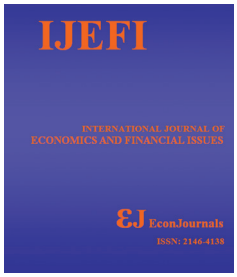

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2025, 15(1), 190-201.

Determinants of Non-Performing Loans in Cyprus: An Empirical Analysis of Macroeconomic and Borrower-Specific Factors

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Received: 23 August 2024 **Accepted:** 16 November 2024 **DOI:** https://doi.org/10.32479/ijefi.17398

ABSTRACT

This study empirically investigates the determinants of non-performing loans (NPLs) within the Cypriot banking sector by employing Pearson's correlation analysis and Generalized Method of Moments (GMM) estimations. Utilizing a sample of 200 NPLs granted to individuals by a Cypriot banking institution from 2013 to 2019, the study examines both macroeconomic and borrower-specific factors influencing NPLs. The findings reveal significant associations between borrower profile characteristics - such as gender, age, education level, professional and financial standing, and place of residence - and loan-specific details, including loan purpose, type of collateral, and NPL status and rescheduling. The study also identifies that lower economic growth, higher inflation, and higher interest rates correlate with an increase in NPLs. Moreover, borrower-specific variables like return on assets and loan growth significantly affect NPL levels. These results offer valuable insights into management in taking corrective actions and have important policy implications for regulatory authorities in formulating effective economic policies. Additionally, the study guides potential investors by highlighting key risk factors associated with NPLs in Cyprus.

Keywords: Non-performing Loans, Cyprus Banking System, Borrower-specific Factors, Macroeconomic Variables, Pearson's Correlation, Generalized Method of Moments
JEL Classifications: C21, C51, G21, G32

1. INTRODUCTION

Non-performing loans (NPLs) are a key indicator of a bank's financial health and serve as a primary measure of credit risk within the banking system. An increase in NPLs suggests a growing number of borrowers are struggling to meet their debt obligations, raising the likelihood of loan defaults. As a result, the value of the bank's assets declines, and its overall financial position deteriorates due to losses from bad debt write-offs. According to the European Central Bank (ECB), NPLs are defined as either significant exposure with a delay of more than 90 days or exposures for which it is not considered likely that the debtor will be able to fulfill his/her credit obligations without the liquidation of collateral, irrespective of the existence of non-delayed amount or the number of days of delay. Consequently, the concept of NPL includes both the criteria of "delay" and "uncertain recovery." In addition, NPLs include loans restructured twice within two years or over two years with delays of more than 30 days (ECB Banking Supervision, 2018).

Loans can also be classified as "problematic" when they exhibit or may exhibit in the future repayment problems, regardless of whether they are serviced or not. Similarly, they are classified as "doubtful loans," when there are clear indications of future non-repayment, partial or total. According to criteria set by the banks, bad debts can be irrecoverable, in which case they must be written off so that the balance sheet of the banking institution reflects the actual value of the claims. For this reason, banks should thoroughly check their total loan portfolio and adequately recognize impairment. Such loans are called "impaired loans."

Michail and Savva (2018) examine the macroeconomic determinants of NPLs in Cyprus using a Bayesian Vector Autoregression (VAR)

methodology. By disaggregating the data into Household and Non-Financial Corporation (NFC) NPLs, the study indicates that the determinants of NPLs differ between the two sectors. Industrial production negatively impacts NPLs in both sectors, while funding conditions, such as deposits, affect household and NFC NPLs through distinct channels. Other sector-specific factors also influence NPLs, but forward-looking variables like the Economic Sentiment Indicator (ESI) do not significantly impact NPL levels. The findings suggest that sustained economic growth is crucial for reducing overall NPL levels, highlighting important policy implications for the Cypriot economy. Mitsigiorgi (2021) investigates the factors that increase the likelihood of NPLs in Cyprus, analyzing a sample of 878 loans from 2004 to 2020. The study considers both loan-specific variables - such as interest rates, loan duration, loan sector, remaining balance, and loan restructuring - and a single macroeconomic variable, the unemployment rate. Using a probit model with panel data, the findings reveal that NPLs are positively associated with the remaining loan balance and the quaternary sector. In contrast, NPLs are negatively associated with loan duration, loan restructuring, and, unexpectedly, interest rates. Additionally, loans in the primary, secondary, and tertiary sectors show a negative relationship with NPLs. These insights provide an understanding of the determinants of NPLs and underscore the complexity of loan performance in the Cypriot banking context.

NPLs held by banks in Cyprus have fallen below €2 billion, now standing at €1.9 billion. At the end of 2017, NPLs were as high as €20.5 billion, and at their peak in 2014-2015, they had nearly reached €28 billion. Significant reductions in NPLs have been achieved since 2018 due to a "break" in partnerships and large-scale sales of problematic loans from Cypriot banks to foreign investment funds. The first major reduction occurred in 2018 with the sale of the cooperative bank and a landmark sale of a large NPL portfolio worth €2.8 billion by the Bank of Cyprus to Apollo. As a result, the €20.5 billion in NPLs was reduced to €10.2 billion by the end of 2018. This was followed by further reductions to €8.9 billion in 2019, €5.1 billion in 2020, €2.9 billion in 2021, €2.3 billion in 2022, and finally €1.89 billion in 2023.

This paper aims to investigate the factors that may lead to NPLs, with an emphasis on those relating to the borrower's initial background (profile). NPLs are a possible outcome of incorrect initial assessment of the borrower by the bank that granted the loan, or due to unforeseen events and circumstances that hurt the borrower's financial position and prevent the normal repayment of his/her obligations to the bank. In any case, it is sufficient to delay the repayment only one day to activate the default scheme, whereas, as mentioned above, to qualify the loan as an NPL it must be delayed for more than 90 days, according to the definition of the European Union.

The remainder of the paper is organized as follows. Section 2 sets the theoretical framework for the research through a literature review and Section 3 describes the methodology used. Section 4 reports and analyzes the results and finally, the discussion and conclusions are presented in Section 5.

2. LITERATURE REVIEW

Several studies examine the impact of NPLs in different banking systems or are trying to explain their determinants. Accordingly, there are two main categories of factors that affect NPLs and contribute to their increase. The first category refers to causes related to the macroeconomic environment, while the second refers to factors relating to the bank-specific factors. The main challenge and motivation of this paper is due to the lack of sufficient research in understanding how borrower-specific factors influence NPLs.

2.1. Macroeconomic Factors

The various macroeconomic factors that affect the number of NPLs have been the subject of extensive research (Akhter, 2023; Kjosevski et al, 2019; Christodoulou-Volos and Hadjixenophontos, 2017; Chavan and Gambacorta, 2016; Anastasiou et al., 2016; Makri et al., 2014; Louzis et al., 2011; Radivojevic and Jovovic, 2017; Beck et al., 2013; Mileris, 2014; Ranjan & Dhal, 2003).

The first factor relates to the rate of economic growth that is inversely related to the number of NPLs. It is obvious that in times of stagnant or negative growth rates, the macroeconomic environment becomes less favorable, with a reduction in supply and demand, an increase in unemployment, and a fall in real estate values, including mortgage collateral, while credit institutions apply stricter lending criteria. In these circumstances, it is significantly more difficult to repay borrowers' credit obligations. Interest rates are another important factor that affects NPLs since an increase in lending rates tends to contribute to an increase in the number of non-performing loans. The rise in interest rates negatively affects the ability of the borrowers to meet their obligations as they now must pay higher installments, given the remaining characteristics of loans that remain stable (capital, duration, balance, etc.). The third factor concerns the level of realty prices, which in times of economic recession exhibit downward trends, due to the deterioration of the remaining macroeconomic indicators, since the decline in household and business incomes leads to a decrease in consumption and in demand for real estate. When the decrease in property prices is significant, then borrowers often devalue the mortgage properties they own and cease to have as their main priority the regular repayment of linked loans, increasing the corresponding NPLs. Unemployment is driven by other macroeconomic factors, and any increase leads to a reduction in available incomes, limiting the ability to meet borrowers' credit obligations, and inevitably leading to an increase in the number of NPLs.

