Retail banking integration in the euro area

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Abstract

This disseration focuses on the analysis of retail interest rate differentials across the euro area countries and tries to identify their underlying reasons and their implications as well. In this context we pay attention on the local nature of retail banking which sufficiently describes the heterogeneity of retail banking market and the divergence of retail financial products and services rates. The available literature points out that despite the introduction of the common currency European banking sector is still fragmented. This situation has been further deteriorated owing to the recent economic crisis across the euro area. We examine through the use of descriptive statistics the course of the composite cost-of-borrowing indicator and confirm the aforementioned findings.

Key words: retail interest rate differentials, retail banking integration, divergence, heterogeneity, composite cost-of-borrowing indicator

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Introduction

The introduction of the single currency signaled a new economic environment and altered the conditions under which monetary policy is conducted in the euro area. This vital step towards EMU though generated extensive discussions over the observed heterogeneity of the national banking sectors across the euro area countries. In response, several studies placed emphasis on the fact that cross-country differences in financial structure may lead to asymmetric effects of the single monetary policy thereby further complicating its implementation. Special attention has been also devoted to the extent to which national banking sectors behave heterogeneously concerning the pricing of retail bank interest rates under a common monetary policy regime. Owing to the key position of the banking sector at the centre of the euro area financial system the pricing of retail banking products, e.g. loans and deposits, is a crucial element concerning monetary policy transmission mechanism. In particular, the empirical literature questions whether there exists a heterogeneous pass-through process which in turn induces asymmetric monetary policy transmission. The majority of these studies document that the degree and speed of pass-through is different across countries as well as across banking products.

Despite the initial expectations, the current situation in the euro area financial market is described and summarized by the phrase *integrated wholesale markets, fragmented retail markets*. From a monetary policy perspective, it should be highlighted that it had been assumed that the observed asymmetries regarding the pass-through process would be outweighed by the financial integration that the single currency would induce and the convergence of the financial structure that the regime by itself would trigger. However, the available literature (Kleimeier & Sander, 2002; Schuler & Heinemann, 2002; Cabral, et al., 2002; Baele, et al., 2004; Walkner & Raes, 2005; Kleimeier & Sander, 2006; Affinito & Farabullini, 2006; Kok Sørensen & Gutiérrez, 2006; Vajanne, 2007; Rughoo & Sarantis, 2014) provides evidence that this process is not without obstacles. In practice, the initial expected integration of the euro area economies has not been achieved yet to the extent that had been predicted by the adherents of this view. Therefore, it is not surprising that incomplete integration of retail banking is stressed by the majority of the empirical studies. In practice, the lack of integration of retail markets is reflected in limited convergence of retail interest rates suggesting insufficient competition. Indeed, the implication of bank competition for the conduct of monetary policy is decisive because if banks operate in a

weak competitive environment monetary policy changes are likely to be transmitted less forcefully than under the situation of full competition. Thus, weak competition is the major obstacle to further financial integration. However, the integration of retail banking markets is expected to be intensified in the near future, without meeting though, the vision of the full integration that the single market project generated. In fact, the main reason lying behind the heterogeneity of national retail banking markets among the euro area is the strong local nature of retail banking activities. Consequently, despite the measures that have been taken targeting financial integration and bank competition, retail banking markets are still fragmented. It becomes apparent that as long as the local nature of retail banking remains an important determinant of the transmission mechanism, the single monetary policy is likely to be implemented in a heterogeneous euro area and retail interest rate differentials are unlikely to be eliminated. Moreover, the low level of retail banking integration has been further deteriorated owing to the recent crisis of the euro area. The available data suggest that the euro area retail has experienced a re-emergence of segmentation. It is interesting that retail banking markets were initially less affected by the European and global financial turmoil because of their fragmented structure. In practice, the financial crisis had a quite clear negative impact on retail banking integration.

In summary the evidence in the available literature suggest a fragmented retail banking market across the euro area, whereas retail banking integration process is slow and unstable. In this context, the purpose of this dissertation is to identify the underlying reasons of the observed retail interest rate differentials and to assess the state of euro area retail banking integration. The length of the dissertation does not allow for an extensive analysis of the different retail banking products, so we focus on an overall assessment of retail banking services. The structure of the dissertation is the following: the first chapter briefly presents some key aspects of the financial system of the euro area. The second chapter presents the definition of financial integration and a set of financial integration indicators. The third chapter assesses the current state of retail banking integration and describes the literature review. The forth chapter identifies the linkages between pass-through, integration and bank competition in the context of monetary policy. The fifth chapter examines the course and the evolution of financial integration on the basis of a price-based indicator, the composite cost-of-borrowing indicator, developed by the European Central Bank. The last chapter concludes and summarizes the dissertation.

1. The banking system of the euro area

Bank lending plays a critical role in Europe as it provides funds to the corporate, private, and public sector. According to the report of European Commission (2014) concerning European financial stability and integration, the EU banking system in terms of size, concentration and cross border ownership is very different among EU members. In particular in most EU members the total assets of national banking systems exceed GDP by two to four times. The size of the banks is much higher in countries such as Luxembourg, Malta, Cyprus and Ireland, whereas these countries' bank size is followed by the UK, Denmark, France and the Netherlands. On the contrary countries such as Romania, Lithuania and Poland have considerably smaller banks compared to GDP. However given the existence of cross-border financial conglomerates the domestic size of banking system does not play such a vital role. In practice the domestic size of the banking system must be considered in combination with the assets held by foreign banks. In this context the EU banking system can be divided in three different categories of business models. The first model refers to Central and Eastern European countries that have a small sized banking system which is dominated by foreign ownership (more than 50%). The second business model refers to countries with a long banking tradition that are dominated by domestic banks. The third model is represented by countries that play the role of financial hubs that have very large banking systems in which foreign banks have a strong presence. Concerning retail banking it is highlighted that retail banking activities require banks to be located close to their customers. So, domestic banks provide the most of the loans to households and non-financial corporations. Given the local nature of retail banking financial integration in retail activities is achieved foreign ownership of banks in domestic market rather that cross border provision of retail banking services.

The fragmented retail banking market is a very important feature of the banking system in the euro area. This feature though appears to be an endogenous and integral component of retail banking which rests on the local nature of retail banking activities. The integration process of retail banking is slower in that area of financial market. Besides, the emergence of the euro area has favored the convergence of retail banking products interest rates, but considerable differences have remained across euro area members suggesting a strong segmentation. More in particular, retail banking represents the traditional business of banks. In this context banks'

customers are mainly households or small corporations. Retail banking traditional core activity is the intermediation between those who save and those who want to borrow. So, retail banking products encompasses the traditional loan and deposit types (consumer credit, mortgages, commercial loans, savings deposit accounts). So the retail banking market differs from wholesale and capital market-related products in two main elements. First, the proximity of banks to its retail customers is crucial because this type of customers has little mobility and hence distribution networks play an important role in retail banking. Second, retail banking market is highly diversified because it includes numerous small banks and huge financial conglomerates that offer a wide range of different credit (Cabral et al. 2002). In this context, as long as the local nature of retail banking remains the integration process will be slow and the financial structure will remain heterogeneous.

As the report of ESBG (2009) highlights any comprehensive discussion on market integration should take into account that the euro area markets for retail banking products and services are characterized by diversity. This diversity should be illustrated in order to get an insight of the current situation of retail financial services market. The fact that the main provider of retail financial products and services in EU are banks which comply with EU banking regulations, does not imply a common European banking model. In practice, European banks differ concerning their organizational structure, size, profitability, orientation and ownership. Actually instead of a European banking model, a European pluralistic model of a banking sector is in place. Indeed, the variety of retail options for banking is impressive reflecting multiple European banking traditions. More in particular, retail banking market in Europe follows three core models, namely commercial banks, cooperative banks and savings banks, which are not mutually exclusive though. These three core models represent different approaches towards banking. Overall this rich diversity is a crucial aspect for any cross-European assessment. Moreover, the diversity of Europe's retail banking markets implies there is not any single market structure but a variety of market structures. This fact is important in the context of retail market integration as there is no recipe for a harmonic and integrated retail banking sector. In practice, policies that push forward further integration of retail financial services market must incorporate the local dimension feature of retail banking. Indeed, the proximity and accessibility between the provider of retail financial services and the customer is fundamental. The local character of retail banking should be taken into consideration when market integration strategies are designed end

implemented. The local character of retail banking business actually depends on the strong local demand for retail banking products and services. Indeed, despite the significant similarities across European countries households and SMEs demand for retail services is affected by domestic economic conditions, traditions and other factors. This implies that retail banking business differs across countries and hence successful strategies are local. Owing to these differences retail banking products and services are not homogeneous. So, demand is driven by local conditions and circumstances. The local nature of retail banking has important implications for retail banking integration. Indeed, as long as cross-border banking refers to a situation that providers and customers are placed in different countries, retail market integration through cross-border provision of retail financial products and services will be limited to neighboring countries. Moreover, if integration refers to the establishment of branches or subsidiaries of foreign banks to a European country then foreign banks have to adapt to local business environment and cannot transfer their own domestic business model. In addition, the successful penetration and entry to a domestic retail banking market requires great investments which are discouraging, especially for mature and competitive markets.

2. Definition and measurement of financial integration

Many studies have defined financial integration taking into consideration the concept of the "law of one price". In particular, this broadly used definition assumes that two markets are integrated when identical goods or assets are priced equally across borders. In the context of financial products and services under the law of one price retail banking products, after the completion of the integration progress, should be priced identically. More in particular, the Cecchini Report (1998) adopting an optimistic scenario of perfect mobility of capital and identical conditions of risk, assumed that in a situation of complete financial integration the law of one price would hold and hence interest rates would fully converge.

According to Baele et al. (2004) an integrated financial market can be defined on the basis of three characteristics. More in particular:

"The market for a given set of financial instruments and/or services is fully integrated if all potential market participants with the same relevant characteristics (1) face a single set of rules when they decide to deal with those financial instruments and/or services; (2) have equal access to the above-mentioned set of financial instruments and/or services; and (3) are treated equally when they are active in the market" (Baele et al., 2004: 6).

This particular definition of financial integration includes three fundamental features. First, it is not based on the financial structures across different countries. It is not surprising for different countries to retain the differences of their different financial structures, namely all financial intermediaries, markets and institutions that interact in order to fund households, corporations and governments. Even after integration these different structures are not likely to converge. Second, financial integration does not necessarily imply that the process of intermediation will be without frictions that impede the optimal allocation of capital. Indeed, financial integration place emphasis on the effects of those frictions on different countries rather than removing these frictions. Phrased differently financial integration can be achieved in the presence of frictions if they have a symmetric impact on different countries. Third, the definition of financial integration of Baele et al. implies that full integration requires equal access to financial services for both investors and firms regardless of their origin. That means that full integration rules out discrimination for investment opportunities among market participants. Overall Baele et al. argue that their definition includes the law of one price. In particular, if the law of one price does not hold, namely if financial services are not priced identically, there would be room for arbitrage opportunities. However, if there is no discrimination, market participants would exploit those arbitrage opportunities and hence they would restore the law of one price. The authors underline though that on one hand the law of one price allows for quantitative measures, but one the other hand it ignores some crucial aspects of financial integration.

