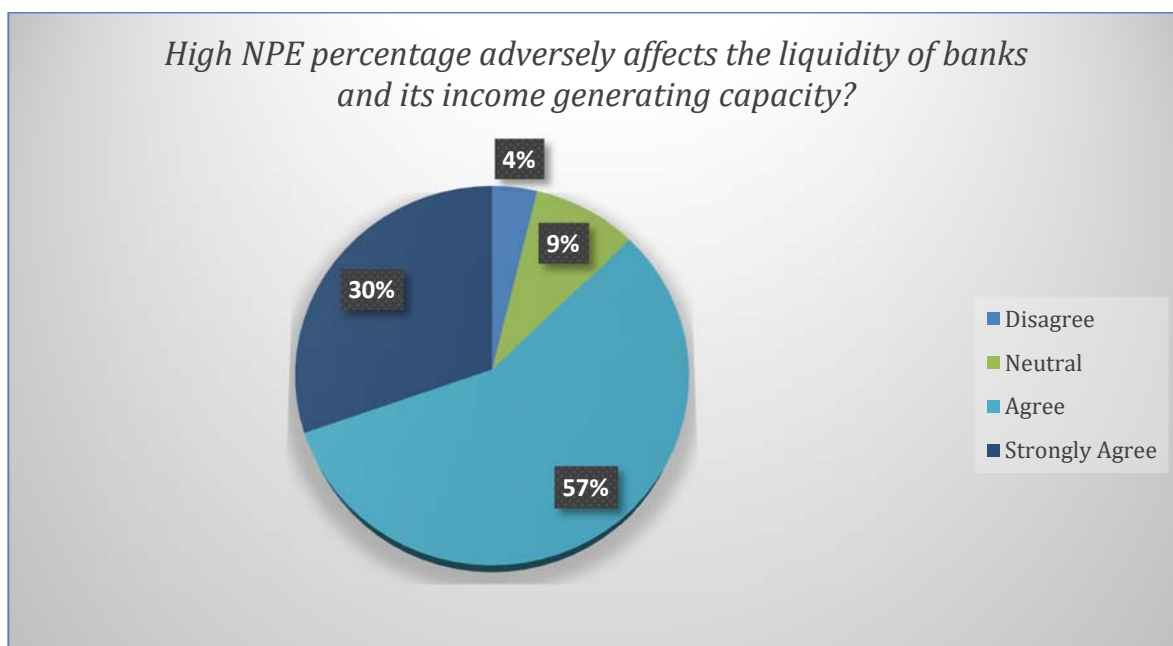
Figure 24. Responses on Question: "Do the revised criteria regarding the treatment of NPEs as stated in BASEL II and also the accounting standard IAS 9, affect the provisioning of banks negatively?"



Source: Author analysis

In the following question, Question 15, the purpose was to identify if the liquidity and the income generating capacity of banks were affected negatively by the high NPEs percentage. According to the responds gathered, 57% of the participants “Agree” with the statement, 30% of the participants “Strongly agree” with the statement, 9% of the participants had “Neutral” opinion and 4% of the participants “Disagree” with the statement.

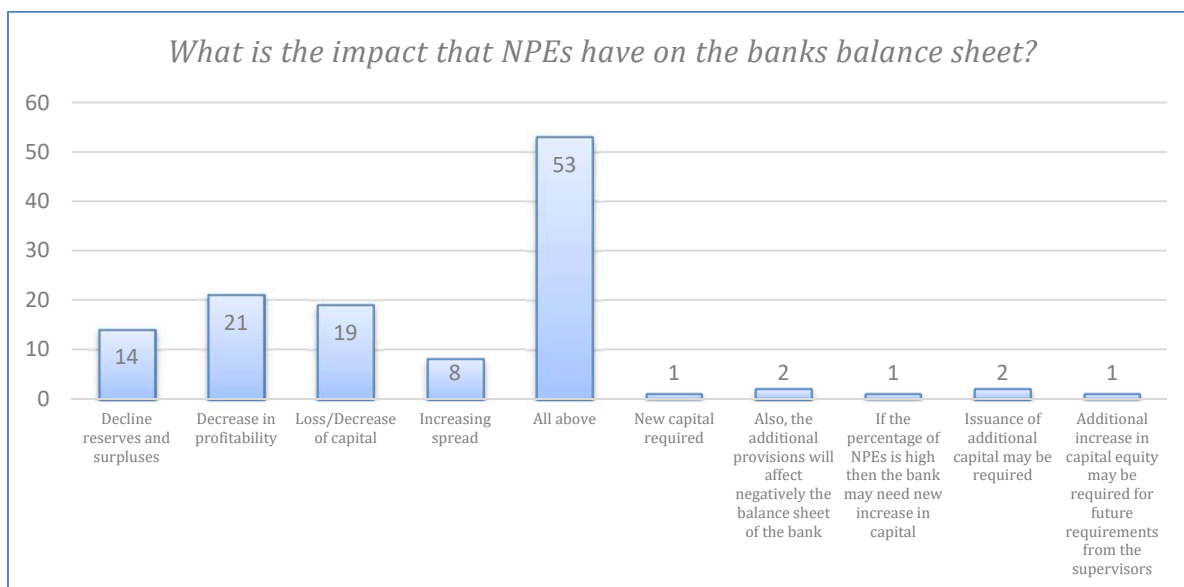
Figure 25. Responses on Question: "High NPE percentage adversely affects the liquidity of banks and its income generating capacity?"



Source: Author analysis

According to the literature review, the NPEs affects the balance sheet of an entity. In Question 16, we tried to identify what were the most common impacts that the NPEs had on a bank’s balance sheet. As we can observe from figure 26, fifty-three [53] participants stated that the NPEs “Decline the reserves and surpluses”, “Decrease the profitability”, “Decrease the capital” and “Increase the spread” [All above option in the questionnaire was selected]. The “Decrease in profitability” was selected twenty-one [21] times, the “Loss/decrease of capital” was selected fourteen [14] times and “increasing spread” was selected eight [8] times. Furthermore, the option “Other” was included in the question which according to the participants opinions was comprised as follows: 1) “The additional provisions will affect negatively the balance sheet of the bank” [two (2) times], 2) The issuance of additional capital may be required” [two (2) times], 3) “New capital will be required” [one (1) time], 4) “If the percentage of NPEs is high, then the bank may need new increase in capital” [one (1) time] and 5) “The additional increase of capital equity may be required for the future requirements may set by the supervisor authorities” [one (1) time].

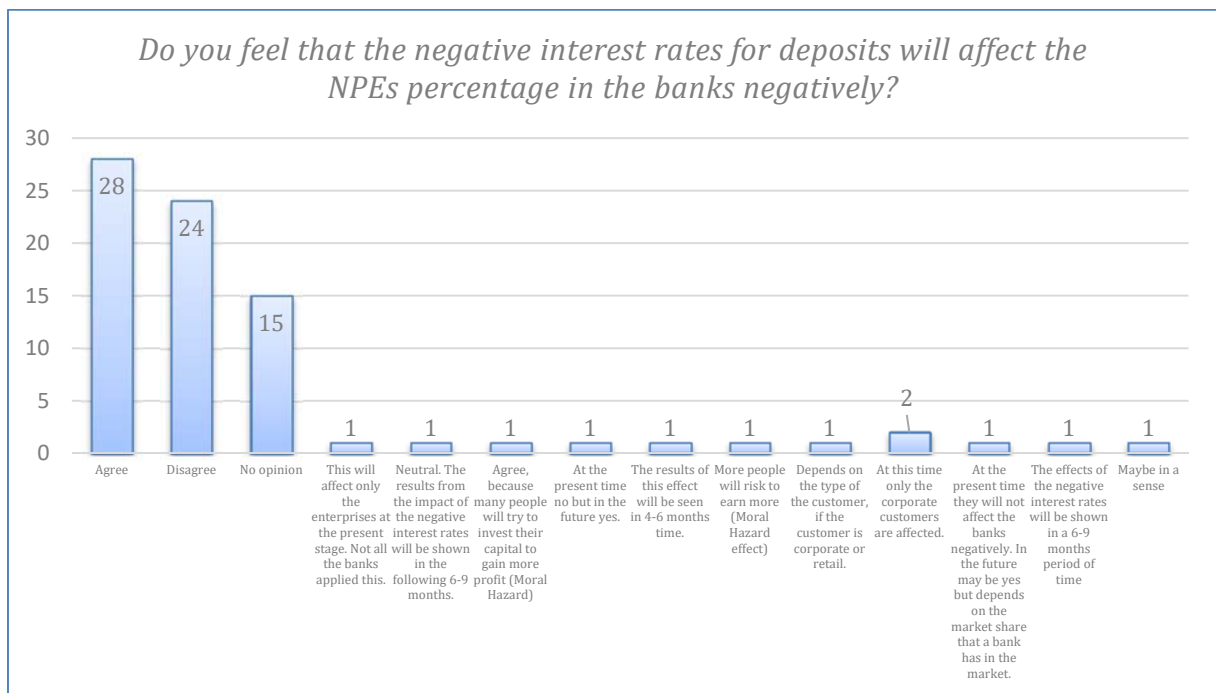
Figure 26. Responses on Question: "What is the impact that NPEs have on the banks balance sheet?"



Source: Author analysis

The last question of this section examines if the negative interest rates for deposits will affect negatively the NPEs percentage in the banks. The option "Agree" was selected by twenty-eight [28] participants, the option "Disagree" was selected by twenty-four [24] participants and the option "No Opinion" was selected by fifteen [15] participants. Moreover, due to the reason that the question was 'open type' the "Other" option was selected as follows: 1) "At this moment only the corporate customers are affected" [two (2) times], 2) "This will affect only the enterprises at the present stage, not all the banks applied this" [one (1) time], 3) "Neutral, the results from the impact of the negative interest rates will be shown in the following 6-9 months" [one (1) time], 4) "Agree, because many people will try to invest their capital to gain more profit (Moral Hazard)" [one (1) time], 5) "At the present time no, but in the future yes" [one (1) time], 6) "The results of this effect will be seen in 4-6 months' time" [one (1) time], 7) "More people will risk to earn more (Moral Hazard)" [one (1) time], 8) "Depends on the type of the customer, if the customer is corporate or retail" [one (1) time], 9) "The effect of the negative interest rates will be shown in a 6-9 months period of time" [one (1) time], 10) "In a sense (may be yes, may be no)" [one (1) time] and finally 11) "At the present time they will not affect the banks negatively. In the future may be yes but depends on the market share that a bank has in the market" [one (1) time].

Figure 27. Responses on Question: "Do you feel that the negative interest rates for deposits will affect the NPEs percentage in the banks negatively?"



Source: Author analysis

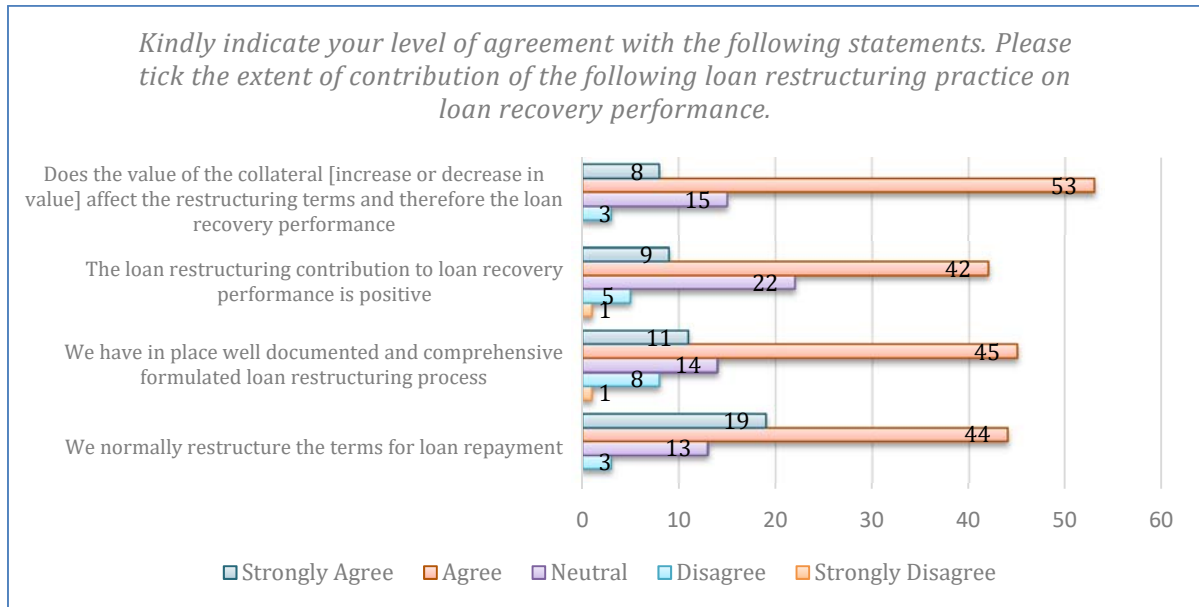
6.5 Section Four – Management of NPE/Non-Performing Loans

The purpose of this section was to gather all important information regarding the management of the NPEs/Non-Performing Loans within a banking institution and an asset management entity. The section is comprised of eleven [11] questions, Q18-Q28, as we observe in the analysis below.

The first question of this section concerned the loan restructuring practice that a banking institution and an asset management entity follows. The first sub-question was “If an entity restructures the terms for a better loan repayment”, forty-four [44] respondents “Agree” with the statement, nineteen [19] respondents “Strongly agree”, thirteen [13] respondents had “Neutral” opinion and three [3] respondents “Disagree” with the statement. The following sub-question was “If a well-documented and a comprehensive formulated loan restructuring process exist”, for this question forty-five [45] respondents “Agree”, fourteen [14] respondents had “Neutral” opinion, eleven [11] respondents “Strongly agree”, eight [8] respondents “Disagree” and one [1] respondent “Strongly disagree”. The next sub-question referred to “The loan restructuring contribution and if it has positive effect on the loan recovery performance”. For this question, forty-two [42] respondents “Agree”, twenty-two [22] respondents had “Neutral” opinion, nine [9] respondents “Strongly agree”, five [5] respondents “Disagree” and one [1] respondent

“Strongly disagree” with the statement. Finally, the respondents were asked “If a change in the value of the collateral affects the restructuring terms and therefore the performance of the loan”, fifty-three [53] respondents “Agree”, fifteen [15] respondents had “Neutral” opinion, eight [8] respondents “Strongly agree” and three [3] respondents “Disagree”. As we conclude from the answers provided, the loan recovery performance can be affected by the four [4] elements as stated in the sub-questions.

Figure 28. Responses on Question: "Kindly indicate your level of agreement with the following statements. Please tick the extent of contribution of the following loan restructuring practice on loan recovery performance."