Existing research finds that analyzing the effects of inflation on the growth rate of NPLs is more complex than in the case of other factors. In conditions of hyperinflation with unchanged interest rates, borrowers often benefit from a decrease in the real value of their loans which helps to improve their repayment capacity and helps to reduce the number of NPLs. On the other hand, if credit institutions raise interest rates in response to losses due to inflation, then real incomes and wages fall, with negative effects on the size of NPLs. Finally, one factor affecting certain categories of lending is exchange rates, which are negatively correlated with the ability to service loans in foreign currency.

2.2. Bank-specific Factors

The various bank-specific factors that affect the number of NPLs have also been the subject of research (Akhter, 2023; Kjosevski et al., 2019; Christodoulou-Volos and Hadjixenophontos, 2017; Anastasiou et al., 2016; Baudino and Yun, 2017; Louzis et al., 2011; Chavan and Gambacorta, 2016; Makri et al., 2014; Messai and Jouini, 2013; Radivojevic and Jovovic, 2017).

Increased lending, which usually occurs in times of rapid economic growth, tends to be positively correlated with an increase in the number of NPLs. In fact, in conditions of drastic growth, to maximize their profitability, credit institutions are increasing their loan portfolio in a short period, taking on higher non-legitimate credit risks through the relaxation of lending criteria. As a result, the chances of higher NPLs are increased accordingly. Adequate capitalization of credit institutions usually makes them less prone to high credit risk decisions, reducing the chances of high rates of NPLs subsequently occurring. The composition of the loan portfolio is a crucial factor that, with the appropriate strategic options, can reduce the growth rates of NPLs by limiting exposure to credit risks by diversifying both the categories of loans granted (consumer, business, etc.) and the sectors of the economy to which they are addressed (building, tourism, education, shipping, etc.). Staffing management positions and other key posts in the bank with persons who possess appropriate knowledge, training, skills, experience, and efficiency may help to reduce the credit risks assumed by the credit institution concerned, as well as to manage crises by recognizing early indications of problem loans and thus taking appropriate action. On the contrary, the inadequacy of executives can lead to uncontrolled credit risks as well as moral hazards, resulting in a further increase in NPLs.

The existence of a clear and strict regulatory framework for the operation of credit institutions and supervision by independent authorities is equally important and can make a positive contribution to reducing the number and/or percentage of NPLs since it acts proactively against reckless lending and increased assumption of non-legitimate credit risks by credit institutions. Intense competition within the financial system can lead to strategic decisions by credit institutions with increased credit risk, such as the relaxation of lending criteria and the granting of loans with insufficient or zero collateral, which often lead to an increase in NPLs. Innovation in the financial sector can work both positively and negatively in the effort to prevent and tackle the problem of NPLs. Portfolio diversification can make a positive contribution, but actions such as the creation of new mortgage-based investment products can lead to excessive and unmanageable credit risks that can lead to a significant increase in NPLs. The profile of borrowers, which includes their demographic characteristics and financial status, as well as their prospects, has an equally significant impact both on their access to bank credit and on loans they receive turning into NPLs. As Kosen (2011) notes, the demographic profile can be an indication of the levels of risk involved in each customer's lending. For example, older, unemployed, lower-income individuals, not own their homes, are less likely to have access to bank loans but even if they do, they are less likely to service them. Even a borrower's place of residence can affect his/her access to lending (Chong et al., 2010).

2.3. The Effects of an Increase in NPLs

The consequences of NPLs are multidimensional, and concern not only borrowers and credit institutions but the whole economy and society. From the borrower's viewpoint, an NPL commits valuable collateral and any outstanding debt obligations make it difficult to obtain new financing and make investments. In the case of people, the consequences are not only economic but also have psychological and social implications. A borrower with a so-called "red loan" due to financial weakness, develops negative psychology, low self-esteem, feelings of failure, and even stigmatization or marginalization from his/her social environment (Balgova et al., 2016; Cuccinelli, 2015; Nyong'O, 2014). On the other hand, from the viewpoint of the lender, an NPL creates direct and indirect costs, both for its management, such as the costs involved in taking legal action, etc. and through capital shortfall which limits the possibility of new credit, which is a source of revenue for credit institutions. High NPLs place a significant burden on the financial statements of credit institutions and constitute an obstacle to their profitability. NPLs shrink the supply of credit and distort its distribution, adversely affecting the market climate and slowing down economic growth (Balgova et al., 2016; Cuccinelli, 2015; Nyong'O, 2014).

As a result, high rates of NPLs are becoming a scourge for the entire economy of a country or a set of countries such as the Eurozone. The analysis of the impact of NPLs and their increase on the national economy is more complex, precisely because of the two-way relationship between them, since the prevailing conditions in the country's economy expressed through key macroeconomic aggregates are determining factors for the course of the NPLs. However, some of the consequences include lower bank lending due to the lower profitability for the banking institutions, resulting in the depletion of financial resources in terms of capital and labor in sectors with low productivity, the slowdown in economic and credit growth, as well as the lack of confidence of consumers and businesses in the financial system (Balgova et al., 2016; Cuccinelli, 2015; Nyong'O, 2014).

2.4. Management of Non-Performing Loans

Before analyzing NPL management policies, it is worth mentioning certain issues that need to be addressed by the competent authorities. Firstly, attempts to solve the problem of NPLs, when it is the result of a banking crisis, take place at the national level. Even if the crisis concerns more than one country, attempts to solve the problem still take place at the national level since state support is a national decision and difficult to coordinate between more countries. However, in cases of associations of states, such as the Eurozone, regional solutions may also be possible. In addition, response policies can only be applied to domestic credit institutions or local branches of foreign banks. At the same time, it should be noted that the longer it takes to deal with the problem of NPLs, the higher the costs of solving it. To effectively manage and resolve this issue, authorities should have a clear idea of its size, through on-the-spot checks at credit institutions, Asset Quality Reviews (AQRs) and stress tests, as well as tests of capital adequacy and loss absorption forecasts by credit institutions. On the other hand, where losses have annihilated banks' capital adequacy, the extent to which the public sector can participate in dealing with NPLs

depends significantly on the available budget, which is subject to national and supranational constraints. It is therefore necessary and more effective to take state and private initiatives in combination. In addition, any strategy to tackle the problem of NPLs must be compatible with the prevailing legal and regulatory framework (Baudino and Yun, 2017).

The strategic tools for resolving NPLs focus either on debtors or on credit institutions. The first concerns debt restructuring through judicial and out-of-court settlement procedures which can make a significant contribution to the recovery of the value of the bank's assets, provided that debt restructuring is truly feasible and not a means of postponing the resolution of the problem. The second includes the write-offs and write-down of debt in the financial statements of credit institutions, the direct sale of NPLs on specialized markets, their securitization and resale in specialized markets, and schemes to protect the assets of banks with a state guarantee and insurance against losses due to NPLs or the acquisition of the "bad" assets of the troubled banks by centralized asset management companies. In addition, options for solving the problem of NPLs must be adapted to the characteristics of the country concerned to maximize the effectiveness of the strategy to be followed, and often include necessary reforms and other policies related to improving the country's macroeconomic climate (Baudino and Yun, 2017).