This definition by Beale et al. (2004) actually refers to the definition for financial integration adopted by the ECB. More in particular:

"The ECB has adopted a definition of financial integration: it considers the market for a given set of financial instruments or services to be fully integrated when all potential market participants in such a market (i) are subject to a single set of rules when they decide to deal with those financial instruments or services, (ii) have equal access to this set of financial

instruments or services, and (iii) are treated equally when they operate in the market". (ECB, 2007:5).

However it should be highlighted that according to Sander and Kleimeier (2001) the law of one price is not a good indicator for measuring retail banking integration. Indeed, retail banking interest rates reflects country-specific differences and hence they cannot be equalized. Actually the law of one price can be valid only for financial markets that provide homogeneous products and are characterized by perfect mobility. Retail banking products do not meet these criteria though. Besides, the aforementioned local nature of retail banking does not allow the arbitrage process to take place properly and equalize retail interest rates. Consequently it becomes apparent that the law of one price cannot capture the concept of retail banking integration. In practice a proper benchmark for measuring the degree of integration in this particular banking market should take into consideration cross-country differences. Clearly retail interest rates cannot be strictly comparable across the euro area.

2.1 Financial integration indicators

Drawing on the available literature (Baele et al., 2005, Cabral et al., 2002, Adam et al., 2002) several financial integration indicators have been highlighted. In particular these indicators can be divided into three categories, namely price-based indicators, quantity-based indicators and other indicators. More in particular:

The first broad category of measures refers to price-based indicators. These indicators measure discrepancies in prices or returns on assets and are directly connected to the law of one price, which in supposed to hold in case that financial integration is complete. If retail banking products have adequately similar characteristics the comparisons can be made on the basis of price. Otherwise differences in several characteristics have to be taken into consideration. This type of indicators is preferable towards other types of indicators as they depend on comparable and reliable available data. In addition, they are easy to be computed and informative since they can be employed to test several hypotheses. Given these considerations a number of price-based integration indicators can be constructed, such as composite indicator of the cost of borrowing for non-financial corporations and households, σ-convergence and β-convergence which are based on a cross-sectional dispersion of interest rates spreads, and banks' margins. If the hypothesis that financial integration makes the return of financial assets more similar holds then

a decrease in cross-sectional dispersion would emerge and interest rates would converge. These indicators show the degree and the speed to which financial markets are integrated.

The second broad category of measures refers to quantity-based indicators. This type of indicators is less accurate compared to price-based measures but it is still valuable for measuring financial integration. Under a situation of retail banking integration cross-border banking activity would be considerably enhanced, but still cross-border banking activity is not a precondition for financial market integration. Moreover, given the threat of entry by foreign banks, the law of one price may hold even in the absence of cross-border banking activity. Despite these limitations, quantity-based indicators can be helpful in accessing financial integration across the euro area banking sector. In particular, these indicators encompass cross-border activities, namely the volumes of cross-border loans to non-banks and interbank loans. The progress toward integration would imply that barriers to foreign banking activity are removed and hence the aforementioned volumes would be increased as foreigners access domestic credit market without being physically present. So, cross-border flows in retail deposits and loans have been implemented to evaluate the degree of financial integration. The most reliable quantity-based indicator is the number of cross-border M&As as merging with or acquiring a domestic bank implies a certain degree of progress towards financial integration. Apart from M&As, banks can also penetrate a foreign banking market through subsidiaries and hence the number of foreign banks and their market share can be used as an additional quantity-based indicator of financial integration.

The third broad category of measures refers to other indicators. This category includes news-based measures of integration. In particular, in financially integrated area regional news are not expected to have a considerable impact on retail banking product prices, whereas global news are expected to be more significant presupposing that risk is identical across financial assets in different countries.

3. Assessment of the current retail banking integration

According to the latest ECB's financial integration report (2014), the integration of banking markets, namely lending and deposit activities, exhibits only limited improvement since the peak of the European sovereign debt crisis in mid-2012. Indeed, some banks have restored their cross-border activities but they are still lower when compared to the activities before the financial crisis. The high financial fragmentation is reflected on the considerably high divergence of the borrowing cost for non-financial companies (particularly SMEs) across the euro zone. This divergence has a very negative impact on monetary and economic policy. In this unstable financial environment the confidence in the euro zone banking sector must be restored through a banking union which is very likely to foster the restoration of cross-border credit flows and the convergence of bank lending rates.

Taking into consideration the prices of certain financial services and products and using composite indicators of the cost of borrowing for non-financial corporations and households' house purchases the ECB's financial integration report (2014) estimates the degree of banking integration. Given the still unfolding financial crisis, the ECB report divides the euro zone in two broad categories, namely distressed and non-distressed countries. Unsurprisingly, the composite indicator for non-financial corporations exhibit that since the eruption of the financial crisis the borrowing costs in distressed and in non-distressed countries have been progressively diverged. Furthermore, the spread between the average interest rate in distressed countries and the ECB's interest rate on the main refinancing operations (MROs) has been broadened, while in the same time this spread remained relatively unchanged in non-distressed countries. Plausibly, these findings indicate that the euro area banking markets are progressively less integrated. In practice, owing to country-specific macroeconomic risks, companies do not enjoy equal access to funding in all euro zone members and hence the divergence of the lending rates. This trend though is not evident in house purchases by households as mortgage lending rates do not diverge between distressed and non-distressed countries. More in particular, cross-country bank lending rates dispersion is larger to small loans. This feature is crucial though because small loans refer to SMEs (small and medium-sized enterprises) which play a very special role in economic activity in many distressed euro zone countries. Moreover, the development of interest rates deposits for non-financial corporations and households is an additional indicator for financial integration in

the euro zone. In particular, before the eruption of financial crisis the deposit rates of monetary financial institutions (MFI) were following the ECB main refinancing operations. However, after the outbreak of the crisis deposit rates for non-financial corporations and households diverged from the ECB's MRO rates in both group of countries. However, deposit rates in distressed countries have been increased more sharply in comparison to non-distressed countries. This feature is explained by the fact that MFIs in distressed countries had to offer higher deposit rates in order to attract depositors as their access to funding markets has been reduced. It should be highlighted though that in 2013 deposit rates exhibited a decreasing rate suggesting that MFIs' funding conditions had been eased.

It is well known that banks can operate either locally or across borders. So, a growing cross border business activity of the euro area banks suggests that banking markets are more integrated and harmonized. In that framework, the ECB's financial integration report (2014) points out that the share of non-domestic euro area subsidiaries and branches to all banks operating euro area countries remained stable during the period 2009-2013. However, it is worth mentioned that the total number of non-domestic euro area subsidiaries and branches has been declined. This development is in line with the trend of dropping euro area bank affiliates. Furthermore, the share of total assets and total loans of non-domestic euro area affiliates has been reduced in the same period, but still the differences between euro area countries are huge. Indeed, in large countries the aforementioned share is below 10%, whereas small countries share is above 80%. Moreover, taking into consideration the cross-border interbank lending market the ECB's financial integration report notes that the share of cross-border interbank loans to total loans has been declined after the Lehman crisis below. Moreover, cross-border loans to households as share of total mortgages is only 1% and hence it is not worth mentioned, whereas cross-border loans to non-financial corporations is less than 8%. As far as the liability side of banks is concerned over 50% of euro area banks' liabilities are deposits, which are their main funding source. During the 2000s till 2013 domestic deposits have been increased more in distressed countries in comparison to non-distressed countries, whereas deposits to MFIs in other euro area countries exhibit a similar trend. In particular, in distressed countries cross-border deposits are only 3% of total deposits while in non-distressed countries account for 7%. Overall, the national reduction of assets and liabilities can be attributed to factors such as turbulent foreign banking markets, revised business strategies, deleveraging, alteration in risk preferences and regulatory

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incentives towards domestic business. Moreover, as the ECB's financial integration report (2014) notes, the provision of payment services is an important fraction of euro area banking business given the regular revenues that provide to banks. The European retail payments market was highly fragmented but currently this market becomes more homogenized reducing the cost of cross-country operations for payment service providers and users and encouraging cross-border banking competition.

3.1 Euro zone retail banking: the way forward

In response to the economic crisis that erupted in 2008, numerous initiatives took place in order to create sounder and more stable financial sector for the euro area. In particular, the initiative to build a European banking union, announced by the heads of state of the euro zone in June 2012, aims to achieve two objectives: firstly, to promote and deepen the single market in financial services and, secondly, to break toxic interactions between weak banks and weak states in order to help overcome the crisis in the euro zone. This proposed approach is divided into three stages: first, the creation of a single supervisory mechanism, second, the creation of a single resolution mechanism for banks, and thirdly, in the indefinite future, some kind of a deposit guarantee scheme in the euro zone. But this gradual creation of the banking union raises questions. It is considered that this three-stage approach is questionable. It is much easier to agree on the establishment of a single supervisory mechanism, rather than taking the next steps towards deeper banking integration which may involve financial commitments or loss of sovereignty over decisions relating to national financial institutions. Moreover, given the current conditions, the implementation of the first stage is technically easier. The creation of a single resolution mechanism for banks and a deposit guarantee scheme also require changes to European treaties or signing new treaties that would require unanimous consent. So the second and third stage of the banking union is technically difficult to achieve and requires the willingness of the euro area Member States to delegate part of their sovereign to multilateral institutions (Herring, 2013).

In any case, these developments are particularly important for the structure of the euro zone. In the early 2000s European banks development was comparable to the new economic environment of the euro area. But when the financial crisis emerged in 2008 it became apparent that while the rescue and supervision of banks had remained a national governments' responsibility, the size of banks was disproportionately large compared to the fiscal capacity of the euro area members.

This created a vicious cycle between banks and sovereigns. Under these circumstances, the banking union could provide a mechanism for absorbing the impact of asymmetric shocks in the euro zone and it break the vicious circle between sovereign debt crisis and banking crisis. However the mechanism of rescuing banks is characterized by a problematic and slow decision-making process and insufficient funds. Furthermore, the heterogeneity of the economies of the euro zone does not refer only to the fragmentation of national banking systems but extends in many macroeconomic and structural parameters. Therefore, the banking union cannot eliminate asymmetric shocks and guarantee a smooth function for the euro area financial system (Enria, 2013).

4. Literature review

An overview of the literature reveals a mixed picture concerning the studies that examine the process of retail banking integration in the euro area. In particular, some of the earlier studies (Kleimeier & Sander, 20002; Schuler & Heinemann, 2002) conduct co-integration analysis on interest rate spreads. Other studies (Vajanne, 2007; Kleimeier & Sander, 2006) use β- and σ-convergence tests in order to estimate the degree and speed of convergence in retail banking. The remaining studies (Affinito &Farabullini, 2006; Kok Sørensen & Gutiérrez, 2006; Rughoo & Sarantis, 2014) apply other methodological approaches. The following part reviews the aforementioned literature.