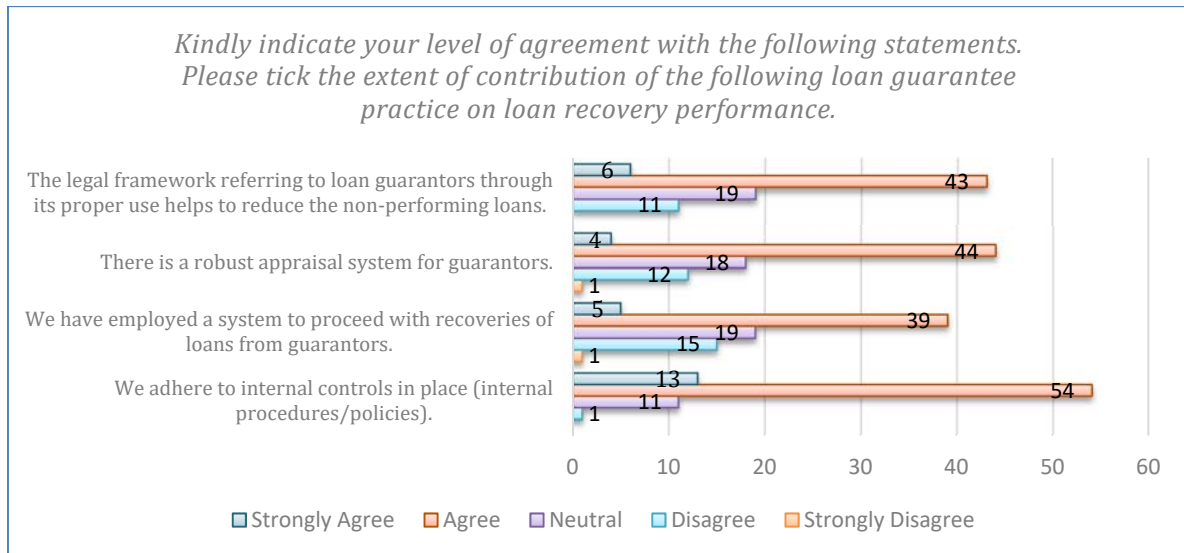


Source: Author analysis

The next question of the section concerned the loan guarantee practice and the contribution extent that may had on the loan recovery performance. The first sub-question was about the bankers and “If they adhere to the internal controls that are in place”, fifty-five [55] respondents “Agree”, thirteen respondents “Strongly agree”, eleven [11] had “Neutral” opinion and one [1] respondent “Disagree” with the statement. The second sub-question referred to “Both entities employed a system to proceed with recoveries of loans from guarantors”, thirty-nine [39] respondents “Agree”, nineteen [19] respondents had “Neutral” opinion, fifteen [15] respondents “Disagree”, five [5] respondents “Strongly agree” and one [1] respondent “Strongly disagree”. The next in order sub-question was about “The current appraisal system for the guarantors and if it is robust”. With this statement forty-four [44] respondents “Agree”, eighteen [18] respondents had “Neutral” opinion, twelve [12] respondents “Disagree”, four [4] respondents “Strongly agree” and one [1] respondent “Strongly disagree”. The last sub-question concerned the “Legal framework that refers to the guarantors and through its proper use can reduce the non-performing loans”. With this statement forty-three [43] respondents “Agree”, nineteen [19] respondents had “Neutral” opinion, eleven [11] respondents “Disagree” and six [6] respondents “Strongly agree”. From the replies

provided, we conclude that the contribution of the loan guarantee practice as it is stated in the above sub-questions had positive effect on the loan recovery performance.

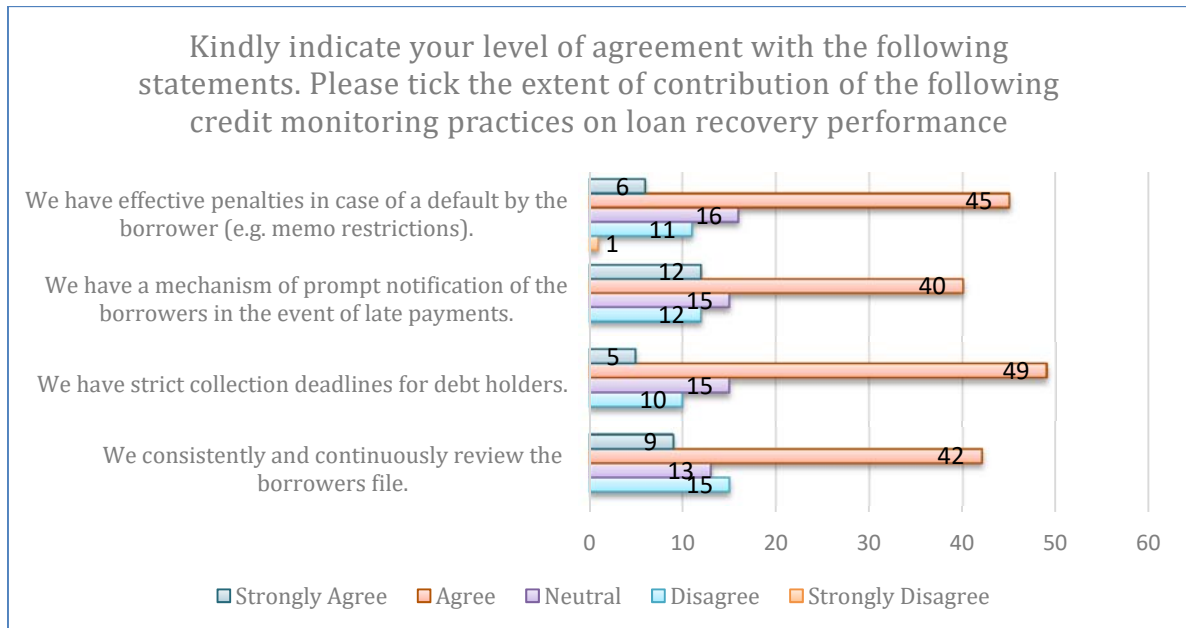
Figure 29. Responses on Question: "Kindly indicate your level of agreement with the following statements. Please tick the extent of contribution of the following loan guarantee practice on loan recovery performance."



Source: Author analysis

The following question, Question 20 of the questionnaire it was about the credit monitoring practices. The purpose of this question "It was to identify the extent of the contribution of the credit monitoring practices to the loan recovery performance". The first sub-question "It was about the consistently and continuously review of the borrowers file", forty-two [42] respondents "Agree" with the statement, fifteen [15] respondents "Disagree" with the statement, thirteen [13] respondents had "Neutral" opinion and nine [9] respondents "Strongly agree". The second sub-question it was about "The strict collection deadlines that exists for the debt holders in an entity", forty-nine [49] respondents "Agree" with the statement, fifteen [15] respondents had "Neutral" opinion, ten [10] respondents "Disagree" and five [5] respondents "Strongly agree". The third sub-question concerned "If a prompt notification mechanism for the borrowers in the event of late payments exist in their organization", forty [40] participants "Agree", fifteen [15] participants had "Neutral" opinion and fifteen respondents "Disagree" and "Strongly agree" respectively. At last but not least, this sub-question was about "The effectiveness of penalties in the case of a default by the borrower occurred in an organization". According to the data collected, forty-five [45] respondents "Agree" with the statement that in their organization have effective penalties in case of a default, sixteen [16] respondents had "Neutral" opinion, eleven [11] respondents "Disagree", six [6] respondents "Strongly agree" and one [1] respondent "Strongly disagree".

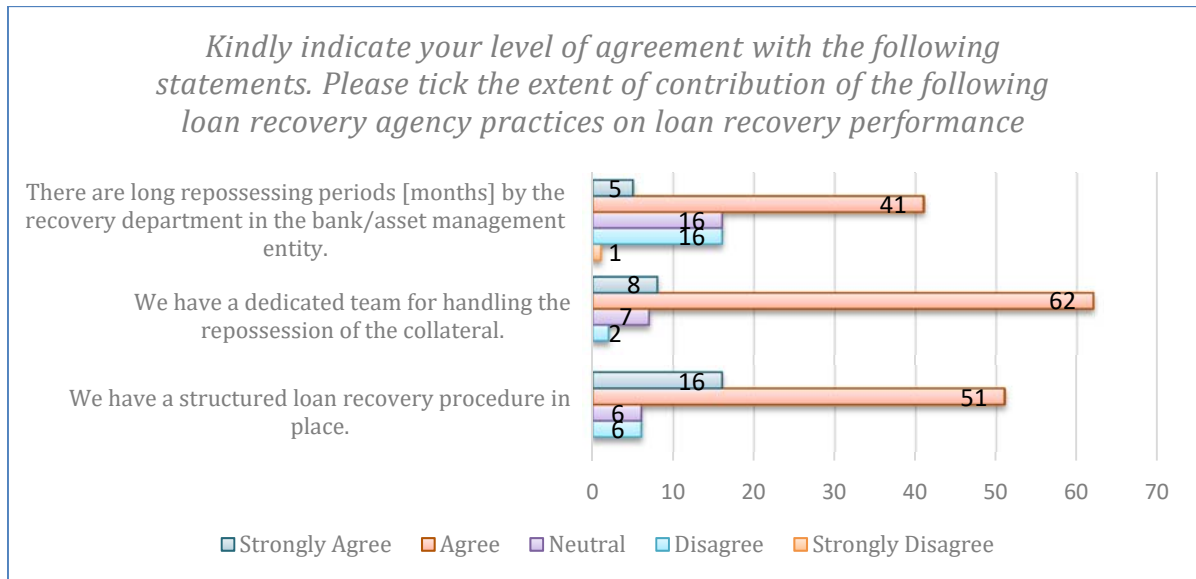
Figure 30. Responses on Question: "Kindly indicate your level of agreement with the following statements. Please tick the extent of contribution of the following credit monitoring practices on loan recovery performance".



Source: Author analysis

The next in order question for the last section it was about the loan recovery agency practices and more specifically "To identify the extent of the contribution on the loan recovery performance". The first sub-question concerned "If a structured loan procedure existed", fifty-one [51] participants "Agree", sixteen [16] participants "Strongly agree", six [6] participants had "Neutral" opinion and six [6] participants "Disagree" with the statement. The second sub-question was about "The handling of the repossession collateral from the borrower, if a dedicated team exists within their organization", sixty-two [62] respondents "Agree", eight [8] respondents "Strongly agree", seven [7] respondents had "Neutral" opinion and two [2] respondents "Disagree" with the statement. At last, the participants were asked "If long repossessing periods by the recovery department exist", forty-one [41] participants "Agree", sixteen [16] participants had "Neutral" opinion, sixteen [16] participants "Disagree", five [5] participants "Strongly agree" and one [1] participant "Strongly disagree" with the statement.

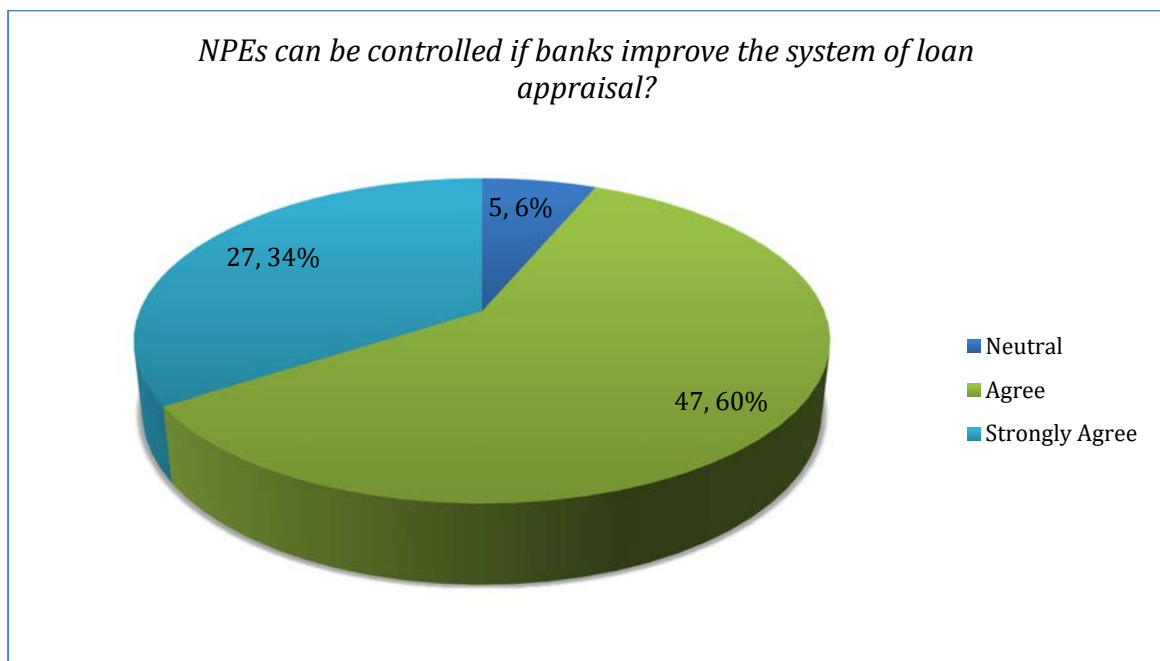
Figure 31. Responses on Question: "Kindly indicate your level of agreement with the following statements. Please tick the extent of contribution of the following loan recovery agency practices on loan recovery performance."



Source: Author analysis

The following question, Question 22, tried to identify if the NPEs within banking institutions can be controlled if the banks improve the loan appraisal system. Based on the respondents, 60% "Agree" with the statement, 34% "Strongly agree" with the statement and 6% had "Neutral" opinion. Therefore, as we can conclude from the results above, if the banks improve their loan appraisal system, then the NPEs may can be controlled.

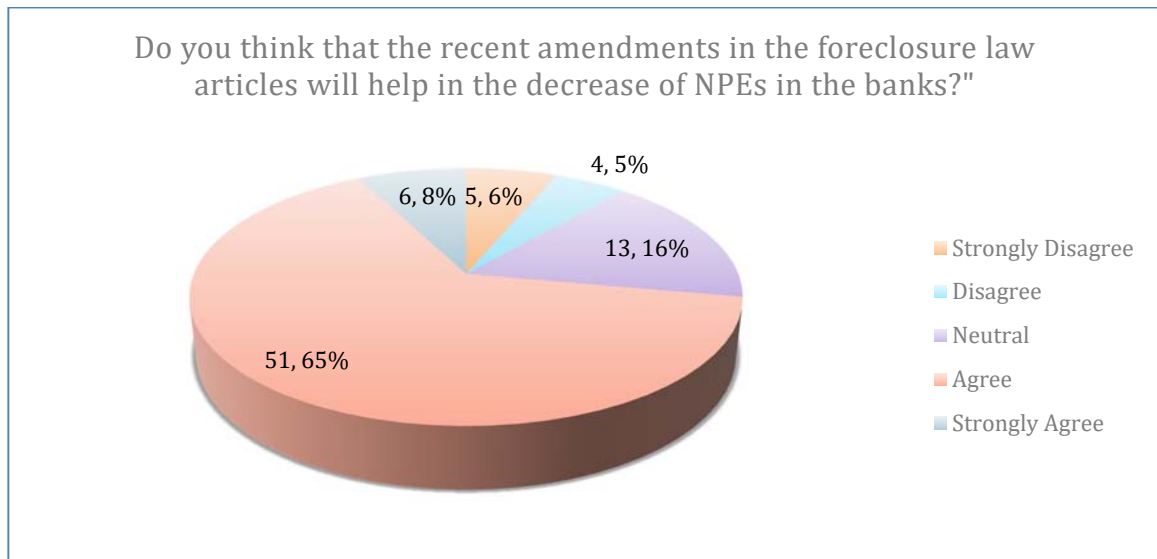
Figure 32. Responses on Question: "NPEs can be controlled if banks improve the system of loan appraisal?"



Source: Author analysis

The next question concerned the foreclosure law and more specifically tried to identify if the recent amendments in the foreclosure law articles will have negative impact on the NPEs percentage in a bank. According to the respondents, 65% of the participants “Agree” with the statement, 16% of the participants had “Neutral” opinion, 8% of the participants “Strongly agree” with the statement, 6% of the participants “Strongly disagree” with the statement and 5% of the participants “Disagree” with the statement.

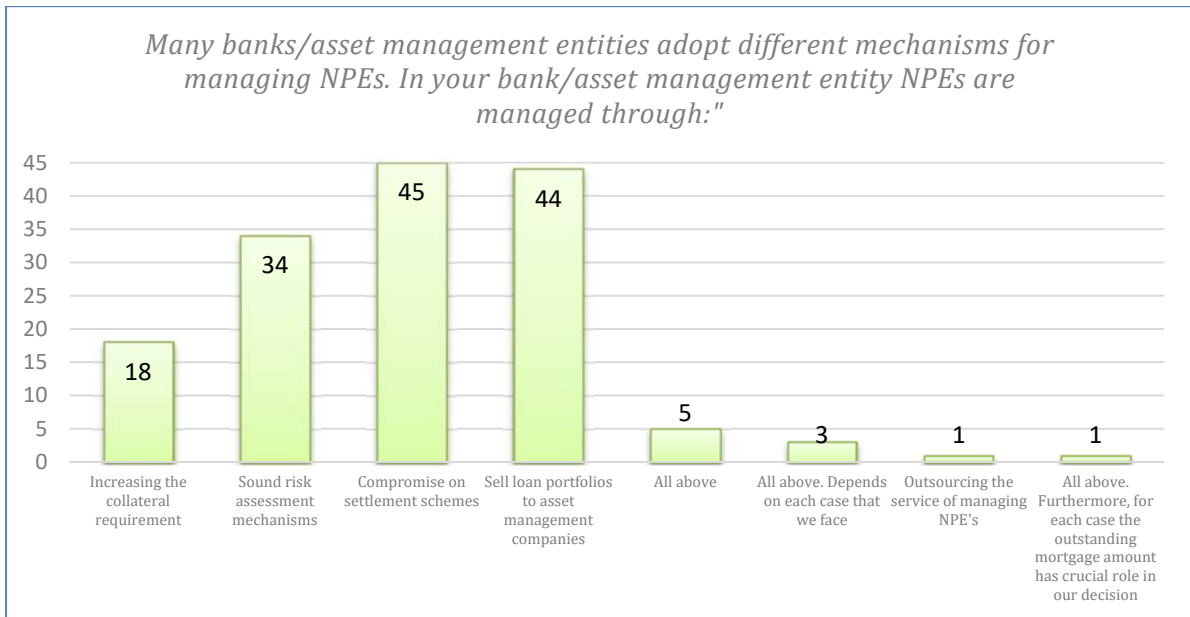
Figure 33. Responses on Question: "Do you think that the recent amendments in the foreclosure law articles will help in the decrease of NPEs in the banks?"