Another type of classification in the measures dealing with NPLs relates to the distinction between short-term and long-term measures. Short-term measures include exclusive interest payments, reduced installments, application of a grace period - suspension of payments, and capitalization of arrears – interest. Long-term measures include reduction of the loan interest rate, the extension of the duration and maturity of the loan, the additional collateral, the consensual sale based on an agreement (assisted sale), the rescheduling of payments, the conversion of the loan currency and/or other terms – clauses of the loan agreement, the additional credit facilities, the consolidation of debt in the case of multiple NPLs and the partial or total debt write-off (Baudino and Yun, 2017).

The regulatory and supervisory framework designed and implemented by competent national and international institutions, such as central banks, the ECB, the European Banking Authority, etc., and the corresponding organizations in other countries and continents, which are, inter alia, responsible for integrating the experience of the latest financial and banking crises to effectively prevent the future recurrence of similar phenomena. At the same time, at the political level, it is necessary to design and take concrete measures to limit the impact of NPLs and restart the crisis-affected economies. Such measures include the strengthening of access to sources of finance through the strengthening of bank balance sheets and removing barriers to growth by establishing alternative sources of business financing by integrating capital markets in associations of countries such as the Euro Zone. Measures are also taken to address shortcomings in national supervisory and regulatory frameworks and to improve corporate governance in credit institutions manage specific risks that are related to credit exposure to foreign currencies and reduce housing market imbalances caused by the uncontrolled growth rate of private debt (European Commission, 2016; Yang, 2017).

Finally, it is equally important to implement risk management systems in credit institutions, to regularly monitor borrowers' data and the repayment progress of loans, for the early diagnosis, prevention, and treatment of problem loans, before they are converted into NPLs. Risk management includes the procedures for identifying, evaluating, measuring, monitoring, and controlling all risks inherent in the banking system. The basic principles governing risk management that can be applied in any financial institution, regardless of size and complexity, are summarized below: (Haneef et al., 2012):

1. The overall responsibility for risk management lies with the board of directors of the bank concerned, which shall design the risk management strategy and clearly define its policies and procedures for its implementation.
2. The bank's business units should also be held accountable for the risk they assume.
3. Wherever and whenever possible, risks shall be quantified and reported.
4. The risk review function shall be independent of those who undertake it.
5. Financial institutions shall have contingency plans in place for any scenarios of abnormal or worst-case scenarios.
6. Depending on the type of risk (credit, operational, ethical, liquidity, market) individual principles and procedures are followed for optimal management.

It is obvious, therefore, that in several cases of banking crises and uncontrolled spread of NPLs, the responsibility lies to a significant extent in the inadequacy or failure to apply the above risk management principles.

2.5. Non-Performing Loans in Cyprus

In the years following the crisis of 2013-2015 and after the completion of the Troika support scheme in 2016, Cyprus has shown steady signs of recovery, accelerating GDP growth rates, rising inflation, falling unemployment, falling public deficit and public debt, but also falling current account deficit, due to increased exports and progress made in the tourism sector. Regarding the banking sector, household and business loans were falling due to the implementation of debt-to-asset swaps, the sale of loans, and debt write-offs as part of the restructuring of NPLs. Consequently, there has also been a decrease in NPLs. In recent years, there have been increasing trends in demand for loans, without a corresponding increase in loan supply, as lending procedures have become far more stringent (Lyddon, 2018).

3. EMPIRICAL RESEARCH

This is an empirical study that was carried out using a sample of household NPLs at a particular banking institution, on the original profile of NPL borrowers. The focus is on the relationship between the profile characteristics of the borrower and the possibility of a negative loan outcome resulting in an NPL. The research questions that were examined are the following:

1. What factors affect the state of a loan and its evolution into an NPL?

2. What are the characteristics of the borrower's profile that may affect the development of a loan into an NPL and in what way?
3. What is the relationship between collateral and possible development of a loan into an NPL?
4. What are the characteristics of loans that affect the attempt to regulate NPLs and the number of arrangements made by the borrower?

As a starting point, this paper uses a case study approach, by conducting correlation analysis using unpublished data for a particular banking institution in Cyprus. Given the unique characteristics of the data set - short period, unpublished, and published data set - the paper estimates a Generalized Method of Moments (GMM) model that also deals with the so-called dynamic panel bias. The GMM estimation provides consistent and unbiased results.

Radivojević et al. (2019), Louzis et al. (2011), and Makri et al. (2014), confirmed that the GMM estimation is appropriate to be used, introduced by Arellano and Bond (1991). The model specification is (eq. 1)

$$y_{i,t} = \gamma y_{i,t-1} + \beta x_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (1)$$

Where y is the dependent variable, x is the vector of regressors, α is the fixed individual effect and ε is the identically and independently distributed (*iid*) error term, the subscripts i and t denote the cross-sectional and time dimension of the panel, respectively, and where $y_{i,t}$ = (*NPL*), and *it* is the vector of macroeconomic variables and bank-specific variables other than the lagged NPL, that is, $x_{i,t}$ = (*Growth, Inflation, Interest rate, Unemployment rate, Exchange rate, Return on assets*), α and β are the vector of coefficients to be estimated.

Judson and Owen (1999) proposed the use of the difference GMM (DGMM) when performing an analysis of unbalanced panel data with <20 periods of time because the lagged dependent variable will be correlated with the fixed effects term (eq. 2). The application of the DGMM model has two advantages. It eliminates the problems of endogeneity and autocorrelation between variables. This is done by both treating lags as instruments and removing the individual fixed effects as well as their associated omitted-variable bias. The result is the following estimated model (eq. 3):

$$Cov\,(y_{i,t-1}, \alpha_i) \neq 0 \quad (2)$$

$$\Delta y_i = \gamma \Delta y_{i,-1} + \beta \Delta x_{i,t} + \Delta \varepsilon_{i,t} \quad (3)$$

The unbiased GMM estimator can be derived by minimizing the following objective function (eq. 4) and choosing a weighting matrix "W" that converges to its long-term covariance matrix "ρ" (eq. 5).

$$\hat{\beta}GMM = N\bar{g}(\hat{\beta}GMM)'W\bar{g}(\hat{\beta}GMM)' \quad (4)$$

$$plim\hat{W} = \rho \quad (5)$$

In the above specification, $\bar{g}$ is the sample moment condition based on a sample of size and $\hat{W}$ is a *px* weighting matrix of population moment conditions.

4. RESEARCH RESULTS

4.1. Demographic Characteristics

Regarding the sample, the NPL population amounts to 40,000 physical borrowers. The aim was to complete 40 questionnaires for each city, so the total sample amounts to 200 borrowers. The sample was selected randomly by customers of the credit institution under study. In a total of 200 individuals, the least numerous age group is the 18-25 with 8.50%, followed by the 26-35 group with 16%. The highest percentages are observed in the ages of 36-45 (20%) and 46-55 (21.5%). Finally, the two oldest age groups, 56-65 and over 65 show the same percentages, 17% each. This age distribution is consistent with the fact that access to lending is usually easier in the middle age groups of 36-45 and 46-55 in which natural persons tend to be in their most productive phase, with a professional and economic profile that enhances their creditworthiness and a wider range of needs for which they would resort to lending (Kosen, 2011). 61.5% of the sample consists of male borrowers, as compared to 38.5% of female borrowers. This difference is consistent with the ratio of male vs female borrowers. According to literature, access to lending by women is much harder than it is for men, especially in countries where gender discrimination is more evident (Galli and Rossi, 2015; Gubbins and Totolo, 2018; Agostinho, 2016; Kosen, 2011). Yet, in Cyprus the gap in access to borrowing between the two genders is relatively small. Therefore, the gender difference noted in the sample is probably the result of other factors related to borrower behavior after obtaining the loan.