Kleimeier & Sanders (2002) examined the development of integration in retail banking markets. The authors review the policies towards the creation of single market for financial services and underline the effort to overcome the heterogeneity in European banking. At these early steps of the euro zone Kleimeier & Sanders observe that interbank and wholesale markets are integrated, whereas the integration of retail banking markets is questionable. In particular they point out that bank lending is a domestic banking activity while the market share of foreign European banks is insignificant when compared to the total assets of domestic banks. So the evidence could not support the emergence of a Europe-wide banking system. Besides, mergers and acquisitions (M&As) were taking place domestically as the total value of domestic M&As was much higher in comparison to cross-border M&As. These findings suggested that the typical EU bank was still a domestic bank. Despite the limited cross-border bank lending and M&As lending rates

across Europe has been converged. Kleimeier & Sanders do not consider that interest rate convergence equals market integration. They empirically investigated the state of integration and ascertained a limited integration process, which has been fostered though by the introduction of the common European currency. More in particular, three key retail interest rates, namely mortgage loans to households, consumer loans to households and lending to the corporate sector, shows that during the period 1995-2000 these key retail interest rates has been converged both in nominal and real terms. However, it would be misleading if this convergence was attributed to an integrated banking market as the impact of the single monetary policy is critical concerning banking rates convergence. So, Kleimeier & Sanders conducted a co-integration analysis on interest rate spreads for different retail banking products, rejecting the "law of one price" and allowing differences in the underlying credit characteristics. Co-integration means that a long-run relationship between interest rates across countries exists. The authors did not find any evidence for European retail banking market for mortgages and consumer lending, whereas corporate lending appears to be more integrated but it is still questionable. These finding are in line with the local nature of retail banking. Kleimeier & Sanders though admit that these finding do not capture the still unfolding impact of the single currency on banking system unification as the sample period 1995-2000 does not sufficiently covers the EMU period.

Schüler & Heinemann (2003) applying a similar methodology examine the degree of retail banking integration analyzing four lending markets and two deposit markets and testing for co-integration between national interest rate spreads. In particular the retail banking products that are examined are consumer loans to households, mortgage loans to households, medium and long-term loans to enterprises, short-term loans to enterprises, time deposits, and savings accounts. The authors suggested that retail financial markets across countries are heterogeneous owing to factors such as country-specific risk differences, bank behavior and cultural influences on banking activity. Given these differences retail banking rates are not expected to equalize even in an integrated market and hence the law of one price cannot hold. However, Schüler & Heinemann argued that retail banking will be taking place in an increasingly integrating area. More in particular, the authors found little evidence for co-integration for mortgage loans to households, whereas for the market for consumer loans no evidence for co-integration was found. Short-term, medium and long-term loans to enterprises were found to be more integrated though. Moreover, little evidence for integration was found for savings market, whereas time

deposits markets appeared to be more integrated. In conclusion, Schüler & Heinemann argue that despite the fact that a single money market has been created after the introduction of single European currency, integration in retail financial markets has not been achieved yet as they revealed substantial fragmentation. The authors though claim that despite the existing underlying obstacles and a certain degree of segmentation, there is potential for further integration in retail financial markets.

Vajanne (2007) argues that after the introduction of the single currency there has been a substantial progress towards integrated financial services. However, the degree of integration is not the same for all financial markets segment. In particular, retail banking markets are less integrated in comparison to other financial markets. In practice, retail financial services are still provided domestically and cross border lending activity is insignificant. So the retail banking products that consumers enjoy differ substantially among euro zone member countries. More in particular this paper assess the speed and degree of retail banking integration for the period 2003-2006 using harmonized interest rates across euro area member countries, and employing two common tests of convergence, namely β- and σ-convergence; σ-convergence measures whether or not national interest rates have become more similar and β-convergence measures the speed of the converge of national interest rates. The tests that Vajanne conducted provide evidence that support a continuous process of convergence of interest rates in retail banking. Despite the existing cross country differences in lending rates across the euro zone countries, the convergence of interest rates is observable according to the authors, whereas the speed of convergence varies among different retail financial products. During the period 2003-2006 the spreads of large loans to non-financial corporations exhibit a fast convergence. This is attributed to the fact that banks compete each other in an environment that was previously restricted. Even in the absence of cross border retail banking the threat of foreign banks entry to domestic markets pushes the spreads closer to each other. Similarly to large loans to firms, short-term housing loans are also integrated in the euro area but the convergence in that category has been occurred already before the sample period. On the other hand long-term consumer credits for households have converged quickly but the differences of interest rates remain considerable. In general, as Vajanne points out large interest rates differences are diminished faster than small differences. Furthermore, consumer credit interest rates differences remain significantly high across euro zone countries.

Kleimeier & Sander (2006) argue that five years after the introduction of the single currency the existing evidence highlight a fragmented retail banking markets which maintains strong national characteristics. The observed convergence of retail banking markets can be attributed to the impact of the single monetary policy. However that means, according to the authors, that without further structural changes it is likely that the convergence process will slow down. Overall, despite the observed signs of a more integrated retail banking market in the euro area, those banking activities remain local. Kleimeier & Sander employed β- convergence and σ-convergence tests and they found that mortgage and short-term corporate loan markets have been mainly converged before the introduction of the common currency. This implies that the driving forces of retail banking integration were macro-economic rather than micro-economic. The fact that euro area results of σ- and β-convergence indicate convergence is mainly connected to a global process of financial integration rather than to euro area-specific processes that promote the single banking market. The authors note that these results draw a pessimistic picture of the retail banking integration as full convergence of retail interest rates has not been achieved yet. They point out thought that it would be surprising if in a market with different retail banking products and different lender and borrower behavior, interest rates were equal. In practice simple price-convergence measures do not fit the euro zone and hence they cannot capture retail banking integration.

Affinito & Farabullini (2009) asses retail banking integration measuring price convergence and testing the law of one price. The emphasis of this paper is placed on interest rate categories and on countries as well, namely the authors are investigating which interest rate categories converge across euro area and which countries are becoming more uniform and similar. Their analysis is based on two methodological approaches, namely statistical tests of equality of country coefficients and stationarity tests. Their paper concludes that interest rates differ and retail banking markets are still segmented as banking services are not homogeneous across euro area countries. So, the law of one price is not valid in the euro area. However, econometric results suggest that in those cases that bank customer have market power and good information interest rates tend to be more converged across the euro area. In particular, this is mainly the case for corporations in comparison to households and large corporations in comparison to small firms.

Kok Sørensen & Gutiérrez (2006) apply hierarchical cluster analysis techniques in order to examine financial integration in the euro area and primarily banking integration. Cluster analysis allowed the authors to develop an alternative tool to traditional measures of financial integration, such as the law of one price. In particular, they examined the extent of cross-country homogeneity or phrased differently they investigate the area countries that "cluster" together in terms of economic and financial structures. Moreover, they examined the evolution of the clustering over time during the period 1998-2004. The paper concludes, based on banking-related variables, that the euro area members overall have become more homogenous since the introduction of the common currency. However, significant differences are still documented and hence they leave scope for further integration. An important finding refers to the clustering of countries; Western and Central European countries (Germany, France, Austria, Italy, the Netherlands, Belgium) and South European countries (Spain, Portugal, Greece) form two distinct clusters.

Rughoo & Sarantis (2014) examine the integration process of retail banking sector placing emphasis on deposit and lending rates for the period 2003-2011, whereas they investigate the impact of the 2008 financial crisis on retail banking integration. Rughoo & Sarantis contribute to the literature by applying a panel convergence methodology which has not been employed in the area of retail banking convergence. The findings of the paper indicate that during the period 2003-2007 the convergence process is mainly evident for the deposit markets, whereas consumer credit markets and mortgage markets, despite their slight convergence, are still heterogeneous. However, the impact of the global crisis in 2008 and the euro zone sovereign crisis was crucial. Indeed, in contrast to the period 2003-2007, no convergence is evident for deposit, consumer credit and mortgage rates for the period 2008–2011. Actually the crisis abruptly halted the integration process of retail banking in deposit markets, whereas the existing barriers and fragmentation in consumer credit and mortgage markets had been further aggravated. In conclusion, the paper of Rughoo & Sarantis point out a reversal in the retail banking integration process and highlight the cross-country asymmetries and the heterogeneity of retail banking markets. Furthermore, they point out that countries with low credit ratings and increasing default risk such as Greece, Spain and Italy, experience a further national fragmentation.

5. Linkages between pass-through, integration and bank competition

As it has been mentioned before there is a strong linkage between retail banking integration, pass-through process and bank competition. This chapter investigates this linkage. In particular, the integration of financial markets in the euro area and particular in retail banking markets is critical also in terms of monetary policy. Indeed, a retail banking integration would allow a smooth function for the transmission mechanism of monetary policy because of bank lending rates that would properly respond to monetary policy impulses (Borio and Fritz, 1995). In practice a highly responsive retail interest rate pass-through process would facilitate the transmission of monetary policy. So, owing to the bank dependence of the European financial system, retail banking integration is crucial in terms of monetary policy (de Bondt, 2002).

The available literature points out though the heterogeneity of the monetary transmission mechanism across the euro area. One of the main explanatory factors refers to the differences of the structure of the financial system among euro area members. In practice, many papers underlined that several characteristics of the national banking structures have a strong impact on the response of bank lending to a monetary policy decision. However, that implies that cross-country differences in financial structure induce asymmetric effects in the context of a single monetary policy (Mojon, 2000). In conclusion, heterogeneity of the pass-through process implies different degrees of stickiness in the national retail banking markets across the euro area which in turn induce asymmetries in the transmission of the single monetary policy (de Bondt et al., 2005). Moreover, de Bondt et al. (2005) categorize the underlying factors of the heterogeneity of the pass-though process. In particular they distinguish two main categories. The first category refers to the differences in macro financial structure which explain the cross-country differences in the pass-through process, whereas the second category refers to the micro financial structure, namely the link between retail bank interest rates and the banking market structure.

It is a very interesting finding that that the pricing behaviour of banks reflects the degree of banking competition in the different segments of the retail banking market in the euro area. Indeed, the most critical factor that explains the persistence of the pass-through heterogeneity is the different degree of banking competition in the euro area (Sorensen & Werner, 2006).

The issue of retail bank interest rate pass-through process has been deeply examined owing to its relevance to monetary policy conducted by the European Central Bank (ECB). Most of these

studies point out an incomplete and heterogeneous pass-through process, not only across the members of euro area, but also across different retail banking products. Of course, the introduction of the common currency and the implementation of a common monetary policy result to a process towards to a more homogenous pass-through process and integrated retail banking market as well. Despite these development though, the transmission mechanism however remains heterogeneous and it produces asymmetric monetary policy effects. The available literature of this particular issue, as it has been aforementioned, places emphasis on the observed structural divergence of the national banking systems. A brief literature review of the pass-through heterogeneity in the euro area follows.