Source: Author analysis

Furthermore, in this section we tried to specify what mechanisms banks and asset management entities have adopted to manage the NPEs. According to the analysis of the results, the respondents stated that “Compromise on settlement schemes” and “Sell loan portfolios to asset management entities” were the most preferable options with forty-five [45] and forty-four [44] replies respectively. The third measure taken was the “Sound risk assessment mechanisms” with thirty-four [34] replies, the fourth measure taken was the “Increasing the collateral requirement” with eighteen [18] replies and five [5] respondents stated that all the above measures were taken by their entity to manage NPEs [all above option was selected]. Due to the reason that the question was “open type”, three [3] respondents stated that “All above measures taken, but depends on each case that they face”, one [1] respondent stated that “They outsource the service of managing the NPEs” and finally one [1] respondent stated that “All the above four measures were taken by his organization. Furthermore, for each case the outstanding mortgage amount had significant role in their decision”.

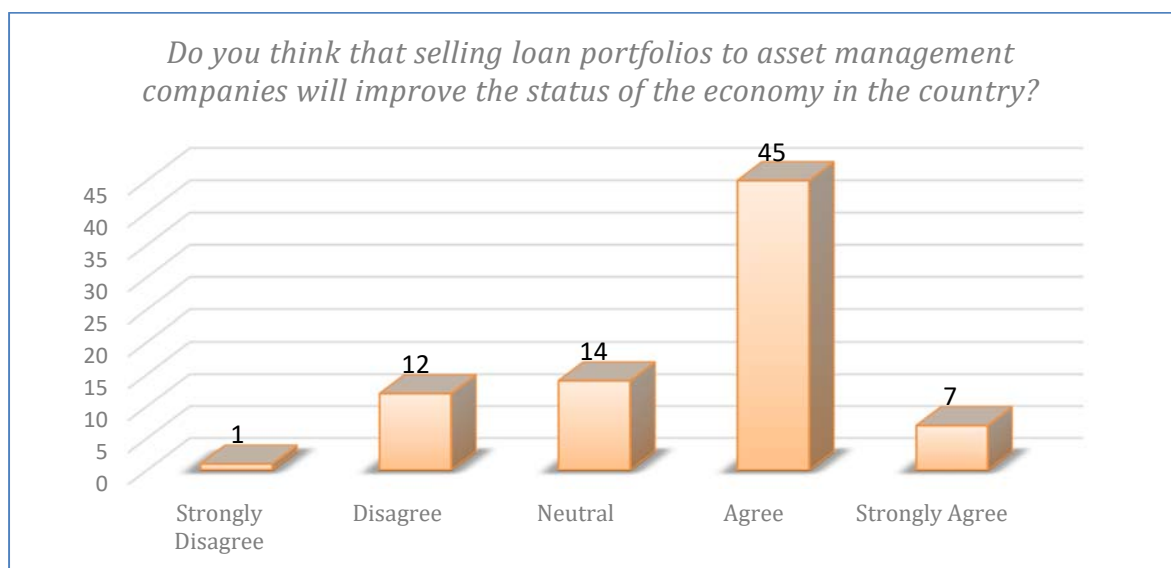
Figure 34. Responses on Question: "Many banks/asset management entities adopt different mechanisms for managing NPEs. In your bank/asset management entity NPEs are managed through."



Source: Author analysis

The next question tried to identify "if the disposal of loan portfolios through direct sale to the asset management companies will improve the status of the economy of the country". The 57% of the respondents "Agree" with the statement, 18% of the respondents had "Neutral" opinion with the statement, 15% of the respondents "Disagree" with the statement, 9% of the respondents "Strongly agree" with the statement and 1% of the respondents "Strongly disagree" with the statement.

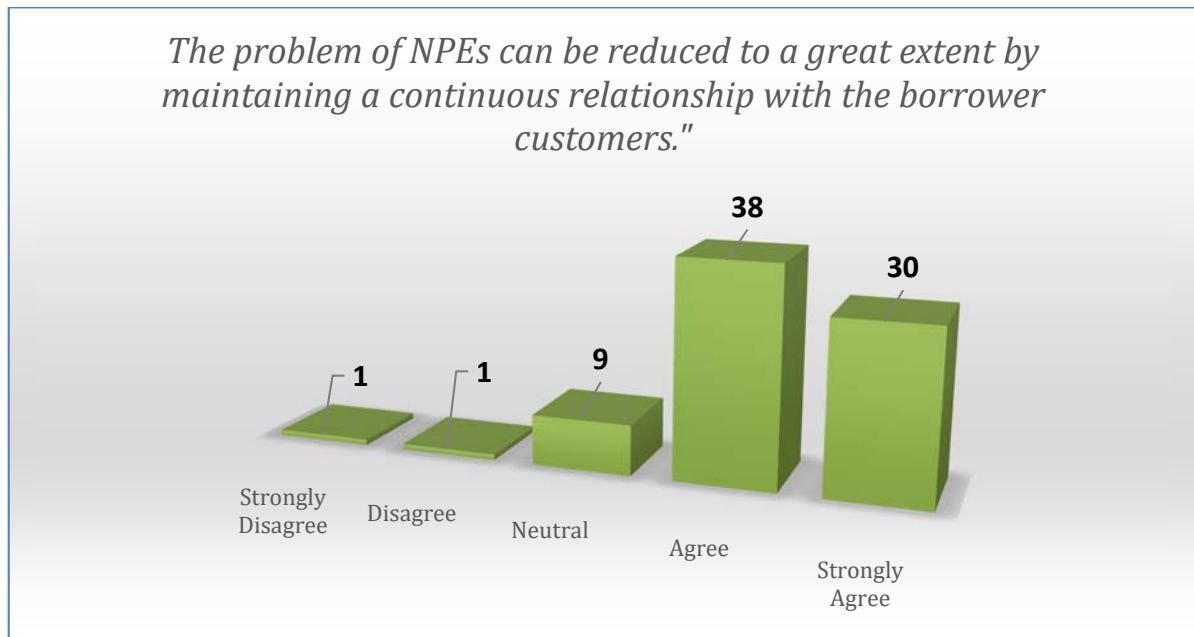
Figure 35. Responses on Question: "Do you think that selling loan portfolios to asset management companies will improve the status of the economy in the country?"



Source: Author analysis

In regards to Question 26 of the questionnaire, stated that “The problem of NPEs can be reduced by a great extent by maintaining a continuous relationship with the borrowers”, 48% and 38% of the respondents “Agree” and “Strongly agree” respectively. Also, 11% of the respondents had “Neutral” opinion with the statement, 1% of the respondents “Disagree” with the statement and finally, the remaining 1% “Strongly disagree” with the statement.

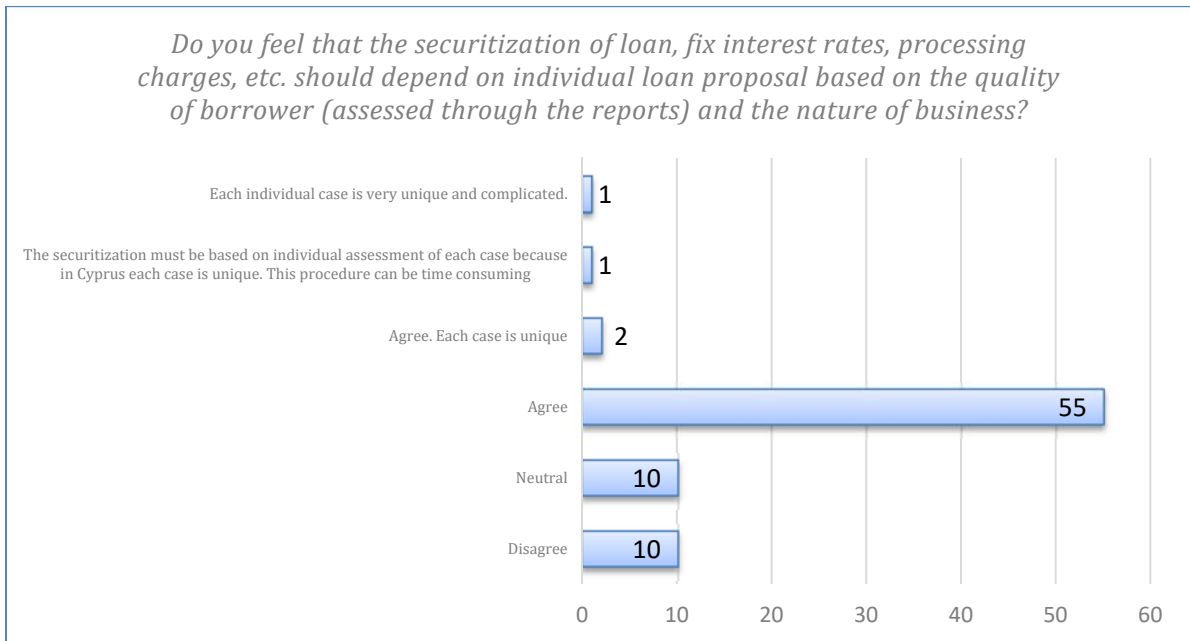
Figure 36. Responses on Question: "The problem of NPEs can be reduced to a great extent by maintaining a continuous relationship with the borrower customers."



Source: Author analysis

The next question tried to identify “If the securitization of loans, the fix interest rates and the processing charges should depend on an individual loan proposal, based on the quality of the borrower”, fifty-five [55] respondents “Agree” with the statement instead of ten [10] respondents that “Disagree”. In addition, ten [10] respondents had “Neutral” opinion, two [2] respondents stated that “They agree with the statement and each case is unique”, one [1] respondent stated that “Each case is unique and complicated” and finally one [1] respondent stated that “The securitization must be based on individual assessment of each case because in Cyprus each case is unique. Also, this procedure can be time consuming”.

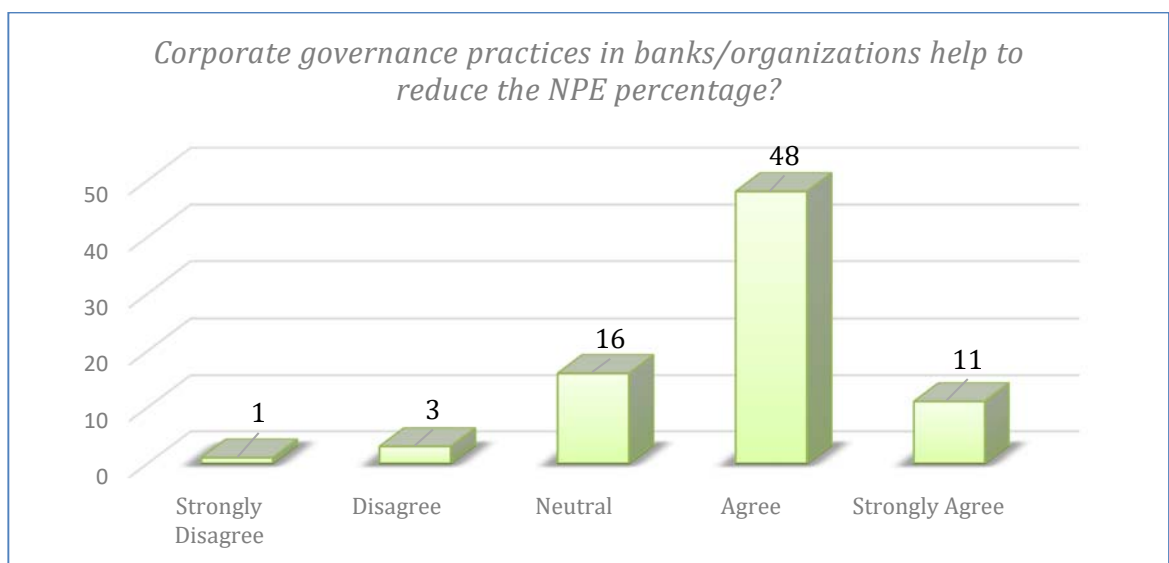
Figure 37. Responses on Question: "Do you feel that the securitization of loan, fix interest rates, processing charges, etc. should depend on individual loan proposal based on the quality of borrower (assessed through the reports) and the nature of business?"



Source: Author analysis

At last but not least, the final question of this section and the questionnaire was regarding "The corporate governance practices in both entities, if they can reduce the NPEs percentage". Based on the results, 61% of the participants "Agree" with the statement, 14% of the participants "Strongly agree" with the statement, 20% of the participants had "Neutral" opinion for the statement, 4% of the participants "Disagree" with the statement and 1% of the participants "Strongly disagree" with the statement.

Figure 38. Responses on Question: "Corporate governance practices in banks/organizations help to reduce the NPE percentage?"



Source: Author analysis

Chapter 7

Econometric Data of the Economy of Cyprus

7.1 Introduction

During the last two decades, a significant increase of credit growth provided by the financial institutions was recorded. This growth is attributed to the deregulation process of financial markets and the development of information technologies in the banking industry, which led to the enhancement of financial intermediation (Marie Papadopoulou 2005; Laura Rinaldi and Alicia Sanchis-Arellano 2006).

Since the global financial crisis that began in 2008 due to the deregulation of the banking industry and the securitization of the mortgage-backed securities, the interest in Non-Performing Loans (according to the recent amendments and the enhancement of the definition by ECB, the most common use definition now, is the Non-Performing Exposures (NPEs)) and their determinants, has greatly increased among the research community. Many studies as we had mentioned in the literature review, tried to identify the determinants that had the greatest impact [positive or negative] on the Non-Performing Exposures ratio.

In Europe, Vasiliki Makri, Athanasios Tsagkanos and Athanasios Bellas (2014) used ten [10] determinants to investigate how the NPLs were affected in Eurozone. The determinants divided into two [2] categories, a) Bank specific determinants and b) Macroeconomic determinants. Few of the determinants that were used in their model are: 1) The Return on Asset [ROA], 2) The Return on Equity [ROE], 3) The Public debt as percentage of GDP, 4) The GDP and 5) The Inflation.

In another study regarding the macroeconomic determinants of non-performing loans by Roland Beck, Petr Jakubik and Anamaria PiloIU, they studied the correlation of: 1) The GDP growth rate, 2) The share prices, 3) The Exchange rate and 4) The Lending interest rate for a sample of seventy-five [75] countries. The authors concluded that all the determinants have significantly affected the NPL ratio, positively or negatively.

Moreover, Linda Donath, Veronica Cerna and Ionela Oprea in their study regarding the macroeconomic determinants in the Baltic countries region, used two [2] types of determinants, 1) The Endogenous and 2) The Exogenous. More specifically, they took into

consideration, 1) The GDP growth rate, 2) The Inflation rate, 3) The Annual rate of Unemployment and 4) The Annual Lending interest rate. The authors concluded that for each country of the sample, the impact of determinants on the NPL ratio varied.

Therefore, based on the above studies and on the literature review of Chapter 3, we have collected publicly available data for the determinants that in studies conducted previously had affected the Non-Performing Loans ratio significantly.

In the following sections we will describe the data collected, we will analyze, present and comment on the results. Also, the results will be presented in graphs.

