

# Research Report

## Household Debt and the European Crisis

**Paper presented at the ECRI Conference, 16 May 2013**  
*Organised by the European Credit Research Institute (ECRI)  
and the Centre for European Policy Studies (CEPS) in Brussels*

**Ales Chmelar**



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**EUROPEAN CREDIT  
RESEARCH INSTITUTE (ECRI)**

Place du Congrès 1  
B-1000 Brussels, Belgium  
Tel.: +32-2-2293911  
Fax: +32-2-2194151  
Email: [info@ecri.eu](mailto:info@ecri.eu)  
Web: [www.ecri.eu](http://www.ecri.eu)

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## Abstract

*The fall in economic output all over Europe that is linked to the economic and sovereign debt crisis since 2008 has had important consequences for household liabilities. Major growth in demand and supply for household credit products has generated an increase in household debt, which contributed to growth rates during the pre-crisis period but – in some countries – became household-debt overhangs and helped inflate asset bubbles. In the run-up to the crisis, long-term economic lessons and theories were often overlooked and signs that the economic situation could worsen were ignored. Although not at the core of the crisis, household debt had important consequences for macroeconomic stability, robustness of growth and the depth of recessions. The last ten years in Europe have demonstrated the typical final stage of a household debt cycle: rapid increase and abrupt retrenchment. Widely varying outcomes across Europe enable us to consider the causes of the rapid growth in household debt and draw theoretical lessons that can help policy-makers and academics devise a coherent regulatory response to avoid extremes of the debt cycle in future.*

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## Executive summary

- Household debt was an important **driver of growth** during the pre-crisis period. The period of high credit expansion was not limited to households and was generally characterised by **lower credit constraints on households due to stable inflation, decreasing risk premiums**, the development of the Single Market in financial services, **higher and more differentiated credit supply, higher future-income expectations, altering households' life-income function**.
- In terms of household-debt development, **on an aggregate level the EU did not go through a specific development of household debt. It can rather be divided into two groups**. One in which the crisis did not have significant effect (**very approximately describable as the EU core**) and the other in which the credit-expansion slowed down or where households reduced their debt levels (**EU periphery**).
- **Both groups on average share some macroeconomic and other conditions**, namely for the periphery higher inflation and lower real cost of credit before the crisis and more abrupt reaction to the financial crisis, most notably in unsecured loans. The relative indebtedness of households does not play a role in this classification.
- There is a **clear association between the lower real cost of credit and the credit expansion**, although the overall economic situation and credit supply plays a more deterministic role. The demand for credit decreased in the later stages of the crisis despite falling interest rates.
- The EU can be further divided into **two different groups based on the degree of credit-market developments**, largely covering the division between the old member states (accession before 2004) and the new ones. **The new member states have significantly lower debt levels both in absolute and relative terms and are catching up slowly**.
- This division has been reinforced by the crisis as **many new member states decreased the pace of household-credit expansion despite their relatively low household indebtedness**. New member states differ the most importantly in the significantly higher cost of consumer credit, associated with higher risk premiums.
- In terms of market convergence, both **per capita and debt-to-income levels of EU countries have been converging in the past ten years but the convergence has decelerated during the crisis**.
- While the development of housing loans has been largely driven by its low cost as well as by a more diverse financial products, the expansion of consumer credit in the past ten years has been accelerated by changing consumer patterns and relatively low market development during the preceding periods. With rare exceptions, **consumer credit accumulated before the crisis has been now largely reduced towards the pre-crisis levels across the EU**, reflecting its higher flexibility and income sensitivity.
- Despite the undisputed existence of on average highly leveraged households in some countries, **the effects of reducing the debt burden during the crisis and thus has contributed to the economic downturn** through effects on aggregate demand, disallowing households to grow out of their debt-to-income levels, further deepening the economic downturn and contributing to the length of the recession.