One of the first studies before the introduction of the euro has been conducted by Cecchetti (1999) who highlighted the differences of the euro area banking systems in terms of size, concentration and health. He concluded that these features vary considerably among national banking systems. As a result he identified that euro area banks demonstrate a different degree of sensitivity to monetary policy changes and hence they respond differently resulting to asymmetries. Furthermore, Mojon (2000) examining the pass-through process in six large countries for the period before the introduction of the euro pointed out that the deregulation of the retail banking markets had a positive effect on the pass-through process. He affirmed though the heterogeneity of the adjustment of retail interest rates to monetary policy impulses. In particular Mojon highlighted four determinants of the pass-through heterogeneity, namely competition among banks, competition from direct finance, monetary policy regime and the rigidity of bank costs. Finally he argued that despite the expecting speed up of the pass-through process, the segmentation of the retail banking market would remain. Toolsema et al. (2001) in line with other studies identified convergence concerning the short and long-run response of lending rates to monetary policy. They also found weak evidence concerning the homogeneity of the of monetary policy transmission, despite the introduction of the single currency. Toolsema et al. argued that the pass-through process is likely to remain country-specific across the euro area inducing different lending rates. The paper of de Bondt (2002) places emphasis on the introduction of the single currency and documented that that the speed retail interest rate pass-through is higher after 1999 mainly owing to increased competitive forces in banking industry. Moreover, Sander and Kleimeier (2004) also found that the speed of adjustment of retail interest rates is rigid and differs considerably across euro area countries. Sander and Kleimeier explained

the imperfect pass-through process focusing on the imperfect competitive market of the banking industry. Their paper, in contrast to other studies, argues first, that the pass-through of the retail interest rates stand incomplete even in the long-run, and second, that pre-EMU banking regulations had a more severe impact on pass-through in comparison to the introduction of the single currency. In particular, they argued that the heterogeneous banking environment is not likely to shift even in the long-run owing to persistent legal and cultural differences reflected on the divergence of national banking market structures. Sorensen & Warner (2006) investigated the pass-through process and they found evidence that confirm the suggestion of a sticky and incomplete pass-through. In particular they argued that the key factor that leads to the pass-through heterogeneity is the different degree of competition among the euro area banking sector. The findings of Sorensen & Warner pointed out a fragmented and not fully integrated pass-through, which is characterized though by an ongoing convergence and a more homogeneous retail banking market. Hristov et al. (2012) find that the pass-through process in retail bank rates became less complete during the crisis that heated the euro area as banks were reluctant to lower their rates despite the fact that the ECB cut its rates in response to financial crisis. So, an increase in interest rate spreads has been observed leading the ECB to implement unconventional policy measures. This implies a major obstacle of the transmission of monetary policy the ECB. The fact that banks of the euro area only partly passed-through the lower refinancing costs to their lending rates is considered to be a critical distortion of the transmission of monetary policy.

So, the heterogeneity of the pass-through process and the fragmentation in the euro area retail markets are well documented as it has been presented. The lack of retail banking integration though is the result of impediments that that protect national retail banking markets from competition. It is critical to underline that according to economic theory it is assumed that under perfect competition retail interest rates would be adjusted in line to marginal costs. However, when banks have increased market power and hence in the presence of imperfect competition this assumption is not hold. Generally the degree of competition in banking market is measured against the benchmark of perfect competition. However, given the heterogeneity of the retail products, this is hardly the case in retail banking (Cabral et al., 2002).

In particular, the European banking sector experienced major shifts and hence the conditions under which euro area banks compete have been altered. The liberalization of capital

movements, the financial deregulation, the technical advances and other elements are among the factors that influence the banking industry. The key development though in this context is the introduction of the euro that has fundamentally changed the cross-border banking regulatory framework as it has been assumed that that the EMU would intensify competition in the banking sector (Walkner and Raes, 2005). The initial expectations were very optimistic but the final outcome was rather disappointing. Indeed, despite the measures that have been taken the reinforcement of competition in the euro area retail banking markets had limited effects (Fernandez de Guevara et al., 2005). Indeed, one of the first papers that examine bank competition in the euro area is that of De Bandt and Davis (2000) which assessed competition in the banking markets of Germany, Italy and France. Their findings indicated a situation of monopolistic competition for large banks. Moreover, Bikker & Haaf (2002) provided strong evidence that banking markets in the euro area are characterized by monopolistic competition. This paper highlights that competition is stronger for the global-wide market for corporate banking, whereas it is weaker in retail local markets. Furthermore, Fernandez de Guevara et al. (2005) employing the Lerner index to describe banks' market power also argue that the core part of the euro area banking industry functions under a situation of monopolistic competition. Furthermore, Van Leuvensteijn et al. (2008) examined the effects of competition on bank interest rates on loans and deposits. They argue that in the euro area countries bank interest rate spreads on core retail banking services, such as mortgage loans, consumer loans and short-term corporate loans, are lower in more competitive markets. This finding indicates that bank loan rates are lower and that monetary policy is transmitted faster to bank rates under strong competition. So, it is shown that bank competition has a significant impact on the monetary policy transmission mechanism.

6. Measuring retail banking integration

The following part of the dissertation examines a prominent price-based indicator, namely *the composite cost-of-borrowing indicator*, which has been recently developed by the ECB. It is important to note that the ECB made the composite cost-of-borrowing indicator available to external users very recently in the end of 2013 and hence the contribution of this dissertation. This examination refers to the period from 2006 to 2013, namely an eight year period during which the eruption of the euro zone crisis took place having a strong negative impact on financial integration. The purpose of this research is to examine the course of the composite cost-of-borrowing indicator in order to assess the divergence or convergence of retail interest rates across the euro area. If we observe a convergence of retail interest rates that would imply a more homogeneous and integrated euro area banking market, whereas a divergence would indicate a fragmented retail banking market.

6.1 Methodology

The prices of certain retail banking products in the euro area countries can offer insights into the course of financial integration. In order to evaluate the effectiveness of the monetary policy pass-through process and the degree of financial integration across the euro area countries the ECB has developed an accurate and comparable measure for the borrowing costs of corporations and households. This measure is constructed by using detailed monetary financial institutions (MFI) interest rate statistics, which are considered the most reliable source of information for bank lending rates, in order to compute an indicator, namely *the composite cost-of-borrowing indicator*. This indicator actually consists of four categories of lending rates, namely total short-term lending rates both for non-financial corporations and households, total long-term lending rates both for non-financial corporations and households, total lending rates to non-financial corporations and total lending rates both to households for house purchase. The composite cost-of-borrowing indicator, apart from accurately assessing borrowing costs for non-financial corporations and households, also enhances and allows cross-country comparisons among the euro area members (ECB, 2013). So, this indicator is considered to be proper for examining and compare the convergence of retail interest rates across the euro zone. However, that fact that retail interest rates cannot be strictly comparable across the euro area is not ignored. As it has been aforementioned price based indicators have limitations. Price-based indicators though

depend on readily available data that are comparable across the euro area countries. Moreover, they are reliable owing to the sound statistical tools that the ECB employs. These indicators have been employed, apart from the Financial Integration Report of the ECB (2014), also from Darracq Paries et al. (2014).

The methodology of computing the MFI interest rate statistics (used in composite cost-of-borrowing indicator) refers to Annualized Agreed Rate (AAR) or Narrowly Defined Effective Rate (NDER). In particular, the AAR is defined as the interest rate that is individually agreed between monetary financial institutions and customers for retail banking products such as deposits and loans. These agreed interest rates are converted to an annual basis and quoted in percentages per annum. Annualized agreed rates cover all interest payments but they do not include other charges. On the other hand the Narrowly Defined Effective Rate is defined as the interest rate that equalises the present value of all future or existing payments agreed between monetary financial institutions and customers. The difference between Annualized Agreed Rate (AAR) and Narrowly Defined Effective Rate (NDER) rests on the implemented method for annualising interest payments. Under certain conditions the annualized agreed rate coincides with the narrowly defined effective rate (ECB, 2003).

The research method of this dissertation refers to descriptive statistics which are used to describe the course of the data of particular retail interest rates in the euro area. Descriptive statistics combined with graphical analysis, provide a simple presentation of the observations that have been made during the period 2006-2013. In the context of this dissertation descriptive statistics form the basis of a simple description of retail interest rates divergence, whereas inferential statistics are beyond the scope of this dissertation. Moreover, given the dispersion between the euro area retail banking interest rates, descriptive statistics are accompanied by the estimation of the standard deviation, which measures the dispersion from the mean value of the data set. Furthermore, mean, maximum and minimum values of the data set are presented in the Appendix. The values of the aforementioned statistics have been calculated using Excel. The data of composite cost-of-borrowing indicators are provided by the ECB's Statistical Data Warehouse available via the website http://sdw.ecb.europa.eu. According to its policy of free access, ECB releases its statistics and related methodologies that can be downloaded via its online data delivery service.

6.2 Results

In the Appendix Tables 1-4 present the data for the set of composite cost-of-borrowing indicators, namely total short-term lending rates both for non-financial corporations and households, total long-term lending rates both for non-financial corporations and households, total lending rates to non-financial corporations and total lending rates both to households for house purchase. These tables are followed by Graphs 1-8 that depict the standard deviation and lending rates divergence as well.

The available data, presented at Tables in the Appendix, show that the course of the convergence of composite cost-of-borrowing indicators until the beginning of the European economic crisis in September 2008 after the default of Lehman Brothers, was satisfactory. Indeed, the rates charged by euro zone MFIs to households and to non-financial corporations recorded a low level of dispersion as a certain degree of heterogeneity was still persisting as a result of euro area domestic banking systems' multiple differences (regulatory and fiscal framework, degree of banking competition, economic cycle phase etc.). We observe that in all categories of composite cost-of-borrowing indicators standard deviation ranged from 0.40 to 0.64 during the period 2006-2008.

This situation though has been suddenly worsened after the eruption of the crisis. This crisis incident has further fragmented the financial markets of the euro area. Indeed, descriptive statistics show that standard deviation is gradually broadening. In particular standard deviation of total short-term cost of borrowing after 2008 has been more than doubled from 0.50 in 2008 to 1.16 in 2009. The relatively low standard deviation of this indicator until 2008, indicating that lending rates tend to be close to the mean, turned to a higher standard deviation indicating that lending rates spread out over a larger range of values. It is important that this trend is observed through the whole crisis period with the exception of 2013 that a small decrease of standard deviation took place reaching 1.45. Moreover, total long-term cost of borrowing follows the same pattern. The value of standard deviation has been increased from 0.64 in 2008 to 1.07 in 2009. The following period is characterized by high but fluctuating values. It should be noticed though that the increase of standard deviation in that case is not so large in comparison to the

increase of total short-term cost of borrowing. It is plausibly to argue that in a situation of growing uncertainty short term loan instruments reflect risks better than long term instruments.

In addition, the value standard deviation of total lending rates to non-financial corporations has also been suddenly increased after 2008 from 0.58 to 1.21. This increase has also been very big and lending rates spread has been gradually increasing until 2013 that a small reduction is observed. In 2012 standard deviation reached its pick value of 1.59. On the contrary standard deviation of total lending rates both to households for house purchase has been affected less intensively. After the eruption of the crisis the value of standard deviation of lending rates spread has been almost doubled from 0.5 in 2008 to 0.98 in 2009. In the following years though, a gradual reduction is observed.