7.2 Description of Data (Sources and Limitations)

As stated in Chapter 3 – Literature Review and in the previous section 7.1, researchers have studied many of the determinants that may contributed to the increase of the non-performing loans in an economy. For this purpose, based on the literature review, we have collected the data for each determinant that has significantly affected the NPL ratio.

First of all, we have collected the publicly available data for the ten [10] determinants used as follows:

1. Inflation rate (2006-2019).
2. GDP Growth rate (seasonally adjusted, 2006-2019).
3. Unemployment (2008-2019).
4. Employment (2008-2019).
5. Unemployment rate of EU countries (2008-2019).
6. Employment rate of EU countries (2008-2019).
7. Non-Performing Loans (value and percentage, 2008-2019Q3).
8. Property Price Index – Central Bank of Cyprus (2006-2019Q2).
9. RICS Property Price Index (2009Q4-2019Q2).
10. Per Capita Income (GNI, 2008-2019).

The Inflation rate, GDP growth rate, Unemployment rate, Employment rate and Per Capita Income data were collected from the Statistical Service of the Republic of Cyprus. The Residential property price index and Non-performing loans [value and percentage] were collected from the Central Bank of Cyprus. The Property price index of RICS was collected from the RICS Cyprus. At last, the Unemployment and Employment rates of EU countries were collected from the Statistical Service of European Union, Eurostat.

However, part of the data collected for the determinants used was incomplete. More specifically, the non-performing loans dataset was not up to date due to the fact that the latest published available data concerned the third quarter [Q3] of 2019 and not the whole year. Furthermore, the property price indices as provided by the Central Bank of Cyprus

and the professional body of RICS Cyprus were not up to date. The latest available data concerns only the second quarter of 2019 and not the whole year.

Also, the data collected for the Per Capita Income was not up to date. Despite the fact that the dataset was fully completed, for the years 2018 and 2019 the dataset referred to projection values and not to statistical verified values. Finally, the unemployment rate for the EU countries was not fully completed. Specifically, the unemployment rate for Italy and United Kingdom for the year 2019 was not available, therefore a gap in the dataset was recorded.

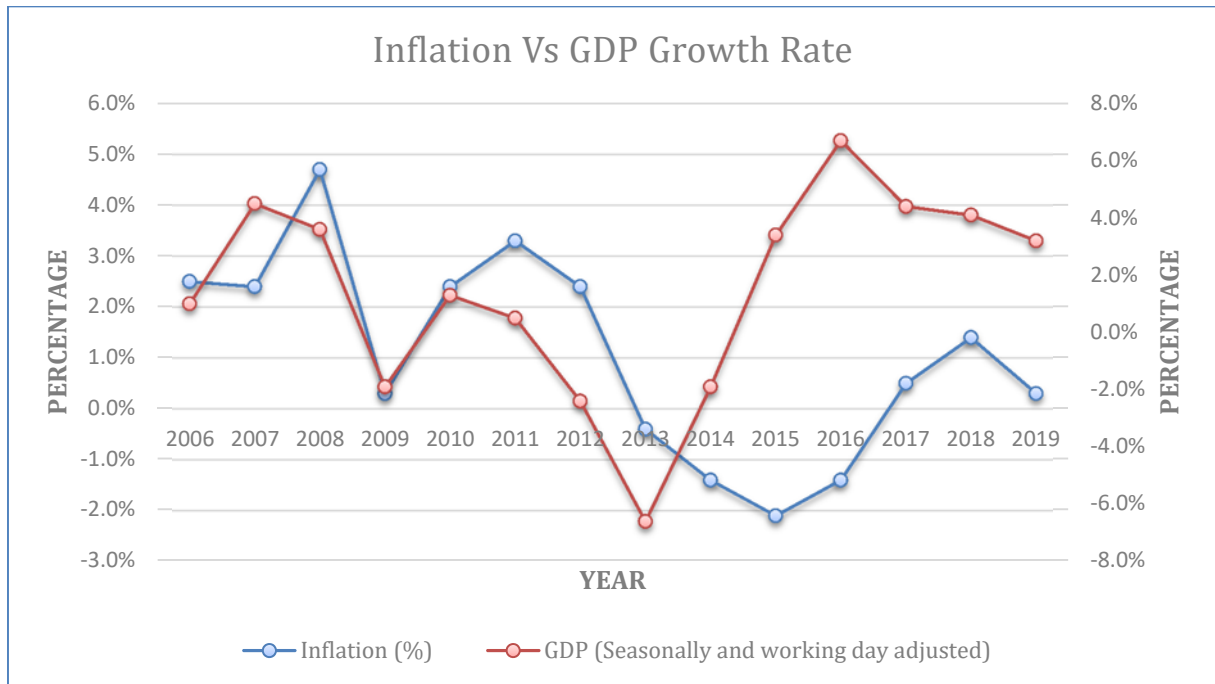
In the next section, the data for each determinant will be analyzed, it will be presented graphically, and comments on the results, by comparing the interactions and relationship between the determinants, will be made.

7.3 Analyze, Present and Comment on the Data

In Graph 1, the Inflation rate and GDP Growth rate (secondary axis) for the period 2006-2019 is presented. As it can be observed from the depicted graph, both determinants had similar movements (as the business cycle) across the years. More specifically, the determinants had similar movements for the years 2006-2013 where the GDP growth rate had the lowest value of -6.6%. The GDP growth rate from 2013 to 2016 had a significant increase from -6.6% to 6.7%.

On the other hand, the Inflation rate from 2013 to 2016 continued its negative downturn ("Deflation") from -0.4% to -2.1%. In that period of time, the economy of Cyprus entered in an economic crisis which lead to a significant drop of the collaterals value. In addition, the foreign investments in real estate sector had decreased significantly. In the period 2016-2019 the inflation rate had returned to positive figures, 0.3% at the end of 2019. The GDP growth rate from 2016 to 2019 had decreased from 6.7% to 3.2% at the end of 2019.

Graph 1. Inflation Rate Vs GDP Growth Rate



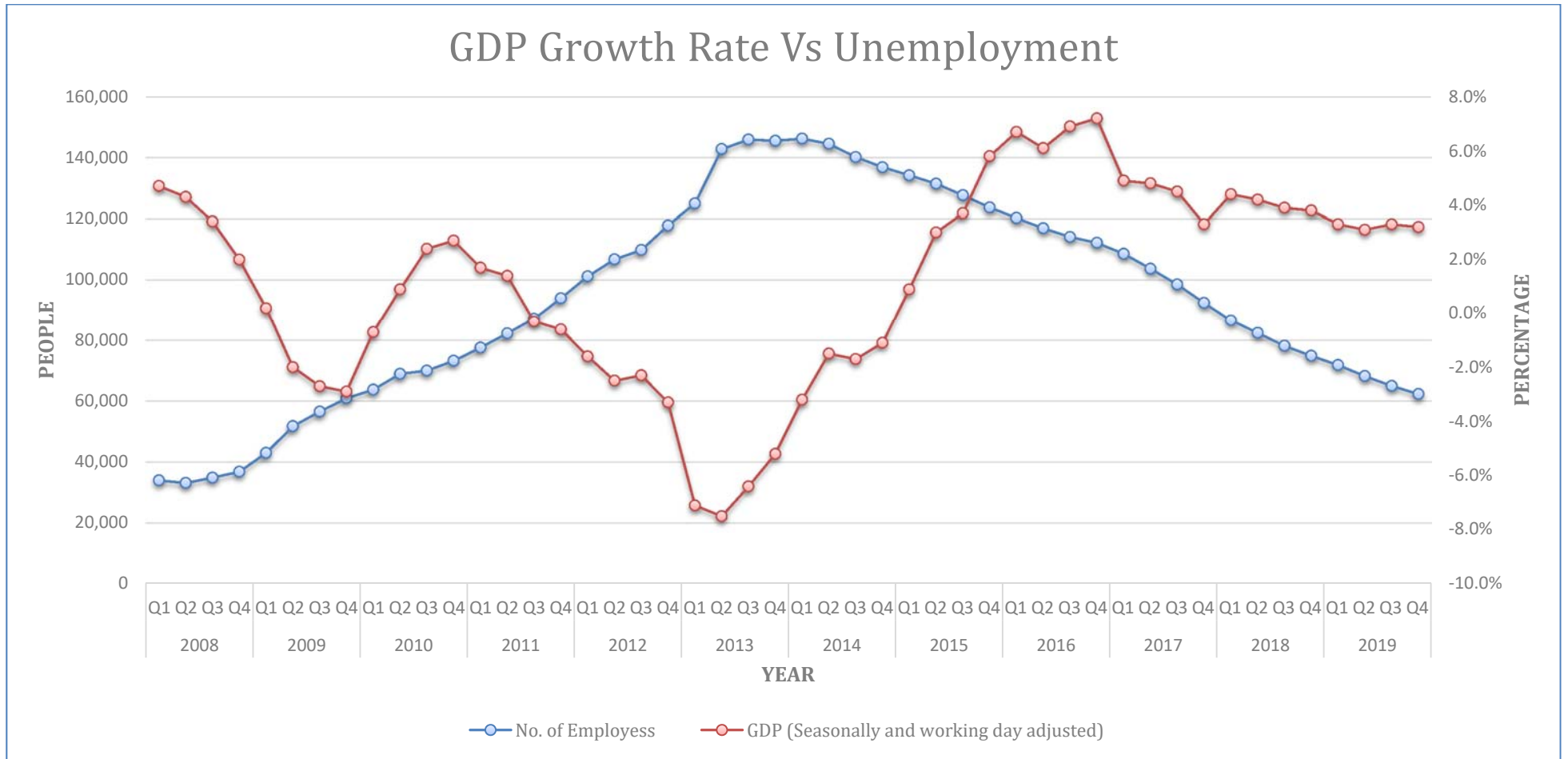
Source: Author analysis

In addition to the above, another important determinant that can provide an indication about the status of the economy, is the unemployment. The unemployment in conjunction with GDP growth rate can provide an indication how the economy reacted in the period 2008-2019. At the beginning of the economic crisis, in 2008, the unemployment in Cyprus was 33.991 people. In 2009Q1, based on the data provided by the statistical service, the unemployment was 43.001 people, an increase of 26.50% in one [1] year. The increase in unemployment continued until the first quarter (Q1) of 2014, reached the peak point of the curve with 146.231 people, an increase of 330.20% from the period of 2008Q1.

On the other hand, the GDP growth rate of 2008 was one of the highest that was ever recorded, 4.7% increase from the previous quarter. From the first quarter (Q1) of 2008 up to the fourth quarter (Q4) of 2009, the GDP was continuously decreasing. As we can observe from the depicted graph, the GDP growth rate followed the business cycle curve. In 2010, the GDP growth rate increased from -2.9% to 2.7%. At the same interval, the unemployment increased from 60.939 to 73.205 people. From the first quarter (Q1) of 2011 up to the second quarter (Q2) of 2013, GDP growth rate declined from 1.7% to -7.5%, the lowest value ever recorded. On the contrary, due to the fact that the unemployment and the GDP growth rate had negative relationship, unemployment reached a historical high with 146.231 people.

From 2013Q3, it can be observed that the GDP growth rate had positive increase from -6.4% to 7.2% (historical high in 2016Q4). On the other hand, the unemployment from 2014Q2 to 2019Q4 was continuously decreasing, from 144.541 to 62.283 people respectively. At last, it can be observed, that the GDP growth rate had smoother fluctuations from 2017Q1 to 2019Q4, from 4.9% to 3.2%.

Graph 2. GDP Growth Rate Vs Unemployment



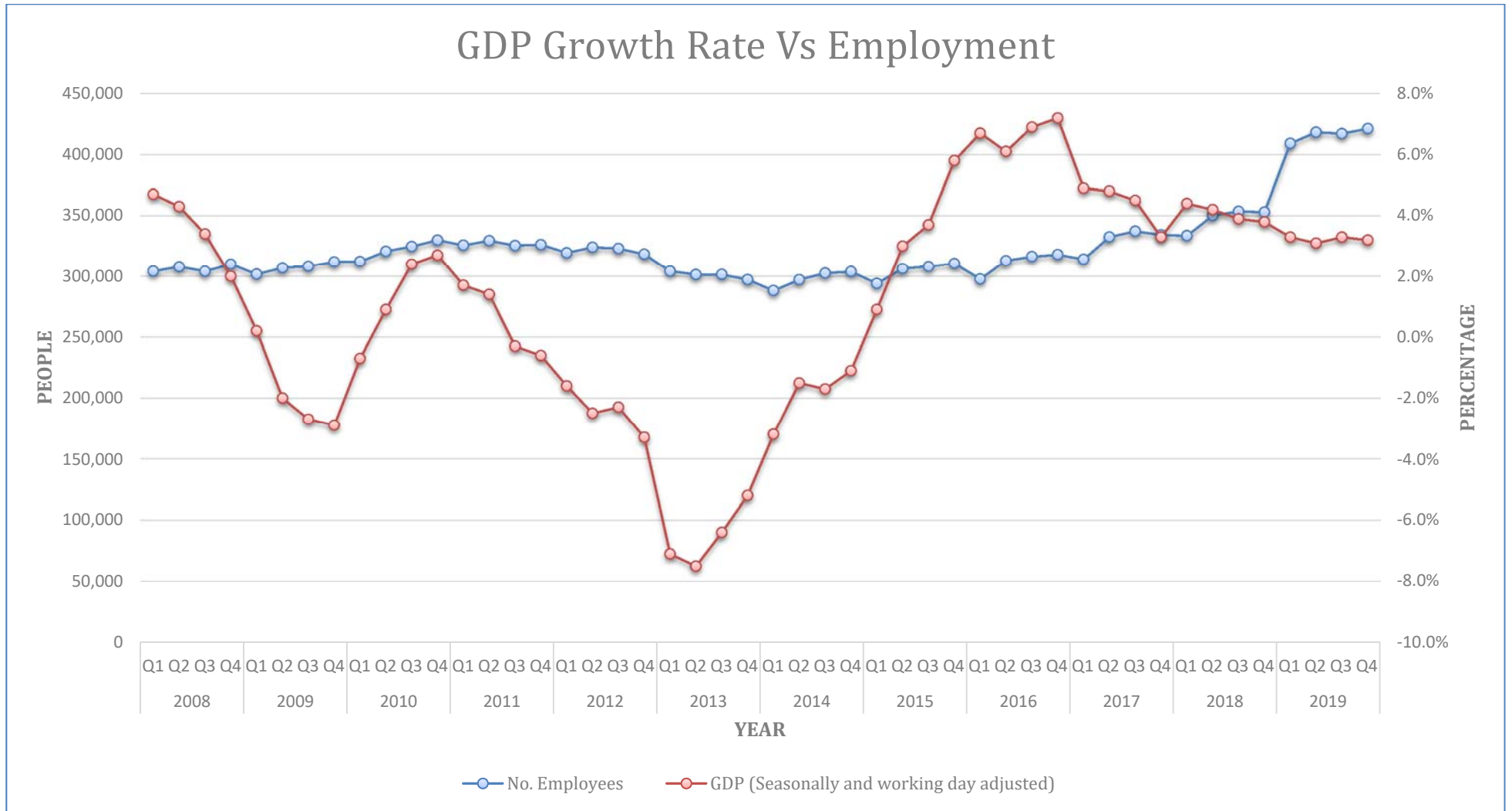
Source: Author analysis

During the economic crisis period, GDP growth rate and employment determinants, how they fluctuated are studied. As it can be observed from Graph 3 below, the employment curve had fewer fluctuations except for the period 2018Q4-2019Q4. Furthermore, as we have already discussed in previous graphs, the GDP growth rate followed the business cycle curve. The employment determinant according to the methodology used by the statistical service, included all the people that had worked 1) full time, 2) part-time and 3) at least part-time for one [1] hour or more. Thus, based on the data provided by the statistical service, the employment from 2008Q1 to 2011Q2 had increased from 304.067 to 329.526 people; the highest figure that was recorded was 329.942 people in 2010Q4.

On the contrary, the GDP growth rate from 4.7% in 2008Q1 decreased to -2.9% in 2009Q4, then it gradually increased to 2.7% in 2010Q4 and decreased to the lowest value of -7.5% in 2013Q2. Employment has decreased from 329.526 people in 2011Q2 to 288.069 people in 2014Q1 (was the lowest value recorded for the examined period). From 2014Q2 to 2019Q4, the employment was gradually increased from 298.068 people to 421.303 people, an increase of 41.82%. The GDP growth rate from -7.5% increased to 7.2% in 2016Q4, and gradually decreased to the 3.2% in 2019Q4.