- Concerning determinants of household-debt reduction after the crisis, **there is no significant correlation between relative indebtedness of households**. On the contrary, **the current household-debt reduction is highly associated with the degree of credit expansion in the pre-crisis period**, suggesting a limited unstable character of household debt accumulated too quickly during economic boom times.
- The main challenges of regulatory framework is to take into account the risks of a downturn parts of the debt cycle even during good times and avoid over-optimistic market developments associated with higher risk accumulation and lenience on consumer solvency as well as comprehensive and sensitive information gathering and provision in order to facilitate sound credit decisions of both parties.

## 1. Introduction

The capacity of households to optimise their cash flows during their life cycle has been a long-accepted central determinant of future household expenditure and economic growth.<sup>1</sup> Despite having a moderately negative effect on aggregate savings,<sup>2</sup> household credit allows demand to expand in the short-term; increasing the immediate output and the potential for future growth. Nonetheless, over-leveraged households can be an impediment to long-term consumption, if spending in the short term and sub-optimal interest rates compromise future demand.<sup>3</sup> More importantly, higher rates of debt to income are clearly associated with the higher sensitivity of households to changes in interest rates and to changes of expected income.<sup>4</sup> Put simply, the interplay between household debt and the economy is not univocal. The economic causes and consequences depend intrinsically on the larger macroeconomic context.

This macroeconomic context has been extremely volatile in Europe over the last ten years. European households underwent significant economic upheaval during this period; they registered record income increases, translating into growth rates of borrowing and unprecedented subsequent retrenchment. These conditions provide a unique opportunity to look back at the development of household debt at this point and assess what caused the quick expansion of household debt, whether its expansion was justified and how the stock of these liabilities behaves during the latter stages of the current debt cycle. Furthermore, the very heterogeneous European context allows us to identify specific idiosyncrasies, which do not always corroborate the theory.

This report looks at the last ten years of the household debt cycle by analysing specific linkages of household debt and comparing them to other cyclical developments and relevant theories. The euphoria and subsequent pessimism that households in many countries went through in the past ten years are put in a broader context. The report tries to find a link between the various household debt developments in European countries and sketch a non-exhaustive account of its expansion and retrenchment. It points to relevant debt theories and

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<sup>1</sup> Ando, A. & F. Modigliani (1963), "The 'life cycle' hypothesis of saving: Aggregate implications and tests", *The American Economic Review*, 53(1), 55-84.

Bacchetta, P. & S. Gerlach (1997), "Consumption and credit constraints: International evidence", *Journal of Monetary Economics*, 40(2), 207-238.

<sup>2</sup> Barba, A. & M. Pivetti (2008), "Rising household debt: Its causes and macroeconomic implications - a long-period analysis", *Cambridge Journal of Economics*, 33(1), 113-137.

<sup>3</sup> Maki, Dean M. (2002), "The Growth of Consumer Credit and the Household Debt Service Burden", *The Impact of Public Policy on Consumer Credit*, 43-68.

<sup>4</sup> Debelle, G. (2004), "Household debt and the macroeconomy", *BIS Quarterly Review*, March, 51-64.