Regarding residency, 62% resided in a municipality and 38% outside. According to the literature, the shorter the distance of the candidate borrowers' place of residence from the sponsoring bank, the greater the number of loans granted (Chong et al., 2010). The respective percentages of the individual provinces of the last updated borrower's place of residence fluctuate, with the capital Nicosia having 22.5%, followed by Larnaca at 20%, Limassol and Paphos at 18% each, and Famagusta at 14%. One of the most interesting findings is the increase in the percentage of borrowers who reside outside Cyprus to 7.5% from 0.5%. Of particular interest is the distribution of borrowers according to their educational level. The vast majority are secondary and higher education graduates, with 36% and 37.5%, respectively. This is followed by a significant proportion of people who have completed only primary education, equal to 15.5%, while holders of a professional, postgraduate, and doctoral degree constitute a total of 11% of the sample. These results are consistent with the literature that borrowers with a higher level of education tend to receive loans more easily and/or more frequently, as banks consider them more conciliatory and cooperative, but also more able to understand the processes and documents of increased complexity included in lending (Nguyen, 2014).

Regarding the employment condition of the respondents, the majority declare employees (36.5%) and self-employed and

retired people follow with 16.5% and 12.5% respectively. 7% of the sample are entrepreneurs, while smaller percentages relate to groups that do not have access to credit facilities like the unemployed (6%) and part-time workers (4.5%), beneficiaries of financial assistance (4.5%), and the bankrupts or restored bankrupts (5%), but also dead borrowers (5.5%) and those who declared "Other" (2%). These percentages are consistent with those found in literature, according to which individuals without a steady job or sufficient income are less likely to be granted a loan as they have a bigger chance of being unable to meet their debt obligations (Kosen, 2011; Chong et al., 2010). Finally, as regards the employment sector of borrowers who had declared themselves employed, out of a total of 138 natural persons, 29.7% work in the public sector and the rest in the private sector, with equal to 23.2% in the service sector, 17.4% in the tourism sector, 12.3% in the construction sector, 12.3% in the retail and trade sector and 5.1% in agriculture. It is noted that the distribution of the sample largely follows the distribution of the total employed population of Cyprus.

4.2. Responses by NPL Borrowers on Loan Issues

Of the total sample of 200 NPL borrowers, 66.5% had personal lending, 15% shared lending, and only 2% corporate lending. A small percentage of corporate lending is reasonable as most corporate loans are issued to legal entities. 4.5% of borrowers have all three types of lending, 9.5% maintain personal and joint lending, 1.5% personal and corporate lending, and 1% corporate and joint lending. Regarding the purpose of lending, 27% of the cases related to consumer loans, 13% residential loans, 12.5% student loans, 11% professional loans, 4% business loans, 5.5% farming loans, 5% investment loans, while 1.5% related to other purposes. Finally, 20.5% of borrowers reported multiple purposes, most commonly "consumer-residential" or "consumer-residential-student," but also "business-investment" or "business-investment-residential." It is of interest to note that 60.5% of NPL borrowers stated that since 2013 their lending had never been the subject of a restructuring, compared with 39.5% who had been the subject of restructuring at least once. Of the 79 borrowers whose loans had been restructured, 49.4% reported one restructuring, 27.8% two, 15.2% three, and 7.6% at least four. 44% of participants borrowing is in arrears, while 33% are in a state of termination and 21.5% are under a court order. Finally, 0.5% and 1% of borrowings are referred to interchangeably as "days in arrears and terminations" and "termination and court order," without a clear indication as to whether they were referring to the same or different lending.

As for the type of loan collateral, 38.5% report personal guarantees, 30.5% tangible security, 22.5% a combination of both, while only 8.5% stated that their lending has no collateral. Of the 122 borrowers with personal guarantees, half of these guarantees came, as expected, from the family environment, 30.3% from the workplace environment, 13.1% from friends, and the rest from other sources (2.5%) or a combination of the previous ones, i.e., family and workplace (1.6%), friends and family (1.6%) and friends and workplace (0.8%). In the case of 106 loans with collateral, 33% relate to a fixed charge on the main residence of the borrower, 29.2% to land property, 7.5% to another residence, 6.6% to an office building, 1.9% to another type of property and 21.7% to a combination of the above. In the same context, for 51.9% of loans with collateral, the loan balance has exceeded the Forced sale value of the fixed charge while 48.1% continues to be fully covered. The fact that more than half of the loans have exceeded the forced sale value of the collateral does not mean that when the loan was initially granted it was not fully covered. The main reasons identified for the problem of insufficient collateral lie in the capitalization of interest on loans in arrears and the reduction in the market value of collateral. It must also be noted that the loan balance refers to the current outstanding balance from the customer before any impairment or provision for impairment. Of the total number of participating borrowers, 60.5% reported that any repayment arrears did not start to occur in the first year of the loan, while 39.5% reported the occurrences in the first year. The very percentage of arrears starting in the first year is clear evidence of very bad practices in place, before the 2013 crisis mainly because the assessments of loan applications focused on the value of collateral rather than the borrower's ability to repay. Finally, regarding the main cause of loans falling into arrears, 21.5% reported a decrease in their incomes, 19% loss of work resulting in a reduction in incomes, 21% other causes such as unexpected increases in family expenses and other family problems, 5% health problems, 5% death, 4.5% disagreement with the terms of the loan, 2.5% divorce, while 21.5% some combination of the above that led to the decrease in incomes.

4.3. Analysis of Factors that Contribute to Loans Developing into NPLs

In this section, the factors that may affect the course of a loan and its potential development into NPL are explored by calculating bivariate correlations (Appendix for the complete set of the correlations). For interpretation purposes, we only report Spearman correlation coefficients that are significantly different from zero (i.e., statistically significant correlations for which the P-value is less than $\alpha = 5\%$ or even $\alpha = 1\%$). Table 1 shows the correlation coefficients between the variables that contribute towards loan development into NPL.

Age shows a relatively weak positive correlation with the amount of borrowing (Spearman's rho (ρ) = 0.223, P = 0.021 <α = 0.05) but also with the occurrence of arrears in the first year of the loan (ρ = 0.174, P = 0.014<α = 0.05). The first relationship suggests that as the borrower's age increases, the NPL is more likely to exceed 100%, while according to the second, younger borrowers tend to start repayment delays in the first year more often than older ones. Gender has a relatively weak negative correlation with the type of borrowing collateral ($\rho = -0.166$, P = 0.018<α = 0.05), but due to the non-operative nature of the two variables, no practical interpretation is given to the statistically significant relationship. A relatively weak negative correlation is also observed between the educational level and the possibility of arrears in the 1st year of the loan ($\rho = -0.166$, P = 0.019<α = 0.05), which may mean that borrowers with less education tend to fall in arrears on their loan obligations later than higher-educated borrowers. A similar relationship is found between the last updated place of residence and the possibility of arrears in the first year ($\rho = -0.192$, P = 0.006<α = 0.05). However, the non-orderly nature of the two variables does not allow for any practical interpretation.