Furthermore, during the period of 2014Q1-2019Q4, the cost of living in Cyprus was increased significantly due to the high number of NPLs and to negative effects caused by other economic determinants, many people had to have more than one job.

Graph 3. GDP Growth Rate Vs Employment



Source: Author analysis

Cyprus, on 01/05/2004 became member of the European Union and since 01/01/2008 became member of the Euro Zone Area. Thus, the European Statistical Service “Eurostat” is responsible to collect all the macroeconomic and microeconomic indicators of the European Union. In the following Graphs 4 & 5, the unemployment and employment rate for eight [8] European countries including Cyprus are presented. The countries that were included in the sample were:

1. Belgium
2. Greece
3. Spain
4. France
5. Italy
6. Portugal
7. United Kingdom (left EU on 31st of January 2020)

Based on Graph 4 below, the unemployment rate of the countries for the period of 2008-2019 is shown. As we can observe, Italy, France, Belgium and UK had similar results, from 5.6% to 7.4% in early 2008 and up to 8.5% at the end of 2019. The data concerning the unemployment rate for Italy and UK for 2019 were not available at that time.

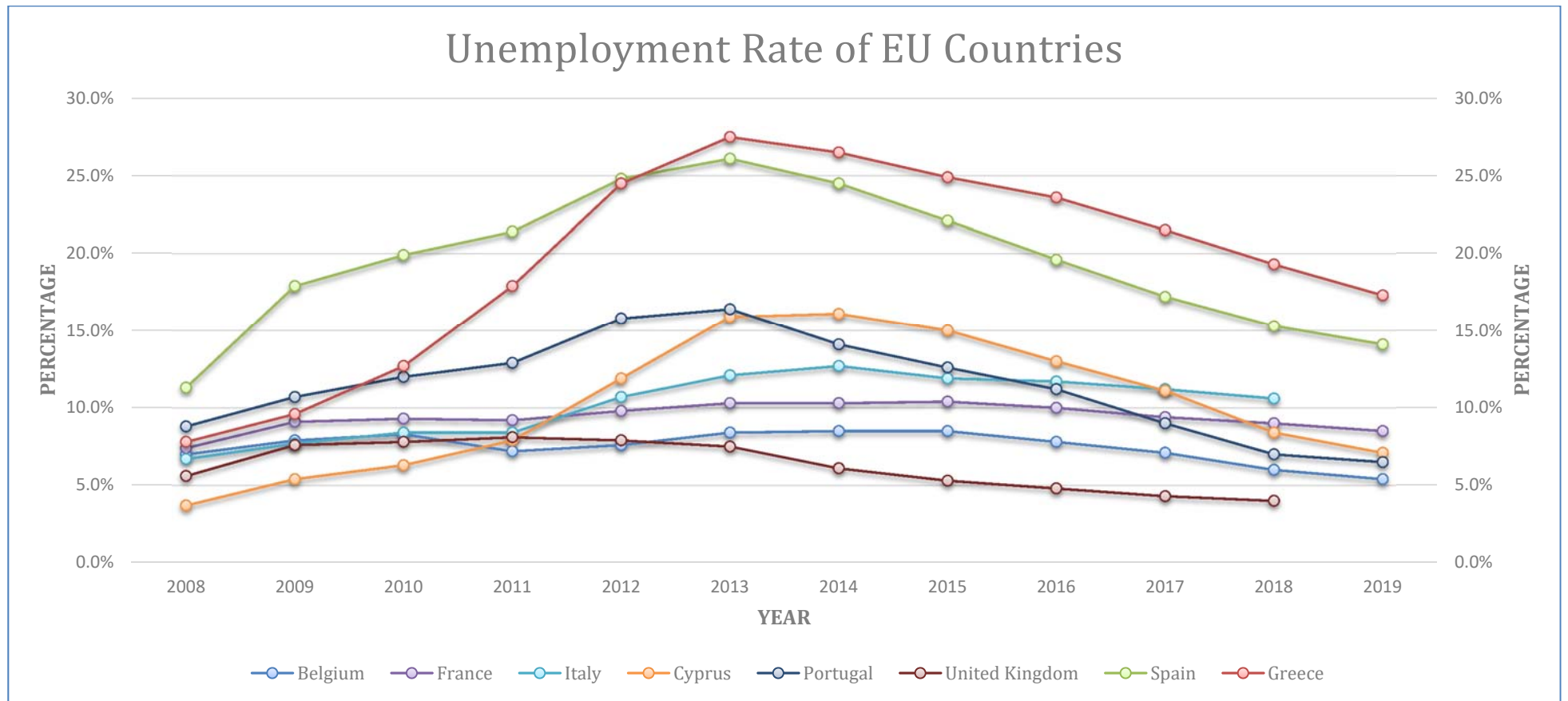
For Cyprus and Portugal, the unemployment rate curves had more fluctuations in the period of 2008-2019. More specifically, the unemployment rate for Cyprus in 2008 was 3.7% and 16.1% in 2014, the highest rate that was recorded in Cyprus. The same pattern was observed for Portugal. The unemployment rate was 8.8% in 2008 and in 2013 it was increased to 16.4%. For both countries the rate was decreased at the end of 2019 to 7.1% and 6.5%, for Cyprus and Portugal respectively.

Furthermore, based on the graph, Greece and Spain had the worst results of the sample. Analytically, the unemployment rate in Greece and Spain in 2008 was 7.8% and 11.3% respectively. Both countries, in 2013 had observed the highest unemployment rate of the sample, with 27.5% and 26.1% respectively. By the end of 2019, both countries had 17.3% and 14.1% unemployment rate respectively.

In the same period, the employment rate for the countries as presented in Graph 5 below was similar. In more detail, Italy had the lowest adoption rate of 62.9% and Cyprus had the highest adoption rate of 76.5% in 2008. In 2013, Greece had the worst employment rate of the sample with 52.9%. The United Kingdom (UK) in 2013 had the highest employment rate of 74.8%. At the end of 2018, Greece had the lowest employment rate of 59.5% and UK had the highest employment rate of 78.7%; all the other countries of the sample falls within the range of Greece and UK.

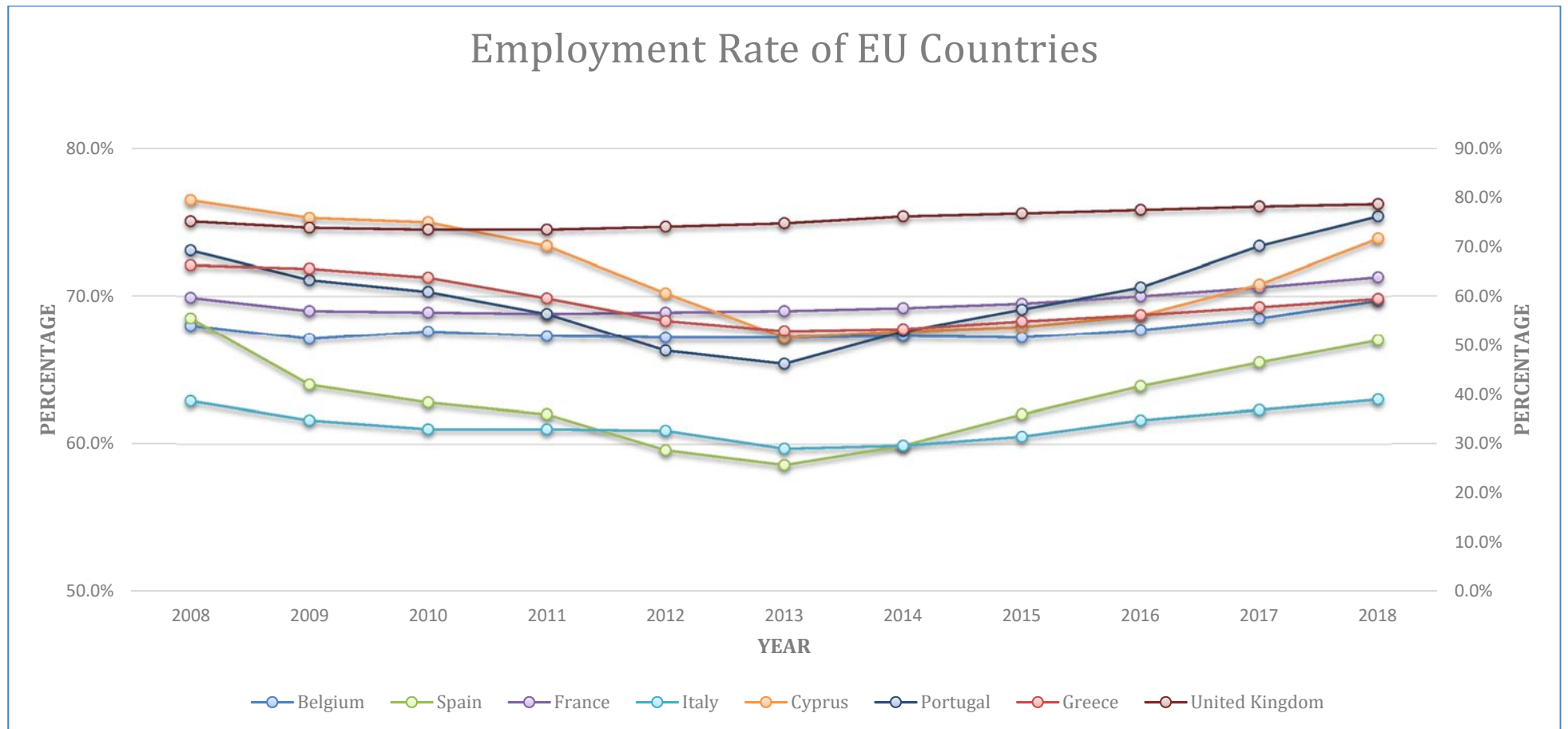
In contrary to the graph of unemployment, the employment rate of EU countries was more stable with fewer fluctuations through the years, except from Greece and UK as described above.

Graph 4. Unemployment Rate of EU Countries



Source: Author analysis

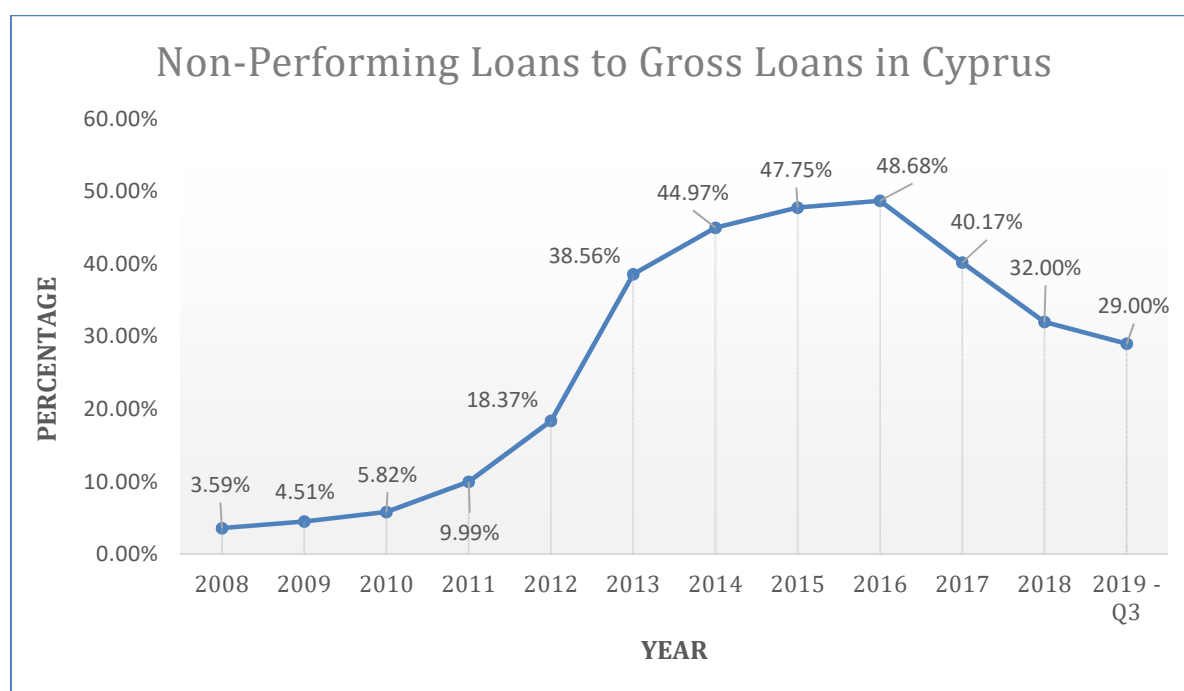
Graph 5. Employment Rate of EU Countries



Source: Author analysis

The next graph, Graph 6 concerns the Non-Performing Loans [NPLs] in Cyprus, the main topic of the thesis. The graph concerns the “Non-Performing Loans to Gross Loans of Cyprus” as published by the Central Bank of Cyprus for the period 2008-2019Q3 (up to date available data). As it can be observed from the graph, in 2008 the NPLs were 3.59% of the total loans provided by all the financial institutions in Cyprus. The NPLs were increased from 3.59% in 2008 to 9.99% in 2011, 6.4% increase in four [4] years. In 2012, the NPLs increased from 9.99% to 18.37%, 8.4% increase from the previous year. The highest increase of the NPLs was occurred in 2013, which the financial crisis in Cyprus began with the bail-in of the deposits of the two largest banks. The NPLs percentage climbed from 18.37% to 38.56%, an increase of 20.19% in one [1] year was observed. The following years, the NPLs percentage was continually increasing. At the peak of the economic crisis in 2016 the NPLs reached 48.68% of the total loans. From 2016 to 2019Q3 the NPLs percentage showed a decrease from 48.68% in 2016 to 40.17% in 2017, to 32% in 2018 and finally to 29% in 2019Q3.

Graph 6. Non-Performing Loans to Gross Loans in Cyprus

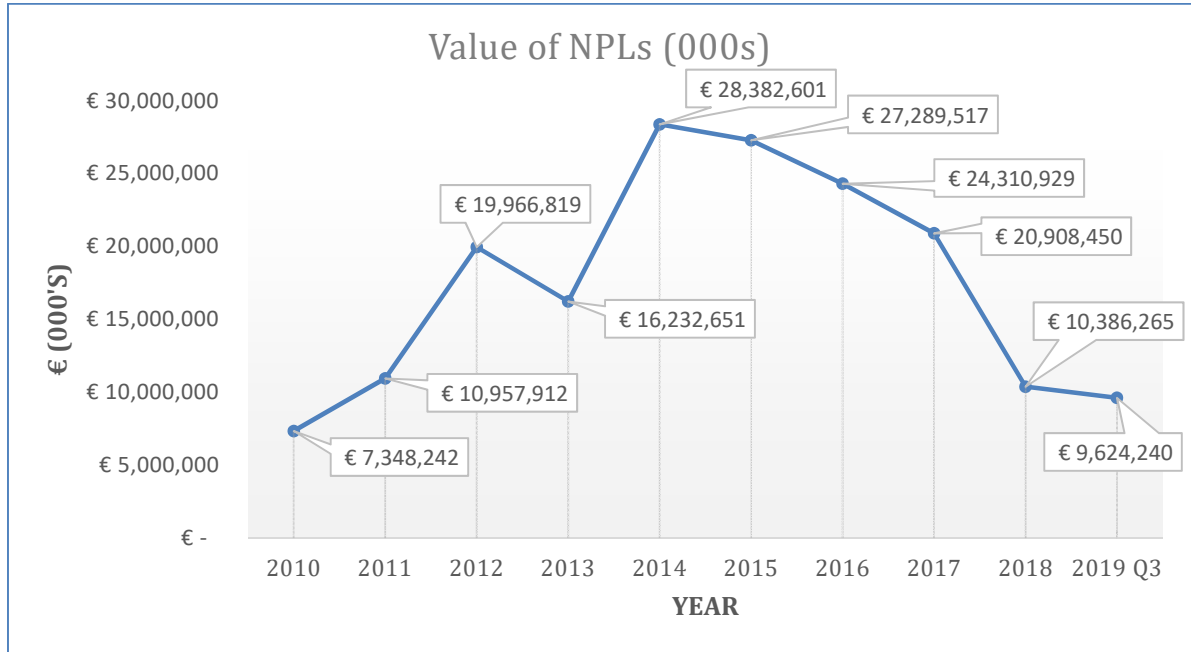


Source: Author analysis

Despite the fact that the NPLs percentage was increasing between 2010 - 2016, the value of NPLs also fluctuated for the same period. In detail, as it can be observed in Graph 7, the value of NPLs in 2010 was €7.348bn, 5.82% of the total loans and in 2011 was €10.957bn, 9.99% of total loans. In 2012, the percentage of non-performing loans was 18.37% with a value of €19.966bn, an increase of €9.0bn from the previous year was observed. On the other hand, as we observed in Graph 6, in 2013 the percentage of NPLs had the highest incremental increase of 20.19%, for the same year, the value of the NPLs decreased from €19.966bn to €16.232bn. In 2014, we observed the highest increase in the value of NPLs, an increase of €12.149bn from previous year, the value of NPLs at the end of the year was €28.382bn.