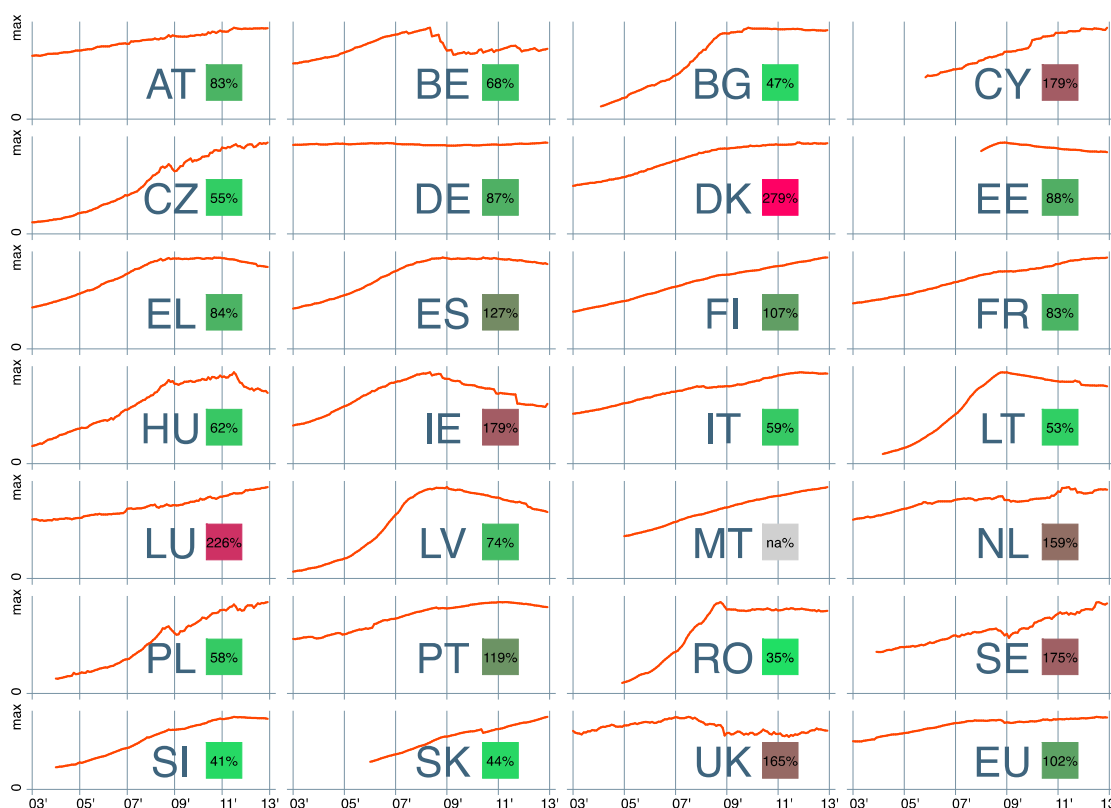
specific characteristics of the European household debt market in the past ten years, which allowed this expansion – with both its positive and negative consequences for the economy. It aims to open up a debate about possible lessons offered by this recent experience and by the current last stage of a household-debt cycle in the European context.

## 2. Household-debt development

Many EU member states experienced a moderate debt development during the early and mid-2000s. Many single countries, however, recorded a considerable rise in household debt in the period preceding the financial crisis, especially in Southern and Eastern Europe. Concurrently with the US, they were accumulating debt both in the corporate and household sector as a consequence of sizeable economic expansion and structural changes in monetary policy and financial markets.

The divergent developments between European countries generally reflect the different macroeconomic situations during the crisis, but also structural differences and the maturity of the household-debt markets. **Error! Reference source not found.** illustrates the extreme differences in the development of household debt among the EU member states. The figure allows assessing both relative and absolute changes in household debt during the crisis and comparison of the relative development of credit markets of given countries (note the rapid development from virtually nil values in the majority of new member states).

Figure 1. Total of household debt in real values (2010 euros) and leverage to disposable income between 2003 and 2012



Source: ECRI, ECB.

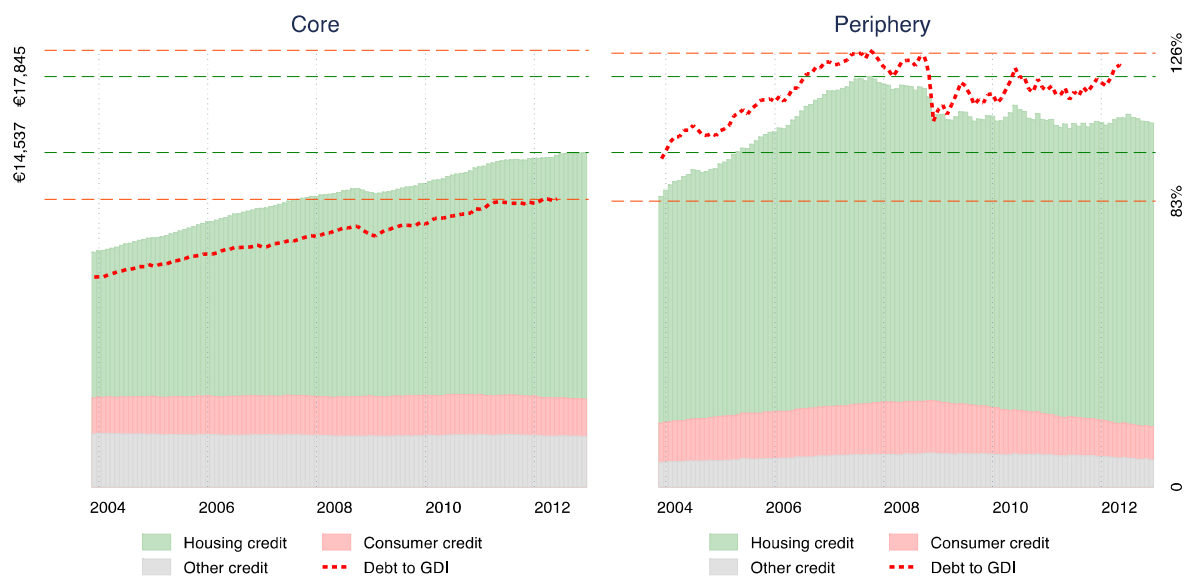
Note: On vertical scale, the graphs are plotted between zero and a maximum level of debt. The inclusion of zero as minimum of the scale allows us to distinguish countries with clearly under-developed credit markets to households.