Table 1: A correlational analysis of the determinants of non-performing loans

Variables	Gender	Age	Amount of borrowing	Arrear	Education	Place of residence	Sector of employment	Financial and professional profile	State of borrowing	Loan restructurings	Type of collateral
Gender	1.00										
Age		1.00									
Amount of borrowing		0.223 (0.021)	1.00								
Arrear		0.174 (0.014)		1.00							
Education				−0.166 (0.019)	1.00						
Place o9f residence				−0.192 (0.006)		1.00					
Sector of employment				−0.339 (0.000)			1.00				
Financial and professional profile								1.00			
State of borrowing							0.324 (0.000)	0.295 (0.000)	1.00		
Loan restructurings								0.248 (0.027)		1.00	
Type of collateral	−0.166 (0.018)						−0.503 (0.000)	−0.342 (0.000)			1.00

Only statistically significant correlations at the 1 and 5 percent levels are reported

The current financial and professional profile of the borrower shows a statistically very significant positive correlation with the current state of borrowing ($\rho = 0.295$, $P = 0.000 < \alpha = 0.01$), as well as a statistically significant positive correlation with the number of restructurings since 2013 ($\rho = 0.248$, $P = 0.027 < \alpha = 0.05$), but also statistically very significant negative correlation with the origins of personal collateral ($\rho = -0.342$, $P = 0.000 < \alpha = 0.01$). However, in this case too, apart from the existence of the possible relationship between the variables, due to their nature, it is not possible to further analyze it. Finally, the sector of employment of borrowers appears to have a statistically very significant positive correlation with the current situation of lending ($\rho = 0.324$, $P = 0.000 < \alpha = 0.01$) and statistically very significant negative correlation with the origins of personal collateral ($\rho = -0.503$, $P = 0.000 < \alpha = 0.01$) and the possibility of arrears from the first year of borrowing ($\rho = -0.339$, $P = 0.000 < \alpha = 0.01$), with no possibility of additional extensions.

In conclusion, the following findings arise:

i. Age may affect the amount of borrowing accessible to prospective borrowers about the amount of collateral available, which confirms the findings that very young or very old people have lower access to credit, but as age moves closer to the middle range the chances of having collateral that can ensure higher borrowing increase. On the other hand, younger people are more likely to find themselves unable to service their borrowing, as they usually have lower disposable income and more limited savings.
ii. Gender, in addition to its effect on access to borrowing, may also affect the type of collateral available, which can be attributed to the wider gender differences and discrimination in income and assets owned.
iii. Borrowers with higher education more frequently show arrears in the first year of borrowing than borrowers with a lower level of education, and this may also be due to more frequent borrowing to the former.
iv. The most recent place of residence appears to affect the incidence of repayment delays from the first year of borrowing, but this relationship does not reveal any further useful information.
v. The current financial and employment profile of the borrower affects the current state of borrowing since people with stable work and higher incomes will be less likely to delay the repayment of their loans. It is reasonable to expect the same characteristics to affect borrowers' ability to reach restructuring agreements in the case of NPLs. Finally, the financial and professional profile will also affect the origins of personal collateral.

4.4. Analysis of the Factors that Relate to Borrowing

In this section, the factors that may affect the course of a loan and its potential development into NPL are explored by calculating bivariate correlations. Again, for interpretation purposes, we only report Spearman correlation coefficients that are significantly different from zero. Table 2 shows the correlation coefficients between the variables that relate to lending.

The type of borrowing shows a statistically very significant positive correlation with the purpose of borrowing ($\rho = 0.562$,

Table 2: Correlational analysis of key variables influencing borrowing behavior

Variables	Type of borrowing	Purpose of borrowing	The main cause of delays	Delays 1st year of borrowing	State of borrowing	Loan restructurings	Origin of personal collateral	Type of collateral
Type of borrowing	1.00							
Purpose of borrowing	0.562 (0.000)	1.00						
The main cause of delays	0.147 (0.037)	0.233 (0.001)	1.00					
Delays 1st year of borrowing				1.00				
State of borrowing	−0.154 (0.027)	−0.152 (0.032)	0.166 (0.019)	−0.319 (0.000)	1.00			
Loan restructurings		0.222 (0.0 49)	0.183 (0.009)	−0.172 (0.015)	0.563 (0.000)	1.00		
Origin of personal collateral		0.247 (0.007)					1.00	
Type of collateral	−0.387 (0.000)	0.262 (0.000)			0.358 (0.000)	0.241 (0.013)		1.00

Only statistically significant correlations at the 1 and 5 percent levels are reported

P = 0.000<α = 0.01) and the type of collateral (ρ = 0.387, P = 0.000<α = 0.01), as well as a statistically significant positive correlation with the cause of the delays (ρ = 0.147, P = 0.037<α = 0.05) and statistically significant negative correlation with the current borrowing situation (ρ = −0.154, P = 0.027<α = 0.05). The purpose of borrowing has a statistically very significant positive correlation with the cause of the start of delays (ρ = 0.233, P = 0.001<α = 0.01), the type of collateral (ρ = 0.262, P = 0.000<α = 0.01) and the origin of personal collateral (ρ =0.247, P = 0.007<α = 0.01), and has a statistically significant positive correlation with the number of loan restructurings since 2013 (ρ = 0.222, P = 0.0 49<α = 0.05) and statistically significant negative correlation with the current state of borrowing (ρ = −0.152, P = 0.032<α = 0.05).

Loan restructuring since 2013 is positively and very significantly correlated with the current state of borrowing (ρ = 0.563, P = 0.000<α = 0.01), the type of collateral (ρ = 0.358, P = 0.000<α = 0.01) and the main cause of the start of delays (ρ = 0.183, P = 0.009<α = 0.01). It also shows a statistically significant positive correlation with the type of collateral (ρ = 0.241, P = 0.013<α = 0.05) and a statistically significant negative correlation with the possibility of delays from the 1st year of borrowing (ρ = −0.172, P = 0.015<α = 0.05). In contrast, the number of loan restructurings since 2013 has a statistically significant negative correlation with the type of collateral (ρ = −0.324, P = 0.021<α = 0.05). Finally, the current state of borrowing shows a statistically very significant positive correlation with the type of collateral (ρ = 0.172, P = 0.005<α = 0.01) and the origin of personal collateral (ρ = 0.353, P = 0.000<α = 0.01), and has a statistically significant positive correlation with the main cause of the delays (ρ = 0.166, P = 0.019<α = 0.05) and statistically very significant negative correlation with the possibility of delays from the first year of borrowing (ρ = −0.319, P = 0.000<α = 0.01).