Overall descriptive statistics findings are in line with the available literature (European Central Bank, 2014; Hristov, et al., 2012; Rughoo & Sarantis, 2014) that points out the fact that after the crisis eruption retail interest rates have been further diverged. The Graphs 1-8 in the Appendix display in a more comprehensive way the numerical data of the Tables. In particular after 2008 we observe an abrupt upsurge in all categories of composite cost-of-borrowing indicators standard deviation. In the following years 2009-2013 the values of standard deviation are still considerably higher in comparison to the pre-crisis period 2006-2008. We also observe the negative impact of economic crisis after 2008 on the course of mean, maximum and minimum values of in all categories of composite cost-of-borrowing indicators standard deviation. These values are presented at Graphs 9-12 in the Appendix.

Given the rapid deterioration of country risk factors and sovereign debt spreads in many euro area countries, such as Greece, Ireland, Cyprus, Portugal etc., the divergence of retail bank lending rates appear to be plausible. The law of one price may disregards this kind of variables, but the divergence of lending rates can be explained referring to these factors which had a strong impact on bank lending rates in some countries. These findings are very important not only in the context of monetary policy transmission mechanism. The increase of lending rates after the crisis emergence in 2008 was substantial for some member countries. In some cases it was questioned if domestic banks could even fulfill their key function, namely the provision of credit to the real economy.

Conclusions

This dissertation examined several issues that refer to the complicated and multi-dimensional topic of retail interest rate differentials across the euro area domestic banking markets. It provides a framework that examines retail interest rate differentials from multiple prospects that encompass the pass-through process, bank competition and monetary policy. Overall, we describe the picture of a considerable heterogeneous retail banking market in the euro area, while its main contribution refers to the descriptive statistics of very recently data (December 2013).

The main finding of this dissertation, grounded on the literature review, the assessment of the current situation of retail banking integration and the quantitative research, is that euro area retail banking market remains highly fragmented, while strong national characteristics are still in place. The dispersion of retail interest rates across the euro area countries reflects the strong local nature of retail banking activities. Despite the fact that the EMU has been launched in 1999 the progress that has been made towards banking integration is not significant. Moreover, the recent and still unfolding economic crisis of the euro zone had a further negative effect on retail interest rates divergence.

Summarizing this dissertation it can be argued that national banking markets in the euro area remain heterogeneous and domestic banks behave in a different way resulting. The divergence of retail interest rates reflects this multi-dimensional heterogeneity. This fact implies that banks respond differently to monetary policy impulses and hence retail interest rate pass-through process is incomplete. This failure signals an asymmetric monetary policy. While legal and regulatory barriers have been removed in the euro area retail banking activities maintain a strong local nature. In this framework, considering the law of one price, retail banking integration is hardly likely to emerge. So, it is not surprising that retail interest rates vary considerably across countries as the findings of composite cost-of-borrowing indicator descriptive statistics show.

In the event of the crisis it is worth mentioning that the heterogeneity and the fragmentation of euro area banking markets did not allow a euro area wide credit crunch. The pluralistic structure of euro area banking and the lack of considerable cross border banking activities did not favor the contagion of financial distress across the euro area. So the pluralism and the diversity of

Europe's retail banking sector implies risk diversification that protected its soundness and secured the supply of credit. Overall, the debate over the integration of the euro area retail banking sector, which was major part of the political agenda after the completion of the Financial Services Action Plan, has been loosened during the financial crisis. This kind of discussion on market integration though is expected to be revived when European economy is restored. However, this crisis represents a major lesson for policy makers who have altered the way that they conceive the process of European integration including retail banking sector.

Currently the euro area banking sector undergoes major reforms in line with the gradual building of a European banking union. Moving towards a sound banking union that would separate banks form sovereigns it is likely that would have a positive impact on retail banking market integration. However, this step towards deeper integration runs against the will of many European countries. In this context, it is suggested that further research should focus on the impact of the agreement on the establishment of a Single Supervisory Mechanism and a Single Resolution Mechanism for banks towards the creation of the banking union.

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Appendix

Table 1. Total short-term lending rates both for non-financial corporations and households (2006-2013)

	Total short-term cost of borrowing							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
AUSTRIA	4,03	5,03	5,41	2,77	2,27	2,77	2,26	2,00
BELGIUM	4,01	5,15	5,44	2,61	2,26	2,83	2,35	2,25
CYPRUS			6,53	6,29	5,79	6,41	6,58	6,03
GERMANY	4,61	5,57	5,74	3,47	3,08	3,43	2,85	2,46
ESTONIA	4,66	5,76	6,26	4,67	4,18	4,11	3,35	2,96
SPAIN	4,03	5,15	5,63	3,03	2,74	3,64	3,53	3,51
FINLAND	3,82	4,87	5,14	2,36	1,97	2,62	2,12	2,02
FRANCE	3,93	4,94	5,31	2,55	2,15	2,77	2,28	1,91
GREECE	5,48	6,16	6,58	4,79	5,04	6,24	6,24	5,85
IRELAND	4,59	5,69	6,02	3,34	3,26	3,74	3,38	3,38
ITALY	4,71	5,48	5,98	3,52	2,90	3,64	4,10	3,98
LUXEMBOURG	4,02	4,92	5,00	2,52	2,59	2,73	2,00	1,76
MALTA			5,94	4,74	4,71	4,57	4,30	4,27
NETHERLANDS	4,16	5,09	5,36	2,83	2,50	2,99	2,43	2,22
PORTUGAL	4,97	5,79	6,44	4,41	4,20	5,73	6,05	5,55
SLOVENIA	4,27	5,44	6,35	5,40	5,01	5,14	4,85	4,75
SLOVAKIA			5,60	3,37	3,42	3,60	2,87	2,65
AVERAGE	4,38	5,36	5,81	3,69	3,42	3,94	3,62	3,39
MINIMUM	3,82	4,87	5,00	2,36	1,97	2,62	2,00	1,76
MAXIMUM	5,48	6,16	6,58	6,29	5,79	6,41	6,58	6,03
STANDARD DEVIATION	0,47	0,40	0,50	1,16	1,18	1,25	1,51	1,45

Graph 1. Standard deviation of total short-term lending rates both for non-financial corporations and households (2006-2013)
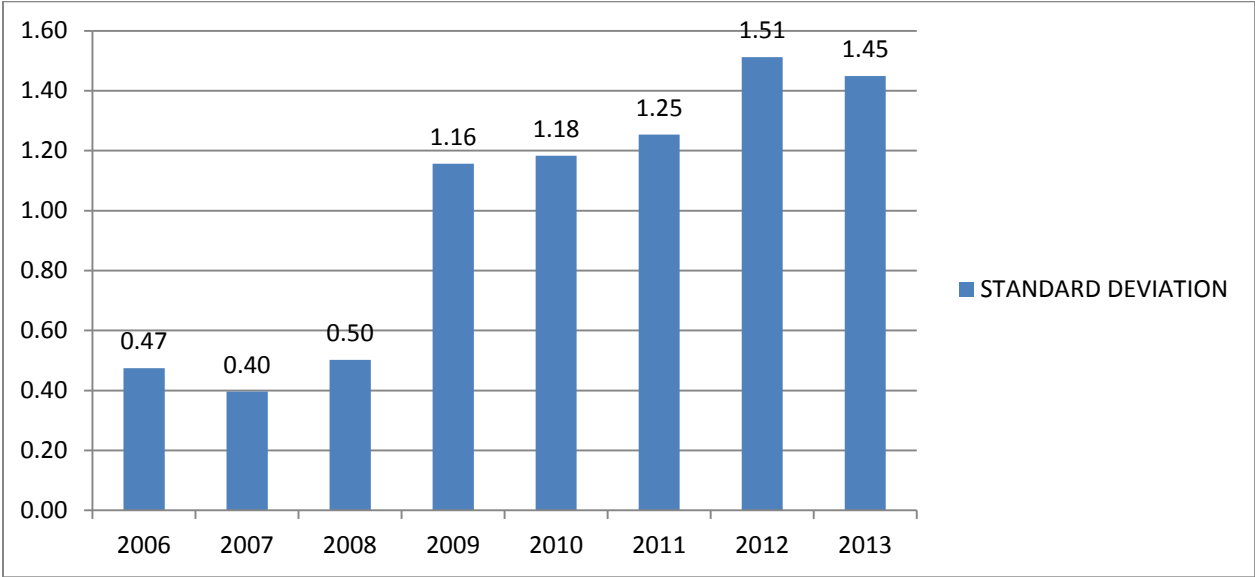
Graph 2. Total short-term lending rates both for non-financial corporations and households (2006-2013)
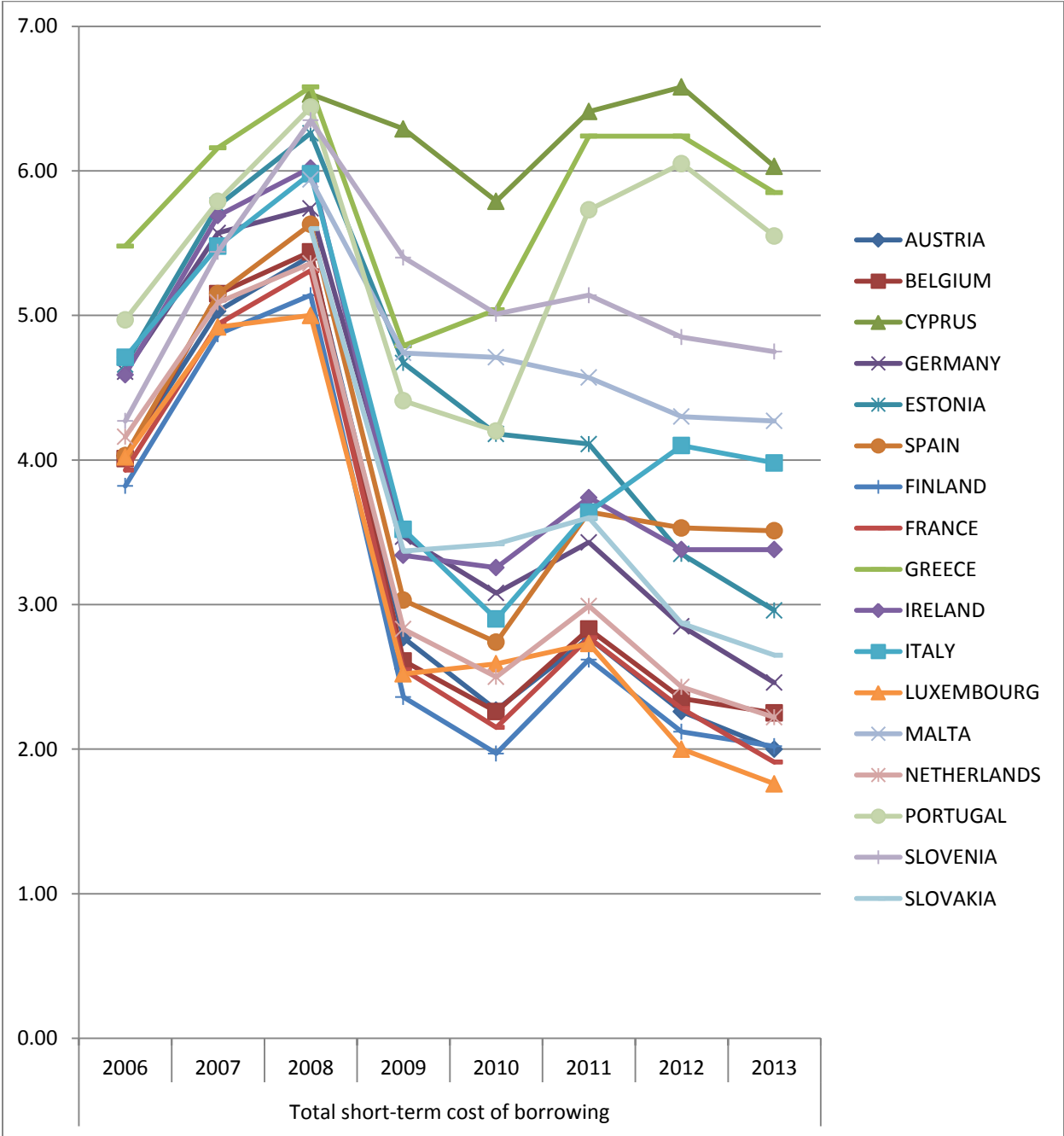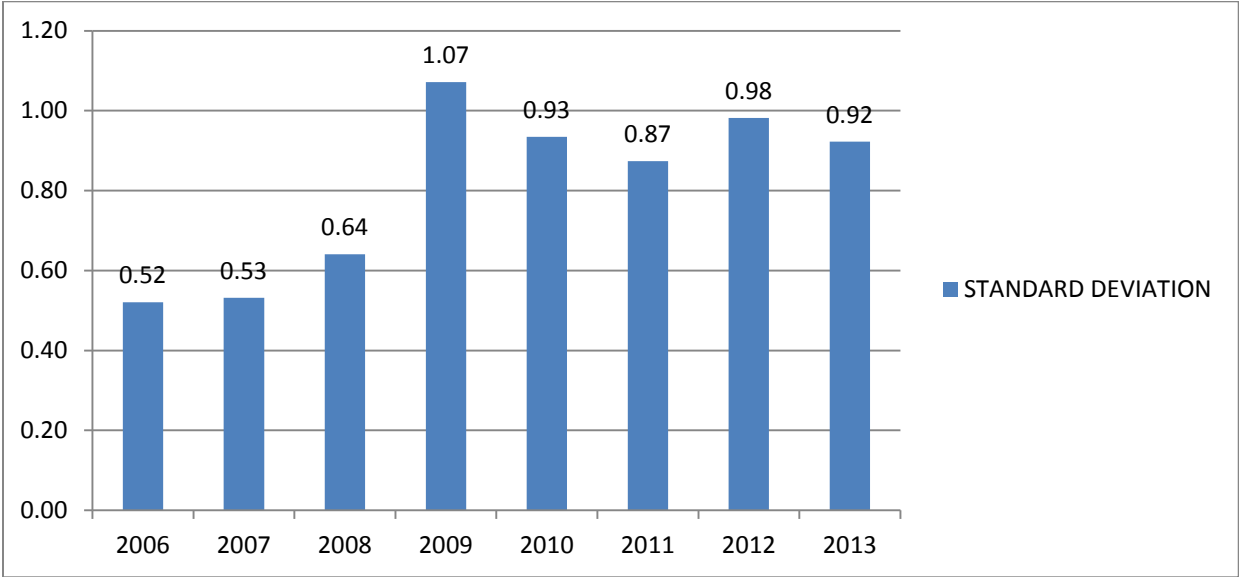
Table 2. Total long-term lending rates both for non-financial corporations and households (2006-2013)