Based on these plots, the development in household-debt trends during the crisis can be separated into two approximate groups: *i)* countries in which the debt expansion has not slowed down substantially during the crisis or has even accelerated after a small or no initial retrenchment,<sup>5</sup> and *ii)* countries in which the crisis has had clear effects on the speed of expansion or where debt has been reduced.<sup>6</sup> The developments of household debt among countries correlate significantly within each group, indicating that the two groups follow similar and specific household debt trends.

With some exceptions, the groups depicted above can also be referred to as *i)* Europe's core and *ii)* periphery in political terms and rather unorthodox terms. This evidence of EU member states being clearly divided into two groups of differing trends in household debt renders the widely applied assessment of aggregate data on EU27 level inadequate and partly explains the seemingly erratic development of debt levels and leverage data in Europe as a whole (see Figure 2).

In countries referred to as the European periphery, the development of household debt both prior to and during the crisis has been unprecedented in their economic histories. The emergence of a wide range of new credit products to households in the past 20 years and the record expansion of home ownership in the same period in these countries have had a tremendous effect on household leverage. Between 1995 and 2007, the overall stock of household debt in the EU expanded almost three times, while in countries with significant real-estate expansion, such as in Ireland or Spain, the debt expanded as much as six-fold.

Figure 2. Real household debt per capita by type (left scale) and leverage to gross disposable income (right scale) in EU *i)* 'Core' and *ii)* 'Periphery'



Sources: ECRI, ECB, Eurostat.

Also relative to disposable income, household debt in countries experiencing the strongest asset price bubbles increased significantly – more than by the moderate EU average of 50%.

<sup>5</sup> *i)* Austria (AT), Cyprus (CY), Czech Republic (CZ), Germany (DE), Finland (FI), France (FR), Italy (IT), Luxembourg (LU), Malta (MT), Netherlands (NE), Poland (PL), Slovakia (SK) and Sweden (SE).

<sup>6</sup> *ii)* Belgium (BE), Bulgaria (BG), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), Hungary (HU), Ireland (IE), Lithuania (LT), Latvia (LV), Portugal (PT), Romania (RO), Slovenia (SI), United Kingdom (UK).



For example, in Ireland, household debt to disposable income went from 49 to 161% in the ten years preceding the crisis.<sup>7</sup>

However, despite similar developments in a range of European countries within the above-mentioned groups, the classification conceals significantly differing levels of debt leverage, also within the groups. In 2011, household debt to disposable income in Romania is as low as 34%, while in Denmark it is as much as 264%.

## 2.1 Explaining the expansion

The credit expansion in the early to mid-2000s was not specific to the household sector. The non-financial companies and sovereign states registered a comparable rise in leverage during the same period, often sharing the same causes. Economic growth, the establishment of the single market in financial services, the expansion of credit products and falling interest rates have facilitated access to all types of credit across Europe.