From 2014 to 2019Q3, the value of NPLs was decreasing continually, from €28.382bn in 2014 to €27.289bn in 2015, to €24.310bn in 2016, to €20.908bn in 2017, to €10.386bn in 2018 and finally to €9.624bn in 2019Q3. As it can be concluded from above, the highest decrease in value of NPLs was observed in 2017-2018, with a decrease of €10.522bn.

Graph 7. Value of NPLs (000s)

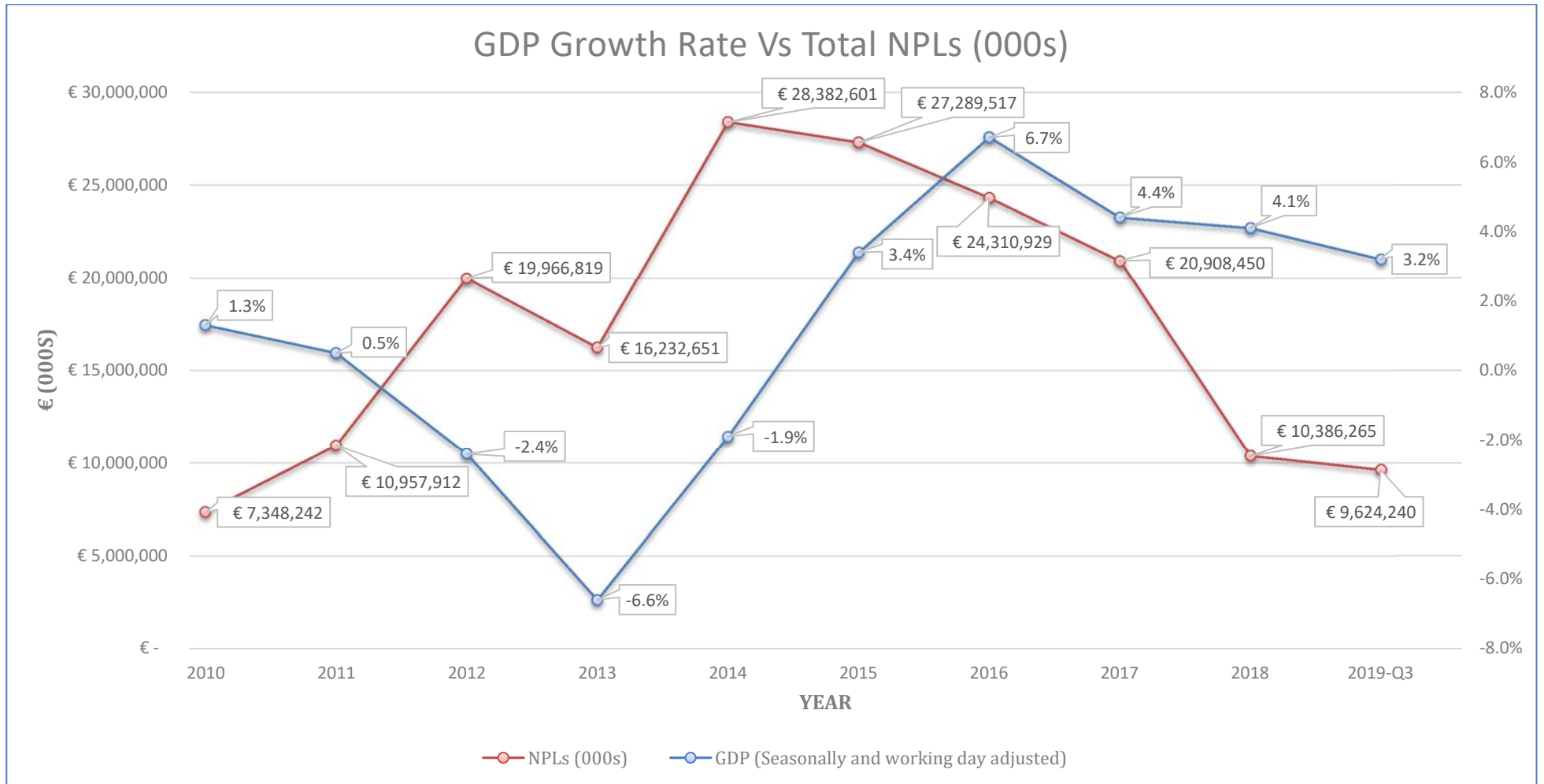


Source: Author analysis

Many of the studies that have been conducted regarding the financial crisis of 2008 and the financial crises of previous years, they included the determinants of GDP Growth Rate and the Value of Total NPLs. As it can be observed from the depicted graph below, the value of NPLs and GDP growth rate had negative relationship for the years 2010-2011 and 2014-2016. On the other hand, they had positive relationship for the years 2012-2014 and 2017-2019Q3. Analytically, the GDP growth rate decreased from 1.3% to -2.4% from 2010 to 2012; but the value of NPLs showed an increase from €7.348bn to €19.966bn. In 2013, the value of NPLs decreased from €19.966bn to €16.232bn and the GDP growth rate had decreased further to -6.6% from the -2.4%.

In 2014, the GDP growth rate had increased from -6.6% to -1.9%, the value of NPLs had increased to the historical record of €28.382bn. From 2014 until 2019Q3, the value of NPLs continually decreased from €28.382bn to €9.624bn. On the contrary, the GDP growth rate had increased from -1.9% to 6.7% in 2016 and decreased to 3.2% in 2019Q3.

Graph 8. GDP Growth Rate Vs Total NPLs (000s)



Source: Author analysis

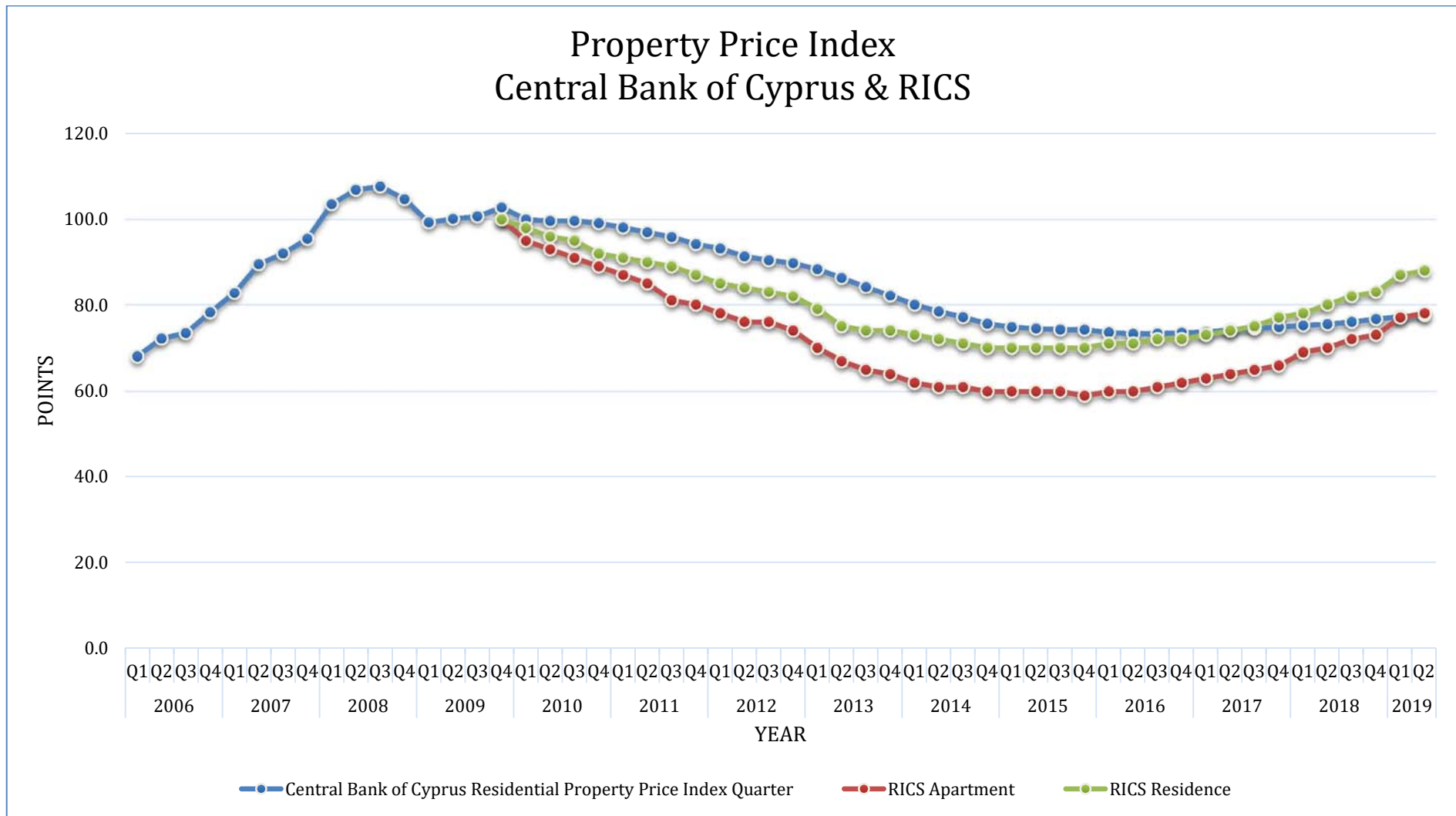
As it was already stated in the literature review, one of the causes of the economic crisis was the decrease of the collaterals value that were mortgaged in favor of banks. In Cyprus, the Central Bank of Cyprus since 2006 is issuing on a quarterly basis an index, the Property Price Index. This index was created from data collected from all the property valuation departments of the financial institutions that operate in Cyprus. In late 2009, the professional body, RICS Cyprus, had issued for the first time a quarterly Property Price Index, which concerned the value of residences and apartments in all the districts of Cyprus.

As it can be observed from the graph below, the CBC Index showed that the value of the residences and apartments were continuously increasing from 2006 to 2008Q3, it reached its peak value, from 68.1 points to 107.7 points. From 2008Q4 to 2019Q2 (published available data), the CBC Property Index continued its negative downturn from 102.8 points to 77.6 points. For the period 2015Q2-2019Q2, it can be concluded that the CBC Property Index was stable with no fluctuations.

On the other hand, the RICS Cyprus in their issue of Property Price Index, showed a decrease in the value of the apartments and residences from 2009Q4 to 2015Q4. At that period, we can observe that the value of residences and apartments reached the bottom of the index with values of 70 points and 59 points respectively. For the period 2016Q1-2019Q2, the RICS index showed an increase of the property market, from 60 points to 78 points for the apartments and from 71 points to 88 points for the residences.

It is worth to mention that the Government of Cyprus in 2013 announced an incentive scheme program concerning the foreign investors. This program provided the opportunity to foreign investors to purchase the Cypriot passport through a series of investments [e.g. to buy a real estate property that worth €2.5m or more, purchase a business that was registered in Cyprus and other incentives measures as stated in the publication]. At that time, the incentive scheme program it was one of the most attractive naturalization programs of the European Union. This incentive scheme program had boosted the economy of Cyprus until the end of 2019.

Graph 9. Property Price Index - Central Bank of Cyprus & RICS

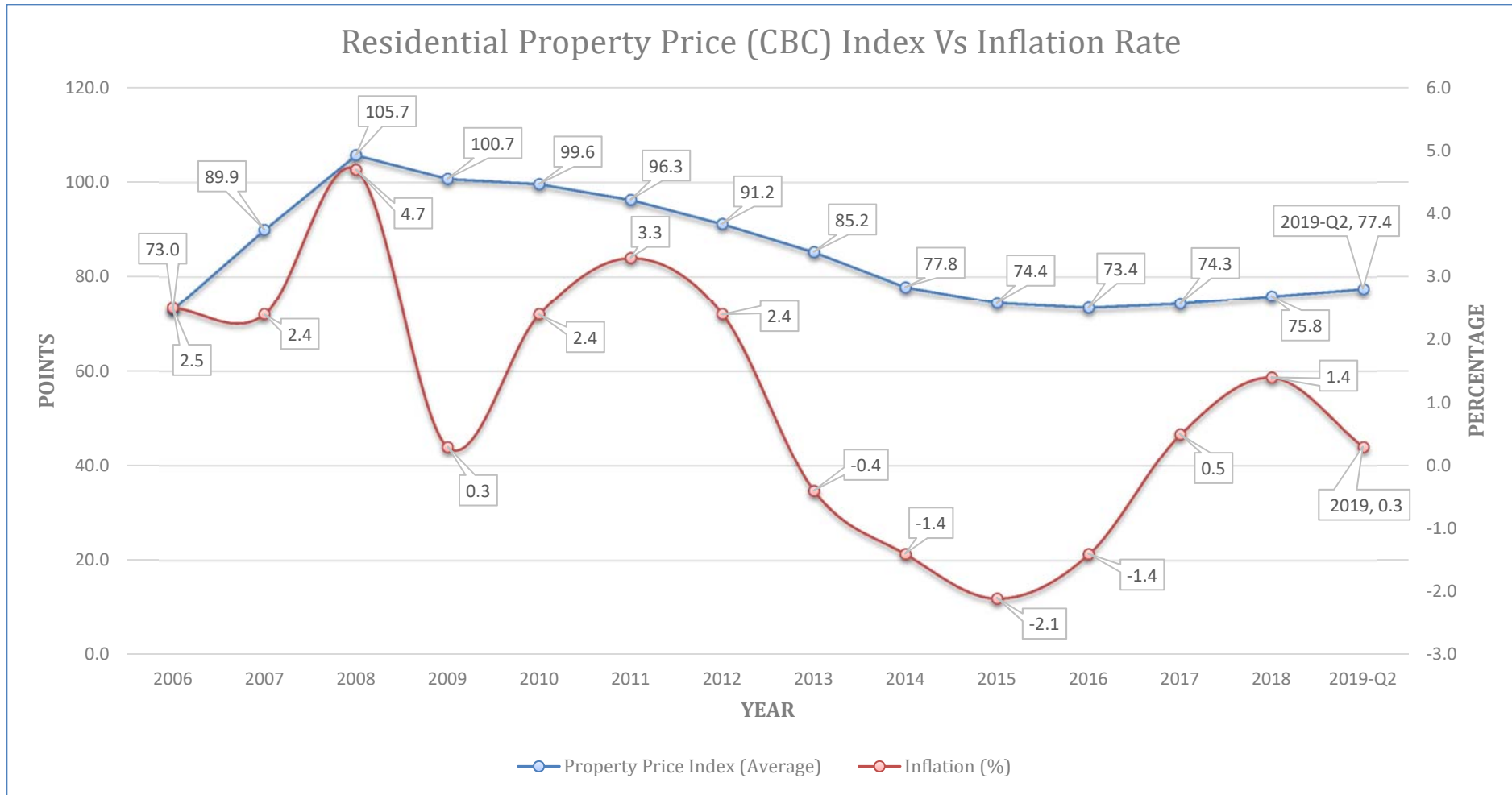


Source: Author analysis

The following graph, Graph 10, shows the average value (points) of CBC Property Price Index for 2006-2019Q2 and the average percentage of Inflation for 2006-2019. As we can observe from the graph below, Inflation had a business cycle curve and the Property price Index had a linear curve with fewer fluctuations. More specifically, the Inflation in 2006 was 2.5% and in 2008 increased to 4.7%. For the same period, the price of properties increased from 73 points to 105.7 points. For this period, it can be concluded that the purchase power of people was not decreased but instead, it was increased. In 2009, the Inflation decreased to 0.3% from 4.7% that was in 2008, increased to 2.4% in 2010 and 3.3% in 2011.