	Total long-term cost of borrowing							
	2006	2007	2008	2009	2010	2011	2012	2013
AUSTRIA	3,57	4,31	4,78	3,82	3,28	3,34	3,21	2,93
BELGIUM	4,26	4,90	5,24	3,53	3,02	3,46	3,57	3,46
CYPRUS			6,31	6,25	4,66	5,05	5,30	4,64
GERMANY	4,58	5,13	5,31	4,38	3,82	3,96	3,15	2,83
ESTONIA	5,38	6,17	6,52	5,36	4,59	4,69	4,12	3,59
SPAIN	4,19	5,34	5,60	3,32	3,36	4,10	4,19	4,26
FINLAND	4,50	5,10	5,25	4,04	3,39	3,50	2,63	2,87
FRANCE	3,95	4,60	5,15	4,26	3,58	3,87	3,80	3,21
GREECE	4,61	4,78	4,99	4,99	4,73	4,74	3,24	2,70
IRELAND	4,52	5,27	5,55	3,54	3,50	4,55	4,62	4,74
ITALY	4,61	5,52	5,79	4,45	3,74	4,23	4,75	4,51
LUXEMBOURG	4,10	4,96	4,91	2,76	2,21	2,95	2,50	2,45
MALTA			5,17	3,87	3,59	3,81	3,02	2,90
NETHERLANDS	4,51	5,03	5,32	4,92	4,49	4,59	4,26	3,88
PORTUGAL	5,33	5,88	6,62	5,41	6,02	6,54	5,63	5,21
SLOVENIA	5,25	5,99	6,88	6,07	4,77	5,41	5,50	5,35
SLOVAKIA			6,02	6,36	5,26	4,80	4,73	4,05
AVERAGE	4,53	5,21	5,61	4,55	4,00	4,33	4,01	3,74
MINIMUM	3,57	4,31	4,78	2,76	2,21	2,95	2,50	2,45
MAXIMUM	5,38	6,17	6,88	6,36	6,02	6,54	5,63	5,35
STANDARD DEVIATION	0,52	0,53	0,64	1,07	0,93	0,87	0,98	0,92

Graph 3. Standard deviation of total long-term lending rates both for non-financial corporations and households (2006-2013)

Graph 4. Total long-term lending rates both for non-financial corporations and households (2006-2013)
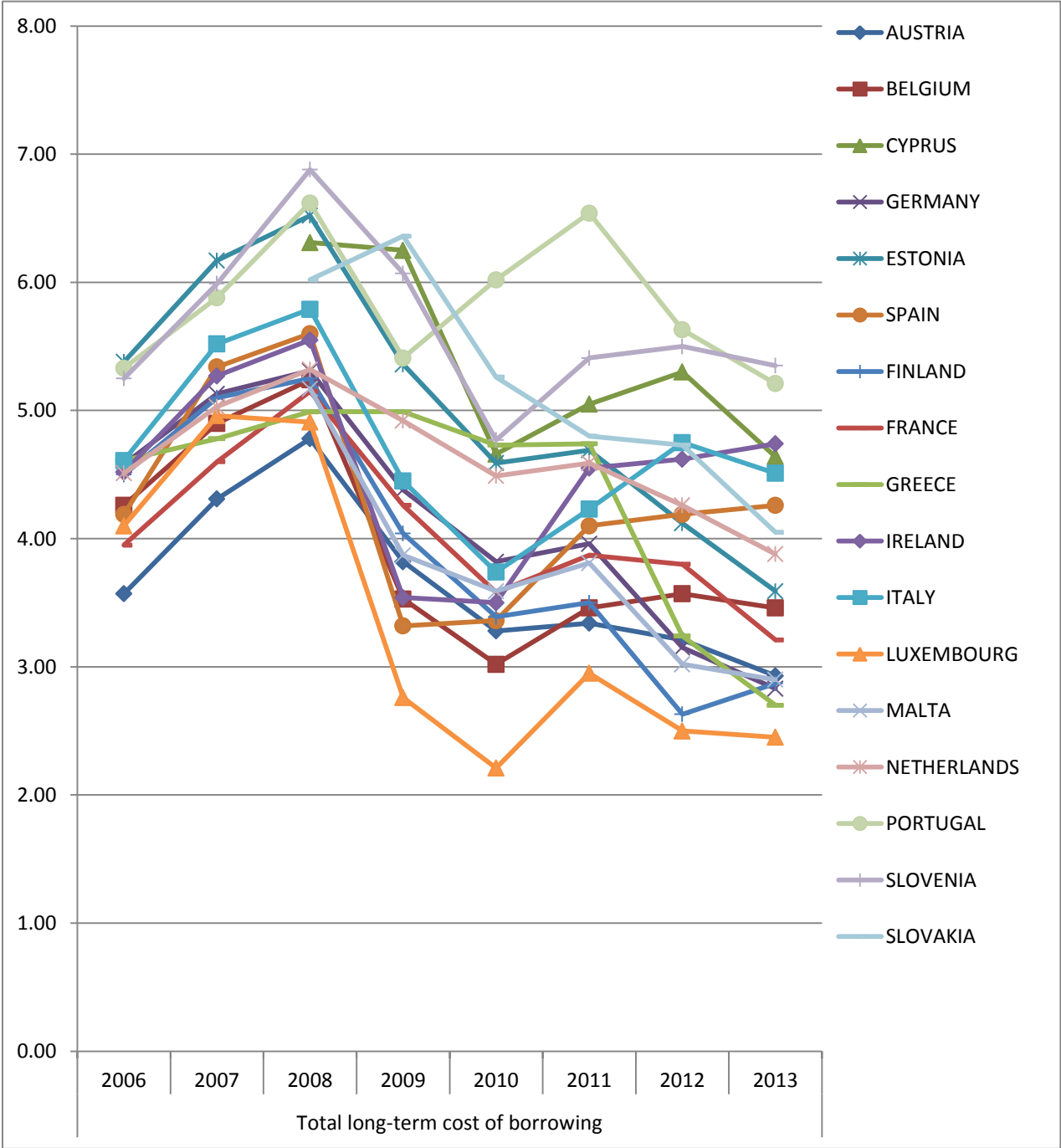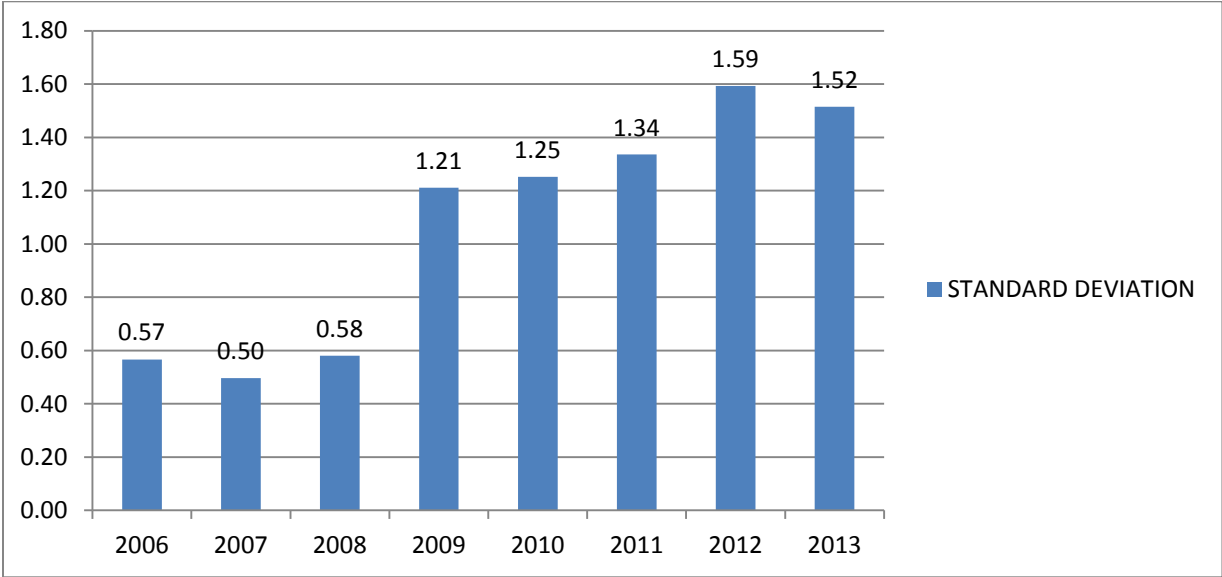
Table 3. Total lending rates to non-financial corporations (2006-2013)