In summary, the following conclusions are drawn:

i. The type of borrowing relates to the purpose of borrowing and the type of collateral. This is almost self-evident since loans granted for residential, student, or consumer purposes usually relate to personal lending. In contrast, in the case of business or investment purposes, it is more common to grant corporate lending.
ii. The type of collateral shall depend on the type, amount, and purpose of the loan. For example, personal residential loans almost always require at least one collateral that is the house itself, while personal or business loans often require personal guarantees or a combination of the two. Small personal consumer loans or corporate lending in the form of limited working capital lending often require no collateral.
iii. The type and purpose of borrowing are also related to the cause of the start of the delays, but also to the current state of borrowing. Similarly, personal loans may be easier and/or more likely to be terminated with or without a court order, compared to corporate loans, which involve more complex procedures and, due to their amount, banking institutions often make stronger efforts to find a viable solution. In the same context and with the same logic, it can be justified that the purpose of the loan is also related

to the number of restructurings to which the borrower has been subject since 2013.

iv. Loan restructuring since 2013 is related to the main cause of the start of delays, the current state of borrowing, the possibility of delays from the first year of borrowing, but also the type and amount of collateral, which also affects the number of restructurings. If the cause of the delays relates to health problems or death, it may be more difficult for the borrower to try to be subject to some restructuring, whereas if the delays began due to a loss of income which was subsequently reduced, the borrower would be more likely to have joined a restructuring scheme. On the other hand, it is reasonable to expect that NPL cases involving strategic defaulters do not have a high probability of joining a restructuring scheme. If the delays occur from the first year of borrowing, then they will either involve strategic defaulters who will not be interested in being restructured, or borrowers who have encountered a sudden or very serious problem. In such cases, the possibility of a restructuring depends on the subsequent state of their demographic profile. Finally, regarding the type and origin of collateral (personal or tangible collateral), the existence of such collateral may limit the chances of restructuring if there are alternative sources of repayment of the loan.

v. The current state of borrowing relates to the main cause of the start of repayment delays and the possibility of such delays from the first year of borrowing, as well as the type and amount of collateral, which is attributed to the same reasons as the conclusion above.

4.5. Generalized Method of Moments (GMM) Results

Table 3 displays the results of the GMM estimation. The results indicate that most of the explanatory variables show statistically significant coefficients and can explain the NPLs. Overall, the coefficients presented in the table show that NPL loans are influenced by both macroeconomic and bank-specific factors.

In order to check the fitness of GMM specification, we apply three tests. First, we perform the Hansen test which checks for the potential misspecification of the model. Based on the (difference) Hansen J statistic, with a P = 0.301, the null hypothesis is not rejected, so the variables utilized are appropriate. Second, the over-identifying restrictions test via Sargan specification to check the validity of the instruments used as the moment conditions. According to the Sargan test, the instrumental variables used in the estimation are valid since there is no correlation between the instruments and errors. Third, we test the fundamental assumption of serial uncorrelated error. The tests confirm that there is no first-order (AR1) or second-order (AR2) serial correlation.

Except for the non-statistically significant variables, all other coefficients have expected signs. As in most studies, GDP growth explains, to a large extent, NPLs. Economic conditions determine a borrower's ability to repay the loans. There is a negative relationship between the variables. The results indicate that there is a positive and statistically significant effect of the one period lagged NPL, which confirms the hypothesis that the past year's NPL values positively affect subsequent years. They also indicate a positive and statistically significant effect of inflation on NPLs at the 5 percent level. It shows that an increase in inflation decreases the purchasing power of income, and the upward-adjusted interest rate makes it more difficult for the borrower to repay the loan. As expected, there is a positive correlation between the interest rate and NPLs. Thus, the increase in the interest rate puts an additional burden on debtors with variable-rate loan contracts. There is supportive evidence that there is a positive relationship between unemployment and NPLs. Therefore, if people suddenly become unemployed their ability to repay loans is adversely affected and NPLs are raised. The results also show a small but statistically insignificant negative effect of loan growth on the NPLs. This finding was expected, and it confirms that an increase in the number and number of loans leads to a decrease in the NPLs. Finally, the indicator of past performance as measured by return on asset, has a negative sign but does not significantly influence the NPLs according to the results.

Table 3: GMM estimation results: Identifying determinants of non-performing loans

Explanatory variables	Dependent variable: NPLs
Constant	1.322*** (0.501)
NPL (t-1)	0.112** (0.046)
Economic growth	−0.164** (0.068)
Inflation	0.388** (0.171)
Interest rate	0.314* (0.178)
Unemployment	0.168*** (0.0601)
Exchange rate	0.002 (0.047)
Loans growth	−0.003 (0.007)
Return on assets	−0.267 (0.705)
Hansen test (P-value)	0.301
Sargan test (P-value)	0.129
AR1 (P-value)	0.822
AR2 (P-value)	0.498

Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively

5. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

This study carried out a thorough analysis of the characteristics and role of loans in the financial system, the procedure and conditions for granting loans, and their possible evolution into NPLs, due to several macroeconomic and banking-specific factors that contribute to the increase in NPLs.

The results show that there are statistically significant correlations between characteristics of the borrower's profile such as age, gender, educational level, occupational and financial situation, and the area of residence with data relating generally to the taking of loans (type and purpose of borrowing, type, and origin of collateral), but also to the state of problem lending, the timing of the start of the problems of delays in the servicing of loan obligations, and the inclusion in a regime of restructuring to try to address them.

A statistically significant correlation between gender and type of lending collateral has been identified but the nature of this relationship cannot be clarified. A similar relationship without a specific practical interpretation was found between the last

updated province of residence and the possibility of delays in the first year of borrowing. The current professional and/or financial situation of the borrower is related both to the current situation of the loan and to the number of restructurings since 2013, but also to the origin of personal collateral. However, due to the non-orderly nature of the variables, it is not possible to further analyze these correlations. Finally, similar correlations with no possibility of further clarification were found between the sector of employment of borrowers and the current situation of lending, the origin of personal guarantees, and the possible delays from the first year of lending.

Existing literature demonstrates that the existence of a private residence, the loan-available income ratio, the age of the borrower, the number of repaid and repayable installments, the number of years of residence in the current residence, the total monthly income and the number of years of work in the current employer are critical factors that affect the late repayment of loans. There are similar correlations in this study, in particular as regards the characteristics of the borrower's profile and the occurrence of repayment delays. In addition, statistically significant correlations are observed between the various variables directly related to lending and its possible evolution into NPL. The type of lending is related both to the purpose of lending and the type of collateral, as well as to the cause of the start of the delays and the current state of lending. On the other hand, correlations were recorded between the purpose of lending and the cause of the start of delays, the type of collateral, the origin of personal collateral, the number of restructurings since 2013, and the current state of lending. At the same time, the inclusion in loan restructurings from 2013 onwards and the number of such loans is, as expected, linked to the current state of lending, the LTV of collateral, and the main cause of the start of the delays, as well as to the type of real estate collateral and the possibility of delays from the first year of lending. Finally, the current state of lending is related to the type of collateral, the LTV of collateral, the type of real estate collateral, the main cause of the start of delays, and the possibility of delays from the first year of lending.

These results are consistent with the existing literature on the factors contributing to the increase in NPLs related to credit institutions. In particular, the correlation of the characteristics of the borrower's profile with data relating to both the granting of loans and their development into NPLs confirms the fact that credit institutions that relax lending criteria and do not strictly apply the provisions of the regulatory framework for the use of risk prevention and management mechanisms are more exposed to credit risk. In a large part of the sample under study, it appears that the initial assessment of lending was largely based on securing it rather than on the borrower's ability to repay, which contrasts with the CBC's directives and, by extension, the ECB's lending directives. However, taking into account that a large proportion of the loans under study started repayment delays within the first year after their disbursement, it confirms the bad and/or incorrect management practices of the lending policy of the bank.

The GMM results showed that lower economic growth, higher inflation, higher interest rates, and higher unemployment rates are associated with higher non-performing loans. Additionally, NPLs are affected by bank-specific variables such as last year's NPL, return on assets (performance), and loan growth.