On the contrary, the Property Price Index was decreasing continuously from 105.7 points (peak value) to 96.3 points in 2011. The index continued its decreasing flow until 2014 which reached the value of 77.8 points. From 2014 to 2019Q2, the Property Price Index had fewer fluctuations, it was becoming closer to a linear curve shape, the values were decreased proportional as shown in graph. The Inflation as it can be observed, continued its downturn, "Deflation", from 3.3% in 2011 to -2.1% in 2015. At this point the purchase power of consumers regarding the purchase of immovable properties was decreasing. Finally, the inflation in 2016 increased to -1.4% from -2.1%, in 2017 increased to 0.5%, in 2018 increased to 1.4% and finally in 2019 decreased to 0.3%.

Graph 10. Residential Property Price Index (CBC) Vs Inflation Rate



Source: Author analysis

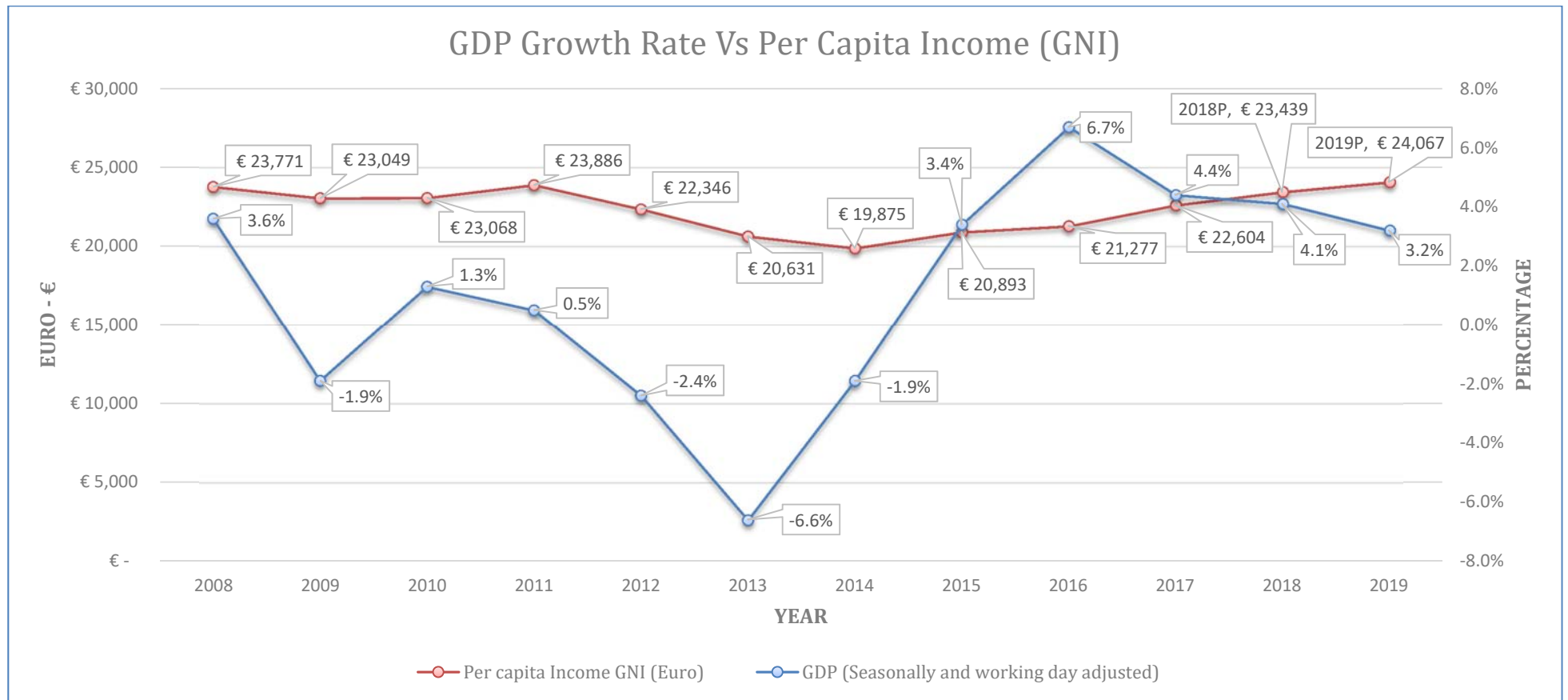
At last but not least, Graph 11 shows the GDP growth rate and the Per Capita Income (GNI) for the period of 2008-2019. In this graph, it is observed that the Per Capita Income has a linear curve and GDP growth rate has a business cycle curve as it was already observed. More precisely, the GDP growth rate decreased from 3.6% to -1.9%, from 2008 to 2009. In 2010, the GDP growth rate increased to 1.3% from -1.9%, then decreased to 0.5% in 2011, decreased to -2.4% in 2012 and in 2013 decreased to -6.6%, the lowest value of GDP growth rate.

On the contrary, the Per Capita Income decreased from 2008 to 2010, from €23.771 to €23.068. In 2011, the Per Capita Income increased to €23.886 and afterwards was continually decreasing until 2014 with a value of €19.875. From that year and forwards, the Per Capita Income was continually increasing from €19.875 to €24.067 in the end of 2019 as projected by the statistical service.

On the other hand, the Inflation rate increased from -6.6% in 2013 to 6.7% in 2016. From 2016 and onwards, the Inflation rate was continually decreasing, reached the value of 3.2% at the end of 2019.

As it can be concluded from Graph 11 below, the last two years, 2018 and 2019, both determinants showed the expected sign, negative relationship, and are in line with the literature review.

Graph 11. GDP Growth Rate Vs Per Capita Income (GNI)



Source: Author analysis

Chapter 8

Recommendations, Future Research and Conclusion

According to Reinhart and Rogoff (2010), non-performing loans [NPLs] can be used to mark the onset of banking crises. NPLs represent ex ante credit risk at an aggregate level and signal future losses for the banking system (Vouldis, A. et al., 2015). In addition to the above, the NPLs are affected by many determinants that could be categorized as macro or micro, depending on the characteristics of each country's economy.

“Recently, a research on banking stability and its determinants has focused on two areas: bank competition and government intervention (Abedifar, Molyneux & Tarazi, 2013; Ariss, 2010; Aysan. Disli, Duygun & Ozturk, 2017; Beck, 2008; Gonzalez, Razia, Bua & Sestayo, 2017; Mili & Abid, 2017). The impact of competition on stability is controversial. On the one hand, higher competition causes lower stability because market competition erodes market power and decreases profit margins. This makes banks less able to endure demand or supply shocks and encourage undue risk-taking (Kabir & Worthington, 2017; Leroy & Lucotte, 2017). On the other hand, because competition pulls interest rates down, deterring moral hazard and adverse selection behavior among borrowers, and decreasing loans, it may lead to greater stability (Fu, Lin & Molyneux, 2014; Noman, Gee & Isa, 2017) (Hassan Al-Tamini, H. et al., 2018).”

The purpose of the thesis was to understand how banks and asset management entities identify, deal with, gain support and ameliorate consequences from non-performing exposures. To achieve the main purpose of the thesis, the Qualitative method and more specifically the Economic Ethnographic methodology with ‘open-type’ questionnaire has been used. The questionnaire was based on the literature review of similar research studies and the methods that were used by the researchers. The questionnaire was comprised by twenty-eight [28] questions and it was distributed via electronic communication [email] using google forms [see Appendix 10.1]. The total responses to the questionnaire were seventy-nine [79].

Based on the interpretation of the results as discussed in chapter six [6], section 6.3 – causes of NPEs/Non-performing loans, all the causes that were included in question five [5] were designated important except the one that refers to the political influence [this depends on the working environment of the respondent]. More specifically, the “Default by customers”, “Strategic defaulter”, “Diversification of funds/poor management of

funds”, “Lack of supervision”, “Weak loan portfolio management/ Lack of transparency”, “Change in governance policies”, “Changes in economic determinant such as inflation, GDP growth rate, etc.” and “Lack of reliable market information” were few of the causes for having NPEs in a financial institution. The global financial crisis [GFC] of 2007-2009 was initially started from the attempts to eliminate risk through financial guarantees that backfired and created more risk. In simple terms, the global financial crisis was the result of moral hazard (Siegel Lawrence, 2020).

Furthermore, the increased competition among the financial institutions and the “good” clientele [not over leveraged] limited availability at that time, forced the banks’ to relax the credit appraisal standards for providing loans. As a result of the above, the percentage of NPEs in the economy was increased. Based on Graph Six [6] – Non performing loans to gross loans in Cyprus, the percentage of NPEs was increased from 18.37% in 2012 to 38.56% in 2013 [the bail-in was decided that year]. Also, financial illiteracy has contributed positively to the increase of NPEs percentage according to the replies of the respondents. Moreover, both terms “Moral hazard” and “Financial illiteracy” can cause global financial crises as can be observed from historical events, for example the Black Swan event of the successful hedge fund, the Long-Term Capital Management [LTCM] and the dot-com bubble of 2001.

In 2016, the European Central Bank [ECB], the Basel Committee [BIS] and the European Banking Authority [EBA] revised the definition and criteria regarding the treatment of NPEs; and how the provisioning procedure of the financial institutions will occur. Therefore, the financial institutions must increase their provisions regarding the NPEs that still have in their balance sheets.

At that time, the economy of Cyprus was evaluated by Troika [consisted by the European Commission, the European Central Bank and the International Monetary Fund], one of the conditions that was imposed, was to enable the option of selling the Non-performing loans held by the financial institutions to third party organizations [e.g. asset management entities]. The whole procedure was supervised and authorized by the Central Bank of Cyprus. This option was voted by the House of Representatives in late 2015 and published as a law with reference [169(I)2015 and 86(I)/2018].

Following the decision of the government to sell the ex-Cooperative Bank as agreed with Troika, the transaction was completed in mid-2018. Part of the agreed terms was that the government will guarantee a percentage of NPEs and deposits that would be transferred to the Hellenic Bank [HB]. If the percentage of NPEs that was agreed [certain threshold was defined between the two parties] to be transferred to Hellenic Bank increased, the government must increase its guarantee percentage respectively. As a result, the economy of Cyprus is exposed to any change, negatively or positively, in the NPEs percentage.

Even more than that, in chapter seven [7] we have used ten [10] determinants to present how the economy of Cyprus was affected by the NPEs and the global financial crisis. The studied period for few of the determinants was from 2006 to 2019 and for others was from 2008 to 2019. This occurred due to the limited availability of data as provided by the

authorities. More specifically, in March 2020, the non-performing exposures [NPEs] were recorded as at 30/09/2019, the Property Price indices as published by Central Bank of Cyprus and RICS Cyprus were recorded as at 30/06/2019, the unemployment for the EU countries and more specifically for the United Kingdom and Italy was available as at 31/12/2018 and not as at 31/12/2019. The employment for the EU countries was available as at 31/12/2018 and not as at 31/12/2019 and finally for the determinant “Per Capita Income” the available data for the years 2018 and 2019 were based on projections and not on seasonally adjusted data.

However, the thesis can be a good reference point for future in-depth analysis of the NPEs issue in Cyprus. The period that was examined in chapter seven [7], was shorter than the periods used in the studies that have been analyzed in the literature review chapter, due to the limited availability of data.

At last but not least, the recent developments of the outbreak of the Novel Coronavirus [Covid-19], declared by the World Health Organization as a “Global Pandemic” on 11 March 2020, has impacted global financial markets and travel restrictions have been implemented by many countries. Moreover, many countries have imposed lockdowns, private companies have closed for specific time periods, the stock market in many countries collapsed and the real estate sector will be affected negatively due to limited investments. Finally, NPEs are affected by many determinants [macro or micro], both entities, financial institutions and asset management entities as a result must be flexible with changes of their action plan.

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Appendices

Appendix I - Questionnaire

Questionnaire - How do organizations, such as Banks and Asset Management entities try to address challenges from non-performing exposures

This questionnaire is the final stage for my postgraduate degree requirements in Enterprise Risk Management [ERM] from Open University Cyprus [OUC] .

The purpose of the questionnaire is [1] to collect information and draw conclusions on the determinants and causes, for the creation and management of non-performing exposures in the monetary financial institutions and in the asset management entities, and [2] to establish how the future growth/development of the monetary financial institution is affected.

The questionnaire is anonymous. The results of the research will be used exclusively for educational and scientific purposes. Your sincere involvement is valuable for the research and for the results to be carried out.

The needed time to complete the questionnaire is estimated to be approximately 10 minutes. Please forward the questionnaire to as many of your contacts as possible.

The way this process is carried out ensures that no specific person can be identified [google forms], so no personal data issues arise.

Thank you in advance for your participation.

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Section One - Background Information

Q1. Working sector of your organization. *

- Banking Institution
- Asset Management Company

Q2. Current role / Designation you have in your organization *

Your answer _____

Q3. Department within your organization. *

- Retail Sector
- Corporate Sector
- Legal Department
- Retail & Corporate sector
- Other: _____

Q4. Work experience in the current position *

- Less than 1 year
- 1-2 years
- 2-5 years
- 5-10 years
- Over 10 years

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Section Two - Causes of NPEs/Non-Performing Loans

Q5. Following the economic crisis of 2013, every monetary financial institution has non-performing exposures. What are the major causes for having NPEs in your organization? Please rate the following as per the importance *

	Most Important	Important	Less Important	Not Important	N/A
Default by customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategic defaulter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diversification of funds/poor management of funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of supervision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weak loan portfolio management / Weak credit analysis from the beginning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrity of borrowers / lack of transparency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political influence on loans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Change in governance policies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changes in economic determinant such as inflation, GDP growth rate, e.t.c	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of reliable market information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5b. Continue from the previous Question 5. Please specify any other determinant if apply

Your answer _____

Q6. The current credit appraisal system/approval for providing loans is inadequate in the modern environment? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q7. The credit appraisal system/approval for providing loans was inadequate in the years 2008-2013? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q8. The competitive pressure from local banks forced the banks in general to relax the credit appraisal standards, and therefore contributed to the increase of non-performing exposures? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q9. There is a mechanism available in the banking sector, Artemis Information System, that gather and disseminate credit information of customers among the banks. What is your opinion about this banking system? *

- Adequate
- Inadequate
- Needs update
- Other: _____

Q10. Do you feel that the statement of Moral Hazard (i.e. take excessive and unusual risks in a desperate attempt to earn high profits) and the inadequate control systems for lending purposes contribute to the increase of NPEs? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Q11. Do you feel that the statement of financial illiteracy contributes to the increase of NPEs? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

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Section Three - Impact of NPEs/Non-Performing Loans

Q12. High NPE percentage in the banks' portfolio may adversely affect the attitude towards new credit proposals (retail and/or corporate sector) and thus credit growth. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q13. Do you agree that NPEs have significant role on the interest rates terms and conditions (if the interest rate will be constant or floating) charged by the banks?