	Total cost of borrowing to non-financial corporations							
	2006	2007	2008	2009	2010	2011	2012	2013
AUSTRIA	4,01	5,01	5,38	2,76	2,29	2,79	2,27	2,01
BELGIUM	4,04	5,15	5,44	2,62	2,27	2,83	2,40	2,28
CYPRUS			6,75	6,49	6,11	6,73	6,95	6,30
GERMANY	4,59	5,51	5,70	3,57	3,15	3,49	2,89	2,51
ESTONIA	5,02	5,93	6,50	5,00	4,52	4,52	3,71	3,16
SPAIN	4,04	5,17	5,62	3,03	2,81	3,70	3,59	3,58
FINLAND	3,98	5,00	5,22	2,43	2,02	2,71	2,22	2,08
FRANCE	3,97	4,96	5,33	2,91	2,46	3,03	2,59	2,17
GREECE	5,74	6,48	6,71	4,92	5,21	6,46	6,57	6,25
IRELAND	4,97	6,06	6,33	3,47	3,35	4,03	3,66	3,61
ITALY	4,74	5,50	5,99	3,56	2,94	3,70	4,13	4,01
LUXEMBOURG	4,02	4,93	5,00	2,52	2,60	2,74	2,00	1,76
MALTA			6,12	4,97	4,82	4,69	4,50	4,48
NETHERLANDS	4,25	5,12	5,34	2,94	2,57	3,08	2,52	2,36
PORTUGAL	5,20	6,04	6,68	4,74	4,52	6,08	6,25	5,64
SLOVENIA	4,22	5,41	6,34	5,46	5,12	5,24	4,98	4,85
SLOVAKIA			5,60	3,35	3,34	3,54	2,82	2,62
AVERAGE	4,49	5,45	5,89	3,81	3,54	4,08	3,77	3,51
MINIMUM	3,97	4,93	5,00	2,43	2,02	2,71	2,00	1,76
MAXIMUM	5,74	6,48	6,75	6,49	6,11	6,73	6,95	6,30
STANDARD DEVIATION	0,57	0,50	0,58	1,21	1,25	1,34	1,59	1,52

Graph 5. Standard deviation of total lending rates to non-financial corporations (2006-2013)

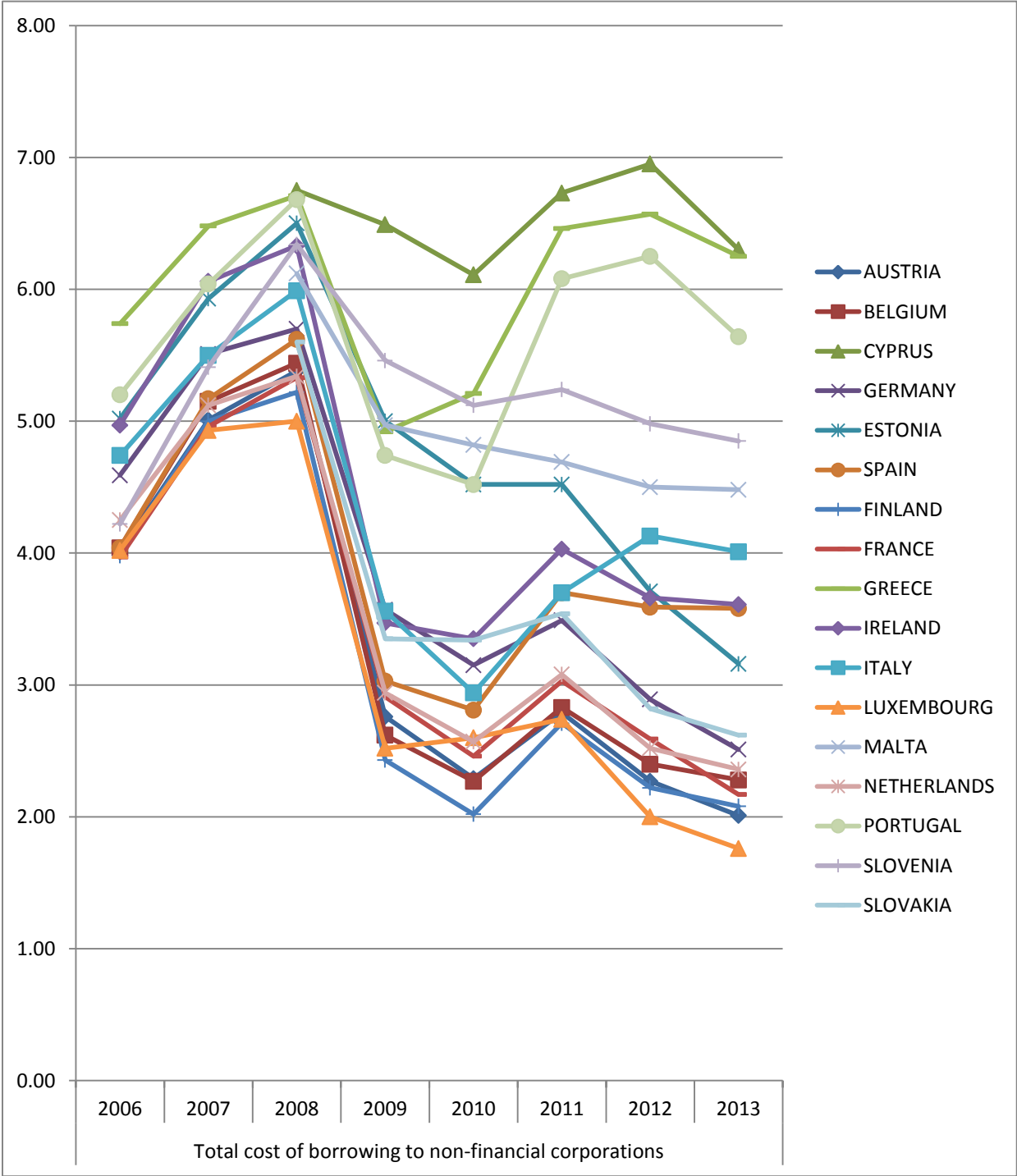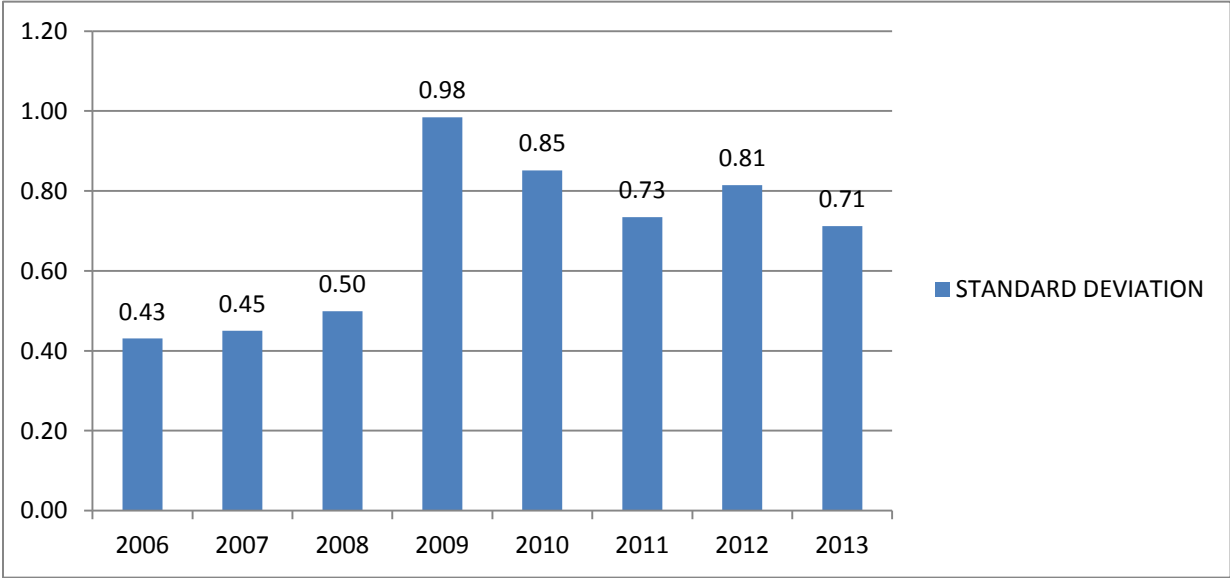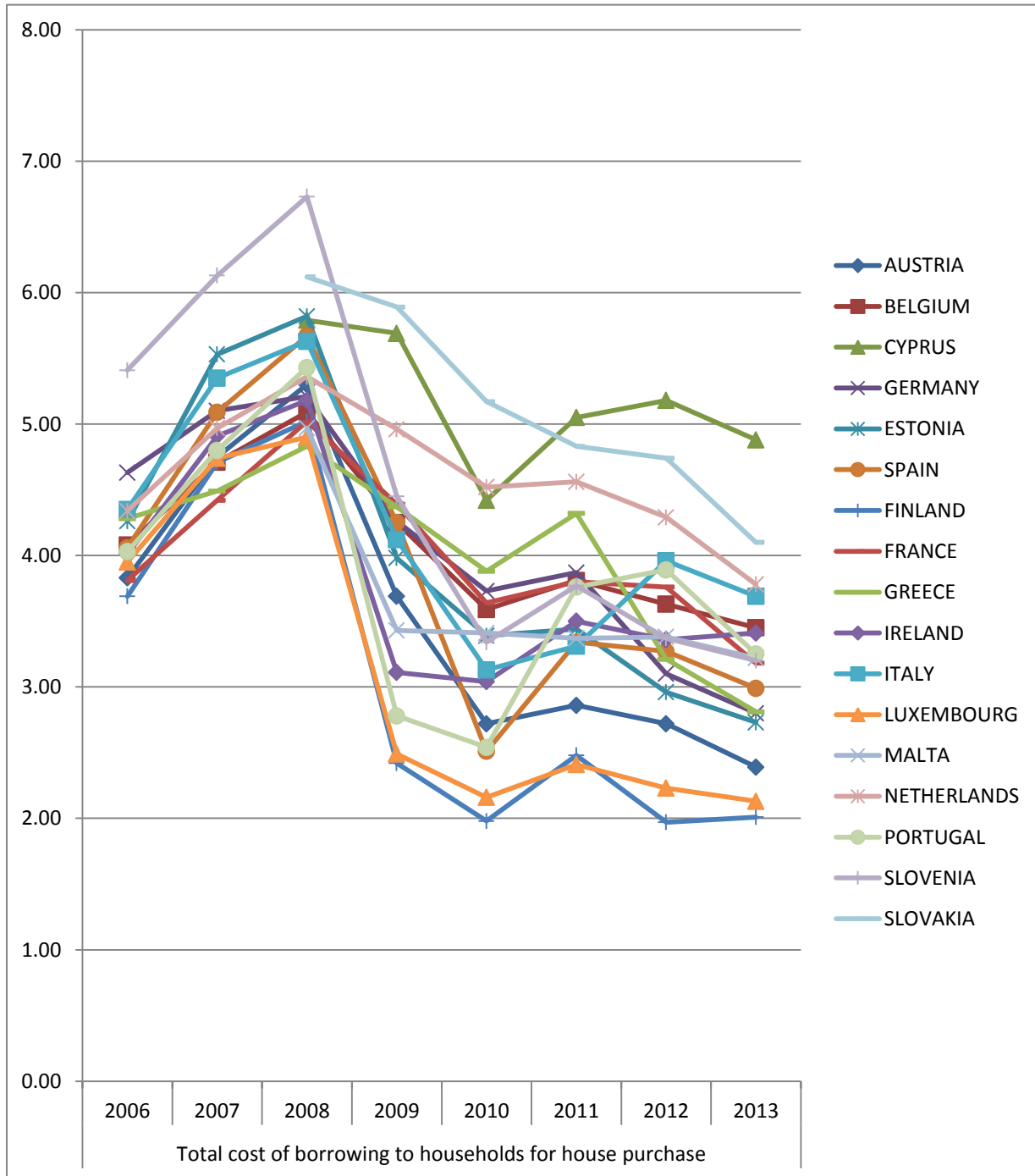**Graph 6. Total lending rates to non-financial corporations (2006-2013)**