The study has several limitations that should be considered. First, while the research identifies statistically significant correlations between certain borrower characteristics (such as gender and the type of lending collateral, or the province of residence and the possibility of delays in the first year of borrowing), the nature of these relationships remains unclear. This ambiguity suggests that, although there is a measurable association, the underlying reasons for these correlations could not be determined, restricting a deeper understanding of how these factors influence loan performance. Additionally, due to the non-ordinal nature of some variables, such as the borrower's current professional or financial situation, the study could not perform a more detailed analysis of certain correlations. This limits the ability to draw more precise conclusions about the impact of specific borrower characteristics on loan repayment or default. The study also uses cross-sectional data from 2013 to 2019, which may not fully capture the dynamic changes in borrower behavior or economic conditions over time. A longitudinal approach could provide more insights into how changes in borrower circumstances or macroeconomic conditions impact loan performance. Moreover, while both borrower-specific and macroeconomic factors are considered, the scope of macroeconomic variables examined may not fully represent all external economic conditions affecting NPLs. The study's focus on a limited set of variables might omit other influential factors, such as broader financial market conditions, policy changes, or international economic shocks. Finally, the study is based on a sample of 200 NPLs from a single banking institution in Cyprus, which may limit the generalizability of the findings to other banks or countries. A larger sample, including multiple banks or cross-country data, could provide more robust results and improve the applicability of the conclusions to different contexts.

To address these limitations, future research could explore the underlying reasons for the observed but unexplained correlations, such as those between gender and the type of lending collateral or the province of residence and early loan repayment delays. Qualitative methods like interviews or case studies could provide deeper insights into these relationships. Future studies could also expand the range of macroeconomic variables considered, including factors like interest rates, inflation, unemployment rates, and economic growth indicators, to provide a more comprehensive analysis of the external influences on NPLs. Additionally, employing longitudinal or panel data analysis could allow researchers to track changes in borrower behavior and loan performance over time, providing a better understanding of how borrower circumstances and economic conditions evolve and impact the likelihood of loans becoming non-performing. Comparative analysis across different banks or countries could enhance the generalizability of the findings by incorporating a more diverse sample. Further research could also examine the impact of specific policy changes or banking interventions, such as regulatory adjustments or loan restructuring programs, on the evolution of NPLs. This could offer valuable insights into the effectiveness of different strategies for managing credit risk and reducing NPLs. Finally, developing predictive models to

forecast NPLs using a combination of borrower-specific and macroeconomic factors, potentially employing machine learning techniques or advanced econometric models, could improve the accuracy of forecasts and assist banks and regulators in better-managing credit risk.