*

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q14. Do the revised criteria regarding the treatment of NPEs as stated in BASEL II and also the accounting standard IAS 9, affect the provisioning of banks negatively? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Q15. High NPE percentage adversely affects the liquidity of banks and its income generating capacity? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q16. What is the impact that NPEs have on the bank balance sheet? (Choose one or more) *

- Decline reserves and surpluses
- Decrease in profitability
- Loss/Decrease of capital
- Increasing spread
- All above
- Other: _____

Q17. Do you feel that the negative interest rates for deposits will affect the NPEs percentage in the banks negatively? *

- Agree
- Disagree
- No opinion
- Other: _____

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Section Four - Management of NPEs/Non-Performing Loans

Q18. Loan Restructuring Practice. Kindly indicate your level of agreement with the following statements. Using the scale as shown below, please tick the extent of contribution of the following loan restructuring practice on loan recovery performance. *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We normally restructure the terms for loan repayment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have in place well documented and comprehensive formulated loan restructuring process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The loan restructuring contribution to loan recovery performance is positive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does the value of the collateral [increase or decrease in value] affect the restructuring terms and therefore the loan recovery performance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19. Loan Guarantee Practice. Kindly indicate your level of agreement with the following statements. Using the scale as shown below, please tick the extent of contribution of the following loan guarantee practice on loan recovery performance. *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We adhere to internal controls in place (internal procedures/policies).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have employed a system to proceed with recoveries of loans from guarantors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a robust appraisal system for guarantors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The legal framework referring to loan guarantors through its proper use helps to reduce the non-performing loans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20. Credit Monitoring Practices. Kindly indicate your level of agreement with the following statements. Using the scale as shown below, please tick the extent of contribution of the following credit monitoring practices on loan recovery performance. *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We consistently and continuously review the borrowers file.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have strict collection deadlines for debt holders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have a mechanism of prompt notification of the borrowers in the event of late payments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have effective penalties in case of a default by the borrower (e.g. memo restrictions).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Q21. Loan Recovery Agency Practices. Kindly indicate your level of agreement with the following statements. Using the scale as shown below, please tick the extent of contribution of the following loan recovery agency practices on loan recovery performance. *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We have a structured loan recovery procedure in place.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have a dedicated team for handling the repossession of the collateral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are long repossessing periods [months] by the recovery department in the bank/asset management entity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22. NPEs can be controlled if banks improve the system of loan appraisal? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q23. Do you think that the recent amendments in the Foreclosure Law articles will help in the decrease of NPEs in the bank? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q24. Many banks/asset management entities adopt different mechanisms for managing NPEs. In your bank/asset management entity NPEs are managed through: (Tick whatever is applicable, you may tick more than one) *

- Increasing the collateral requirement
- Sound risk assessment mechanisms
- Compromise on settlement schemes
- Sell loan portfolios to asset management companies
- Other: _____

Q25. Do you think that selling loan portfolios to asset management companies will improve the status of the economy in the country? *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q26. The problems of NPEs can be reduced to a great extent by maintaining a continuous relationship with borrower customers. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Q27. Do you feel that the securitization of loan, fix interest rates, processing charges, e.t.c should depend on individual loan proposal based on the quality of borrower (assessed through the reports) and nature of business? *

- Agree
- Disagree
- Neutral
- Other: _____

Q28. Corporate governance practices in banks /organizations help to reduce the NPE percentage? *

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

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Questionnaire - How do organizations, such as Banks and Asset Management entities try to address challenges from non-performing exposures

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Appendix II - Dataset Used in Chapter 7

Table 5. Inflation Rate Vs GDP Growth Rate (Graph 1)

<i>Year</i>	Inflation Rate (%)	GDP Growth Rate (Seasonally and working day adjusted)
<i>2006</i>	2.5%	1.0%
<i>2007</i>	2.4%	4.5%
<i>2008</i>	4.7%	3.6%
<i>2009</i>	0.3%	-1.9%
<i>2010</i>	2.4%	1.3%
<i>2011</i>	3.3%	0.5%
<i>2012</i>	2.4%	-2.4%
<i>2013</i>	-0.4%	-6.6%
<i>2014</i>	-1.4%	-1.9%
<i>2015</i>	-2.1%	3.4%
<i>2016</i>	-1.4%	6.7%
<i>2017</i>	0.5%	4.4%
<i>2018</i>	1.4%	4.1%
<i>2019</i>	0.3%	3.2%

Table 6. GDP Growth Rate Vs Unemployment (Graph 2)

<i>Year</i>	<i>Quarter</i>	No. of Employees	GDP Growth Rate (Seasonally and working day adjusted)
<i>2008</i>	Q1	33,991	4.7%
	Q2	33,131	4.3%
	Q3	34,876	3.4%
	Q4	36,810	2.0%
<i>2009</i>	Q1	43,001	0.2%
	Q2	51,764	-2.0%
	Q3	56,548	-2.7%
	Q4	60,939	-2.9%
<i>2010</i>	Q1	63,733	-0.7%
	Q2	68,922	0.9%
	Q3	69,969	2.4%
	Q4	73,205	2.7%
<i>2011</i>	Q1	77,563	1.7%
	Q2	82,234	1.4%
	Q3	87,201	-0.3%
	Q4	93,944	-0.6%
<i>2012</i>	Q1	101,170	-1.6%
	Q2	106,733	-2.5%
	Q3	109,808	-2.3%
	Q4	117,844	-3.3%
<i>2013</i>	Q1	124,972	-7.1%
	Q2	142,805	-7.5%
	Q3	145,931	-6.4%
	Q4	145,536	-5.2%
<i>2014</i>	Q1	146,231	-3.2%
	Q2	144,541	-1.5%
	Q3	140,180	-1.7%
	Q4	136,851	-1.1%
<i>2015</i>	Q1	134,187	0.9%
	Q2	131,454	3.0%
	Q3	127,667	3.7%
	Q4	123,655	5.8%
<i>2016</i>	Q1	120,225	6.7%

<i>2017</i>	Q2	116,945	6.1%
	Q3	114,089	6.9%
	Q4	112,182	7.2%
	Q1	108,585	4.9%
<i>2018</i>	Q2	103,688	4.8%
	Q3	98,489	4.5%
	Q4	92,425	3.3%
	Q1	86,598	4.4%
<i>2019</i>	Q2	82,390	4.2%
	Q3	78,124	3.9%
	Q4	74,843	3.8%
	Q1	71,803	3.3%
	Q2	68,189	3.1%
	Q3	64,959	3.3%
	Q4	62,283	3.2%

Table 7. GDP Growth Rate Vs Employment (Graph 3)

<i>Year</i>	<i>Quarter</i>	No. Employees	GDP Growth Rate (Seasonally and working day adjusted)
<i>2008</i>	Q1	304,067	4.7%
	Q2	307,878	4.3%
	Q3	304,046	3.4%
	Q4	309,961	2.0%
<i>2009</i>	Q1	301,647	0.2%
	Q2	306,913	-2.0%
	Q3	308,268	-2.7%
	Q4	311,924	-2.9%
<i>2010</i>	Q1	312,169	-0.7%
	Q2	320,741	0.9%
	Q3	324,691	2.4%
	Q4	329,942	2.7%
<i>2011</i>	Q1	325,751	1.7%
	Q2	329,526	1.4%
	Q3	325,479	-0.3%
	Q4	326,224	-0.6%
<i>2012</i>	Q1	319,541	-1.6%
	Q2	324,084	-2.5%
	Q3	323,060	-2.3%
	Q4	318,371	-3.3%
<i>2013</i>	Q1	304,124	-7.1%
	Q2	301,299	-7.5%
	Q3	301,327	-6.4%
	Q4	297,143	-5.2%
<i>2014</i>	Q1	288,069	-3.2%
	Q2	297,068	-1.5%
	Q3	302,511	-1.7%
	Q4	303,766	-1.1%
<i>2015</i>	Q1	293,972	0.9%
	Q2	306,275	3.0%
	Q3	308,087	3.7%
	Q4	310,576	5.8%
<i>2016</i>	Q1	297,593	6.7%
	Q2	312,924	6.1%
	Q3	316,334	6.9%
	Q4	317,969	7.2%
<i>2017</i>	Q1	314,095	4.9%

2018	Q2	332,536	4.8%
	Q3	337,331	4.5%
	Q4	334,268	3.3%
	Q1	333,669	4.4%
2019	Q2	350,250	4.2%
	Q3	353,662	3.9%
	Q4	353,001	3.8%
	Q1	409,117	3.3%
	Q2	418,374	3.1%
	Q3	417,118	3.3%
	Q4	421,303	3.2%

Table 8. Unemployment Rate of EU Countries (Graph 4)

Year	Belgium	Greece	Spain	France	Italy	Cyprus	Portugal	United Kingdom
<i>2008</i>	7.0%	7.8%	11.3%	7.4%	6.7%	3.7%	8.8%	5.6%
<i>2009</i>	7.9%	9.6%	17.9%	9.1%	7.7%	5.4%	10.7%	7.6%
<i>2010</i>	8.3%	12.7%	19.9%	9.3%	8.4%	6.3%	12.0%	7.8%
<i>2011</i>	7.2%	17.9%	21.4%	9.2%	8.4%	7.9%	12.9%	8.1%
<i>2012</i>	7.6%	24.5%	24.8%	9.8%	10.7%	11.9%	15.8%	7.9%
<i>2013</i>	8.4%	27.5%	26.1%	10.3%	12.1%	15.9%	16.4%	7.5%
<i>2014</i>	8.5%	26.5%	24.5%	10.3%	12.7%	16.1%	14.1%	6.1%
<i>2015</i>	8.5%	24.9%	22.1%	10.4%	11.9%	15.0%	12.6%	5.3%
<i>2016</i>	7.8%	23.6%	19.6%	10.0%	11.7%	13.0%	11.2%	4.8%
<i>2017</i>	7.1%	21.5%	17.2%	9.4%	11.2%	11.1%	9.0%	4.3%
<i>2018</i>	6.0%	19.3%	15.3%	9.0%	10.6%	8.4%	7.0%	4.0%
<i>2019</i>	5.4%	17.3%	14.1%	8.5%	N/A	7.1%	6.5%	N/A

Table 9. Employment Rate of EU Countries (Graph 5)

Year	Belgium	Greece	Spain	France	Italy	Cyprus	Portugal	United Kingdom
<i>2008</i>	68.0%	66.3%	68.5%	69.9%	62.9%	76.5%	73.1%	75.2%
<i>2009</i>	67.1%	65.6%	64.0%	69.0%	61.6%	75.3%	71.1%	73.9%
<i>2010</i>	67.6%	63.8%	62.8%	68.9%	61.0%	75.0%	70.3%	73.5%
<i>2011</i>	67.3%	59.6%	62.0%	68.8%	61.0%	73.4%	68.8%	73.5%
<i>2012</i>	67.2%	55.0%	59.6%	68.9%	60.9%	70.2%	66.3%	74.1%
<i>2013</i>	67.2%	52.9%	58.6%	69.0%	59.7%	67.2%	65.4%	74.8%
<i>2014</i>	67.3%	53.3%	59.9%	69.2%	59.9%	67.6%	67.6%	76.2%
<i>2015</i>	67.2%	54.9%	62.0%	69.5%	60.5%	67.9%	69.1%	76.8%
<i>2016</i>	67.7%	56.2%	63.9%	70.0%	61.6%	68.7%	70.6%	77.5%
<i>2017</i>	68.5%	57.8%	65.5%	70.6%	62.3%	70.8%	73.4%	78.2%
<i>2018</i>	69.7%	59.5%	67.0%	71.3%	63.0%	73.9%	75.4%	78.7%

Table 10. Non-Performing Loans to Gross Loans in Cyprus (Graph 6)

Year	Percentage
2008	3.59%
2009	4.51%
2010	5.82%
2011	9.99%
2012	18.37%
2013	38.56%
2014	44.97%
2015	47.75%
2016	48.68%
2017	40.17%
2018	32.00%
2019 - Q3	29.00%

Table 11. Value of NPLs (000s) (Graph 7)

Year	NPLs (000s)
2010	€ 7,348,242
2011	€ 10,957,912
2012	€ 19,966,819
2013	€ 16,232,651
2014	€ 28,382,601
2015	€ 27,289,517
2016	€ 24,310,929
2017	€ 20,908,450
2018	€ 10,386,265
2019 Q3	€ 9,624,240

Table 12. GDP Growth Rate Vs Total NPLs (000s) (Graph 8)

<i>Year</i>	GDP Growth Rate (Seasonally and working day adjusted)	NPLs (000s)
<i>2010</i>	1.3%	€ 7,348,242
<i>2011</i>	0.5%	€ 10,957,912
<i>2012</i>	-2.4%	€ 19,966,819
<i>2013</i>	-6.6%	€ 16,232,651
<i>2014</i>	-1.9%	€ 28,382,601
<i>2015</i>	3.4%	€ 27,289,517
<i>2016</i>	6.7%	€ 24,310,929
<i>2017</i>	4.4%	€ 20,908,450
<i>2018</i>	4.1%	€ 10,386,265
<i>2019-Q3</i>	3.2%	€ 9,624,240

Table 13. Property Price Index - Central bank of Cyprus & RICS (Graph 9)

<i>Year</i>	<i>Central Bank of Cyprus</i>		<i>RICS</i>	
	Quarter	Residential Property Price Index	Apartment	Residence
2006	Q1	68.1	N/A	N/A
	Q2	72.2	N/A	N/A
	Q3	73.4	N/A	N/A
	Q4	78.2	N/A	N/A
2007	Q1	82.7	N/A	N/A
	Q2	89.5	N/A	N/A
	Q3	92.0	N/A	N/A
	Q4	95.5	N/A	N/A
2008	Q1	103.6	N/A	N/A
	Q2	106.9	N/A	N/A
	Q3	107.7	N/A	N/A
	Q4	104.8	N/A	N/A
2009	Q1	99.3	N/A	N/A
	Q2	100.1	N/A	N/A
	Q3	100.7	N/A	N/A
	Q4	102.8	100	100
2010	Q1	100.0	95	98
	Q2	99.6	93	96
	Q3	99.7	91	95
	Q4	99.1	89	92
2011	Q1	98.1	87	91
	Q2	97.0	85	90
	Q3	95.9	81	89
	Q4	94.2	80	87
2012	Q1	93.2	78	85
	Q2	91.3	76	84
	Q3	90.4	76	83
	Q4	89.8	74	82
2013	Q1	88.4	70	79
	Q2	86.3	67	75
	Q3	84.2	65	74
	Q4	82.1	64	74
2014	Q1	80.0	62	73
	Q2	78.4	61	72
	Q3	77.1	61	71
	Q4	75.6	60	70
2015	Q1	74.8	60	70

<i>2016</i>	Q2	74.5	60	70
	Q3	74.2	60	70
	Q4	74.2	59	70
	Q1	73.6	60	71
<i>2017</i>	Q2	73.2	60	71
	Q3	73.3	61	72
	Q4	73.5	62	72
	Q1	73.7	63	73
<i>2018</i>	Q2	74.2	64	74
	Q3	74.5	65	75
	Q4	74.8	66	77
	Q1	75.2	69	78
<i>2019</i>	Q2	75.5	70	80
	Q3	76.0	72	82
	Q4	76.7	73	83
	Q1	77.2	77	87
	Q2	77.6	78	88

Table 14. Residential Property Price Index (CBC) Vs Inflation Rate (Graph 10)

<i>Year</i>	Property Price Index (Average)	Inflation Rate (%)	
<i>2006</i>	73.0	2.5	
<i>2007</i>	89.9	2.4	
<i>2008</i>	105.7	4.7	
<i>2009</i>	100.7	0.3	
<i>2010</i>	99.6	2.4	
<i>2011</i>	96.3	3.3	
<i>2012</i>	91.2	2.4	
<i>2013</i>	85.2	-0.4	
<i>2014</i>	77.8	-1.4	
<i>2015</i>	74.4	-2.1	
<i>2016</i>	73.4	-1.4	
<i>2017</i>	74.3	0.5	
<i>2018</i>	75.8	1.4	
<i>2019-Q2</i>	77.4	0.3	Full Year

Table 15. GDP Growth Rate Vs Per Capita Income (GNI) (Graph 11)

	GDP (Seasonally and working day adjusted)	Per capita Income GNI (Euro)	
<i>2008</i>	3.6%	€ 23,771	
<i>2009</i>	-1.9%	€ 23,049	
<i>2010</i>	1.3%	€ 23,068	
<i>2011</i>	0.5%	€ 23,886	
<i>2012</i>	-2.4%	€ 22,346	
<i>2013</i>	-6.6%	€ 20,631	
<i>2014</i>	-1.9%	€ 19,875	
<i>2015</i>	3.4%	€ 20,893	
<i>2016</i>	6.7%	€ 21,277	
<i>2017</i>	4.4%	€ 22,604	
<i>2018</i>	4.1%	€ 23,439	Projection
<i>2019</i>	3.2%	€ 24,067	Projection