Table 4. Total lending rates to households for house purchase (2006-2013)

	Total cost of borrowing to households for house purchase							
	2006	2007	2008	2009	2010	2011	2012	2013
AUSTRIA	3,83	4,75	5,30	3,69	2,72	2,86	2,72	2,39
BELGIUM	4,08	4,71	5,09	4,25	3,59	3,81	3,63	3,45
CYPRUS			5,79	5,69	4,42	5,05	5,18	4,88
GERMANY	4,63	5,10	5,21	4,26	3,73	3,87	3,10	2,80
ESTONIA	4,26	5,53	5,82	3,98	3,39	3,44	2,96	2,73
SPAIN	4,06	5,09	5,67	4,25	2,51	3,34	3,27	2,99
FINLAND	3,69	4,71	5,02	2,42	1,98	2,48	1,97	2,01
FRANCE	3,81	4,42	5,02	4,39	3,64	3,80	3,76	3,18
GREECE	4,28	4,49	4,83	4,37	3,88	4,32	3,21	2,81
IRELAND	4,01	4,91	5,18	3,11	3,04	3,50	3,36	3,41
ITALY	4,35	5,35	5,63	4,12	3,13	3,31	3,96	3,69
LUXEMBOURG	3,95	4,74	4,90	2,49	2,16	2,41	2,23	2,13
MALTA			4,97	3,43	3,41	3,37	3,38	3,22
NETHERLANDS	4,34	4,97	5,36	4,96	4,52	4,56	4,29	3,78
PORTUGAL	4,03	4,80	5,43	2,78	2,54	3,76	3,89	3,25
SLOVENIA	5,41	6,13	6,73	4,45	3,34	3,77	3,37	3,20
SLOVAKIA			6,12	5,89	5,17	4,83	4,74	4,10
AVERAGE	4,20	4,98	5,42	4,03	3,36	3,68	3,47	3,18
MINIMUM	3,69	4,42	4,83	2,42	1,98	2,41	1,97	2,01
MAXIMUM	5,41	6,13	6,73	5,89	5,17	5,05	5,18	4,88
STANDARD DEVIATION	0,43	0,45	0,50	0,98	0,85	0,73	0,81	0,71

**Graph 7. Standard deviation of total lending rates to households for house purchase (2006-2013)**

Bar chart showing standard deviation values:
- 2006: 0.43
- 2007: 0.45
- 2008: 0.50
- 2009: 0.98
- 2010: 0.85
- 2011: 0.73
- 2012: 0.81
- 2013: 0.71

Legend: STANDARD DEVIATION

Graph 8. Total lending rates to households for house purchase (2006-2013)


Total cost of borrowing to households for house purchase

Graph 9. Mean, maximum and minimum of total short-term lending rates both for non-financial corporations and households (2006-2013)

Total short-term cost of borrowing
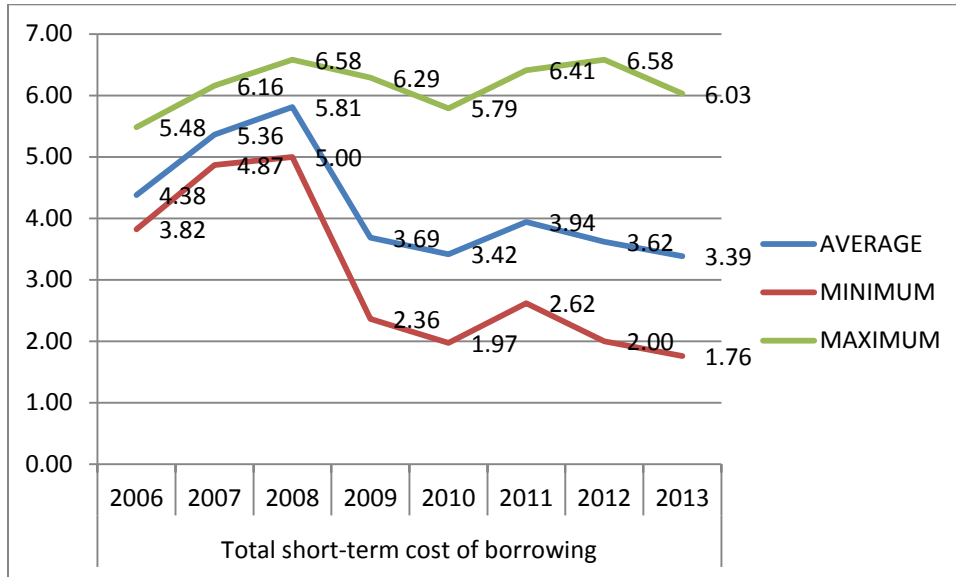
Graph 10. Mean, maximum and minimum of total long-term lending rates both for non-financial corporations and households (2006-2013)

Total long-term cost of borrowing
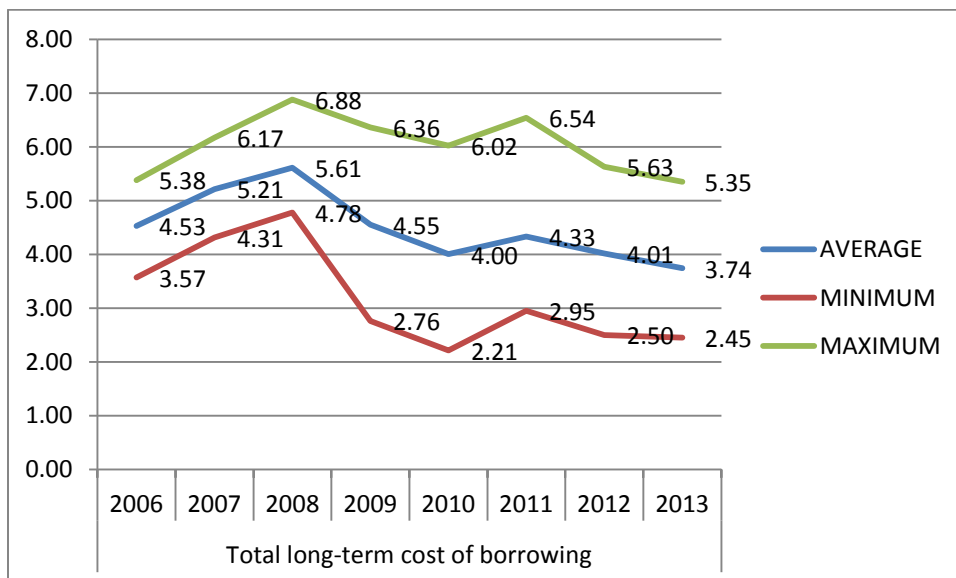
Graph 11. Mean, maximum and minimum of Total lending rates to non-financial corporations (2006-2013)

Total cost of borrowing to non-financial corporations
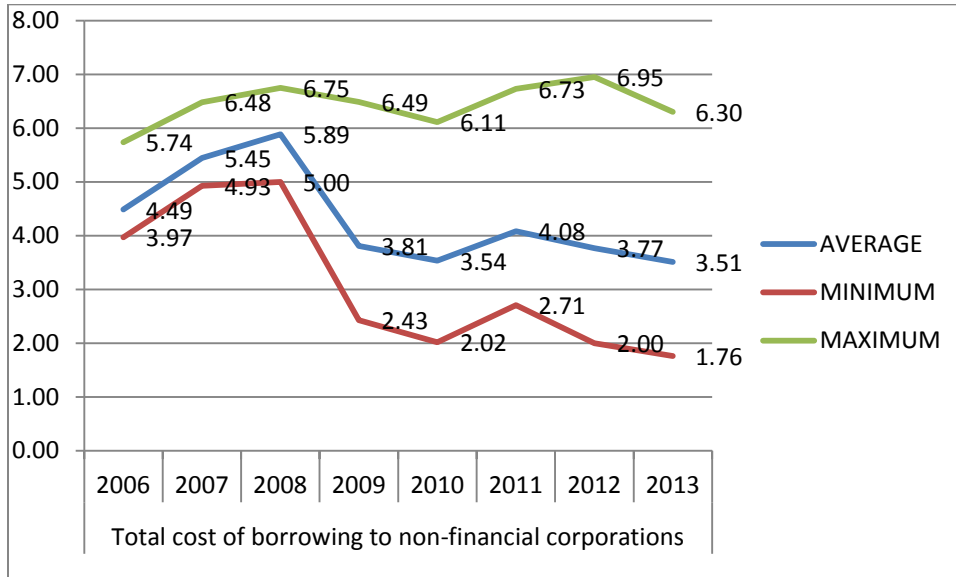
Graph 12. Mean, maximum and minimum of total lending rates to households for house purchase (2006-2013)

Total cost of borrowing to households for house purchase