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APPENDIX

Appendix: Correlation Coefficients

Correlations

			Σε ποια ηλικιακή ομάδα ανήκει ο δανειολήπτης;	Ποιο είναι το φύλο του δανειολήπτη;	Σε ποια γεωγραφική περιοχή δέμενε ο δανειολήπτης κατά την παραχώρηση του δανείου;	Σε ποια περιοχή δέμενε ο δανειολήπτης κατά την παραχώρηση του δανείου;	Ποια είναι η σημερινή (τελευταία επαυξημένη) γεωγραφική περιοχή του δανειολήπτη;	Ποια είναι η σημερινή (τελευταία επαυξημένη) περιοχή του δανειολήπτη;	Ποιο είναι το μορφωτικό επίπεδο του υπό εξέταση δανειολήπτη;	Ποια η σημερινή επαγγελματική / οικονομική κατάσταση του δανειολήπτη;	Νιοσυμένου ότι ο δανειολήπτης εργοδοτείται, δηλώστε σε ποιο κλάδο απασχολείται σήμερα.	Τι δανειομό διατηρεί ο δανειολήπτης;	Για ποιο σκοπό παραχωρήθη κε ο δανειομός;	Δηλώστε κατά πόσο ο δανειομός του δανειολήπτη έχει τύχει οποιαδήποτε ρύθμισης από το 2013 και μετά.	Αν ναι, να δηλώστε πόσες φορές;	Ποια είναι η σημερινή κατάσταση του δανειομού;	Ποιο είναι το είδος εξασφάλισης;	Αν ο δανειομός εξασφαλίζεται με προσωπικές εγγυήσεις, από ποιο περιβάλλον του δανειολήπτη προέρχονται;	Αν ο δανειομός εξασφαλίζεται και με εμπράγματη εξασφάλιση, δηλώστε το είδος ακινήτων:	Αν ο δανειομός εξασφαλίζεται και με εμπράγματη εξασφάλιση, δηλώστε το Loan to Value βάσει καταναγκαστικής αξίας (LTVκ):	Δηλώστε κατά πόσο οι καθυστερήσεις του δανειομού ξεκίνησαν να παρουσιάζονται κατά τον πρώτο χρόνο του δανειομού;	Δηλώστε την κύρια αιτία έναρξης καθυστερήσεων;
Spearman's rho	Σε ποια ηλικιακή ομάδα ανήκει ο δανειολήπτης;	Correlation Coefficient	1,000	-,042	,017	,160*	-,032	,190**	-,708**	,336**	-,198*	,103	,137	-,031	,139	,128	,133	,166	-,042	,223*	,174*	,053
		Sig. (2-tailed)	.	,554	,806	,024	,649	,007	,000	,000	,020	,147	,054	,660	,220	,071	,061	,067	,669	,021	,014	,456
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποιο είναι το φύλο του δανειολήπτη;	Correlation Coefficient	-,042	1,000	,030	,037	,002	-,019	-,060	-,030	,223**	-,104	-,049	,051	-,005	,020	-,166*	-,004	-,123	-,147	-,075	-,006
		Sig. (2-tailed)	,554	.	,674	,605	,981	,786	,399	,671	,009	,143	,488	,475	,965	,782	,018	,966	,208	,132	,289	,936
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Σε ποια γεωγραφική περιοχή δέμενε ο δανειολήπτης κατά την παραχώρηση του δανείου;	Correlation Coefficient	,017	,030	1,000	-,064	,666**	-,050	,018	-,016	,073	-,023	,036	,035	,049	-,065	-,035	-,076	-,029	,060	-,127	,047
		Sig. (2-tailed)	,806	,674	.	,369	,000	,483	,799	,823	,392	,746	,617	,624	,667	,357	,627	,405	,770	,542	,074	,510
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Σε ποια περιοχή δέμενε ο δανειολήπτης κατά την παραχώρηση του δανείου;	Correlation Coefficient	,160*	,037	-,064	1,000	-,061	,500**	-,120	,198**	,027	-,062	-,037	,021	,012	,045	-,011	-,163	,078	,047	,021	-,003
		Sig. (2-tailed)	,024	,605	,369	.	,392	,000	,090	,005	,751	,386	,605	,763	,913	,525	,880	,074	,426	,635	,763	,961
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποια είναι η σημερινή (τελευταία επαυξημένη) γεωγραφική περιοχή του δανειολήπτη;	Correlation Coefficient	-,032	,002	,666**	-,061	1,000	-,047	,095	-,027	,057	-,027	,016	,136	,050	,015	-,008	-,100	,028	,088	-,192**	,063
		Sig. (2-tailed)	,649	,981	,000	,392	.	,512	,183	,707	,509	,703	,825	,056	,659	,837	,915	,274	,777	,371	,006	,376
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποια είναι η σημερινή (τελευταία επαυξημένη) περιοχή του δανειολήπτη;	Correlation Coefficient	,190**	-,019	-,050	,500**	-,047	1,000	-,226**	,286**	,051	-,136	-,036	,121	-,034	,128	,034	-,032	,095	,093	,033	,028
		Sig. (2-tailed)	,007	,786	,483	,000	,512	.	,001	,000	,556	,054	,614	,087	,768	,072	,634	,726	,335	,345	,643	,691
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποιο είναι το μορφωτικό επίπεδο του υπό εξέταση δανειολήπτη;	Correlation Coefficient	-,708**	-,060	,018	-,120	,095	-,226**	1,000	-,327**	,126	,092	,082	-,043	-,144	-,075	,022	,035	,124	-,164	-,166*	,063
		Sig. (2-tailed)	,000	,399	,799	,090	,183	,001	.	,000	,140	,195	,247	,543	,204	,289	,759	,704	,207	,093	,019	,374
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποια η σημερινή επαγγελματική / οικονομική κατάσταση του δανειολήπτη;	Correlation Coefficient	,336**	-,030	-,016	,198**	-,027	,286**	-,327**	1,000	,447**	-,133	-,045	,100	,248*	,295**	,086	-,342**	,051	,111	-,097	-,011
		Sig. (2-tailed)	,000	,671	,823	,005	,707	,000	,000	.	,000	,061	,523	,159	,027	,000	,226	,000	,601	,256	,173	,879
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Νιοσυμένου ότι ο δανειολήπτης εργοδοτείται, δηλώστε σε ποιο κλάδο απασχολείται σήμερα.	Correlation Coefficient	-,198*	,223**	,073	,027	,057	,051	,126	,447**	1,000	-,018	-,143	,133	,136	,324**	,074	-,503**	,150	,086	-,339**	-,090
		Sig. (2-tailed)	,020	,009	,392	,751	,509	,556	,140	,000	.	,830	,095	,120	,328	,000	,385	,000	,230	,492	,000	,293
		N	138	138	138	138	138	138	138	138	138	138	138	138	54	138	138	96	66	66	138	138
	Τι δανειομό διατηρεί ο δανειολήπτης;	Correlation Coefficient	,103	-,104	-,023	-,062	-,027	-,136	,092	-,133	-,018	1,000	,562**	-,221**	,148	-,154*	,387**	,139	,172	,153	,090	,147*
		Sig. (2-tailed)	,147	,143	,746	,386	,703	,054	,195	,061	,830	.	,000	,002	,193	,029	,000	,127	,078	,117	,207	,037
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Για ποιο σκοπό παραχωρήθηκε ο δανειομός;	Correlation Coefficient	,137	-,049	,036	-,037	,016	-,036	,082	-,045	-,143	,562**	1,000	-,129	,222*	-,152*	,262**	,242**	,053	,062	,061	,233**
		Sig. (2-tailed)	,054	,488	,617	,605	,825	,614	,247	,523	,095	,000	.	,069	,049	,032	,000	,007	,591	,526	,394	,001
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Δηλώστε κατά πόσο ο δανειομός του δανειολήπτη έχει τύχει οποιαδήποτε ρύθμισης από το 2013 και μετά.	Correlation Coefficient	-,031	,051	,035	,021	,136	,121	-,043	,100	,133	-,221**	-,129	1,000	.	,563**	-,009	,076	,241*	,358**	-,172*	,183**
		Sig. (2-tailed)	,660	,475	,624	,763	,056	,087	,543	,159	,120	,002	,069	.	.	,000	,899	,406	,013	,000	,015	,009
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Αν ναι, να δηλώσετε πόσες φορές;	Correlation Coefficient	,139	-,005	,049	,012	,050	-,034	-,144	,248*	,136	,148	,222*	.	1,000	,216	-,029	-,009	-,324*	,033	-,314**	,015
		Sig. (2-tailed)	,220	,965	,667	,913	,659	,768	,204	,027	,328	,193	,049	.	.	,056	,798	,952	,021	,816	,005	,893
		N	79	79	79	79	79	79	79	79	54	79	79	79	79	79	79	48	51	51	79	79
	Ποια είναι η σημερινή κατάσταση του δανειομού;	Correlation Coefficient	,128	,020	-,065	,045	,015	,128	-,075	,295**	,324**	-,154*	-,152*	,563**	,216	1,000	,172*	-,151	,205*	,353**	-,319**	,166*
		Sig. (2-tailed)	,071	,782	,357	,525	,837	,072	,289	,000	,000	,029	,032	,000	,056	.	,015	,090	,035	,000	,000	,019
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Ποιο είναι το είδος εξασφάλισης;	Correlation Coefficient	,133	-,166*	-,035	-,011	-,008	,034	,022	,096	,074	,387**	,262**	-,009	-,029	,172*	1,000	,136	,195*	,186	-,041	,289**
		Sig. (2-tailed)	,061	,018	,627	,880	,915	,634	,759	,226	,395	,000	,000	,899	,798	,015	.	,135	,045	,056	,563	,000
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Αν ο δανειομός εξασφαλίζεται με προσωπικές εγγυήσεις, από ποιο περιβάλλον του δανειολήπτη προέρχονται;	Correlation Coefficient	,166	-,004	-,076	-,163	-,100	-,032	,035	-,342**	-,503**	,139	,242**	,076	-,009	-,151	,136	1,000	-,075	,093	,245**	,271**
		Sig. (2-tailed)	,067	,966	,405	,074	,274	,726	,704	,000	,000	,127	,007	,406	,952	,096	,135	.	,619	,541	,007	,003
		N	122	122	122	122	122	122	122	122	96	122	122	122	48	122	122	122	46	46	122	122
	Αν ο δανειομός εξασφαλίζεται και με εμπράγματη εξασφάλιση, δηλώστε το είδος ακινήτων:	Correlation Coefficient	-,042	-,123	-,029	,078	,028	,095	,124	,051	,150	,172	,053	,241*	-,324*	,205*	,195*	-,075	1,000	,199*	,010	,084
		Sig. (2-tailed)	,669	,208	,770	,426	,777	,335	,207	,601	,230	,078	,591	,013	,021	,035	,045	,619	.	,041	,922	,392
		N	106	106	106	106	106	106	106	106	66	106	106	106	51	106	106	46	106	106	106	106
	Αν ο δανειομός εξασφαλίζεται και με εμπράγματη εξασφάλιση, δηλώστε το Loan to Value βάσει καταναγκαστικής αξίας (LTVκ):	Correlation Coefficient	,223*	-,147	,060	,047	,088	,093	-,164	,111	,086	,153	,062	,358**	,033	,353**	,186	,093	,199*	1,000	-,165	,135
		Sig. (2-tailed)	,021	,132	,542	,635	,371	,345	,093	,256	,492	,117	,526	,000	,816	,000	,056	,541	,041	.	,090	,167
		N	106	106	106	106	106	106	106	106	66	106	106	106	51	106	106	46	106	106	106	106
	Δηλώστε κατά πόσο οι καθυστερήσεις του δανειομού ξεκίνησαν να παρουσιάζονται κατά τον πρώτο χρόνο του δανειομού;	Correlation Coefficient	,174*	-,075	-,127	,021	-,192**	,033	-,166*	-,097	-,339**	,090	,061	-,172*	-,314**	-,319**	-,041	,245**	,010	-,165	1,000	-,073
		Sig. (2-tailed)	,014	,289	,074	,763	,006	,643	,019	,173	,000	,207	,394	,015	,005	,000	,563	,007	,922	,090	.	,305
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200
	Δηλώστε την κύρια αιτία έναρξης καθυστερήσεων;	Correlation Coefficient	,053	-,006	,047	-,003	,063	,028	,063	-,011	-,090	,147*	,233**	,183**	,015	,166*	,289**	,271**	,084	,135	-,073	1,000
		Sig. (2-tailed)	,456	,936	,510	,961	,376	,691	,374	,879	,293	,037	,001	,009	,893	,019	,000	,003	,392	,167	,305	.
		N	200	200	200	200	200	200	200	200	138	200	200	200	79	200	200	122	106	106	200	200

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).