The rapid economic growth before the crisis across Europe – and, more significantly, in its periphery – was helped by the positive spill-over effects of European integration, most notably through the newly established single market and the drop in interest rates associated with euro membership. This overall positive economic environment coincided with initially low household debt to income in the new member states and some peripheral European countries. There was therefore both scope for catch-up and an economic situation that was prone to provide it. The steadily decreasing inflation of the past thirty years in Europe also encouraged higher credit provisions as the supply of funding through increased and the perceived risk associated with variable interest rates was reduced. The development of the single market in financial services, which kicked off in 1999 with the Financial Services Action Plan, also had a significant effect on the cost of credit across Europe as it facilitated the recognition of banking companies across the EU and thus increased competition.

The easing of credit constraints induced by the long-term macroeconomic stability and market developments added to a larger picture of global financial deregulation,<sup>8</sup> which translated rather early into European legislative frameworks, most importantly through the liberalisation of European mortgage markets.<sup>9</sup> Overall, liquidity constraints on households dropped substantially between the 1990s and early 2000s.<sup>10</sup> Due to similar business and marketing development patterns, European households on average tended to move towards the credit behaviour of their US counterparts, despite large internal differences.<sup>11</sup>

The positive economic conditions had a direct effect on the behaviour and risk appetite of households. Following the life-cycle theory of Ando & Modigliani,<sup>12</sup> decreasing interest rates result in increases in the discount rate in the future. When combined with high future income expectations, the perceived net value over a lifetime and therefore the optimistic view of future capacity or repayment increases even further. As Brown et al. (2005) have demonstrated, in the case of British households such expectations do not reflect actual future

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<sup>7</sup> Unless stated otherwise, all data come from the ECRI Statistical Package 2013: *Lending to Households 2013*.

<sup>8</sup> Barrell, R., E. Davis, T. Fic & A. Orazgani (2009), "Household Debt and Foreign Currency Borrowing in New Member States of the EU", Economics and Finance Working Paper, Brunel University, 09.

<sup>9</sup> Girouard, N. & S. Blöndal (2001), *House prices and economic activity*, OECD, Paris.

<sup>10</sup> Debelle, G. (2004), "Household debt and the macroeconomy", *BIS Quarterly Review*, March, 51–64.

<sup>11</sup> Barba, A. & M. Pivetti (2008), "Rising household debt: Its causes and macroeconomic implications – a long-period analysis", *Cambridge Journal of Economics*, 33(1), 113–137.

<sup>12</sup> Ando, A. & F. Modigliani (1963), "The 'life cycle' hypothesis of saving: Aggregate implications and tests", *The American Economic Review*, 53(1), 55–84.

income but rather an immediate subjective feeling of optimism about the future.<sup>13</sup> Long periods of sustained growth accompanied by the easing of credit constraints therefore overshadow the likelihood of a possible downturn of business cycles, strongly affecting the susceptibility of households to take on credit and further fuelling the economy and thus income expectations.<sup>14</sup>

The loop of long periods of economic growth and high-income expectations tends to increase the likelihood, almost exponentially, of households taking on more credit, which increases asset prices, bringing about the peak of the leverage cycle and also fuelling the culmination point of the business cycle. Therefore, not only falling liquidity constraints and the general availability of credit, but also the cyclical character of the economy itself tend to inflate household debt levels that are almost by definition transformed into a debt overhang in the long term, if we assume that income cannot rise at the same or accelerating pace indefinitely.

Although such an increase in debt during boom times would not be problematic per se, high household leverage has structurally destabilising macroeconomic effects. Firstly, due to a large part of their portfolios being dependent on interest rates, households become more sensitive to their changes; with consequences for macroeconomic volatility. Secondly, with higher reliance on credit and more life-cycle optimisation, households – as the ultimate spenders of the economy – also become more sensitive to expected future income. A small future-income change under high leverage can have potentially large repercussions on implicit life-cycle assumptions of individual consumers. The higher the relative debt level, the higher the risk that interest rate and expected income changes result in abrupt changes in consumption patterns, therefore increasing the potential drop in demand during an economic crisis and preparing the ground for a deeper recession in countries with high household leverage.

## 2.2 The cost of credit to households during the crisis

Within the groups detailed above, a large set of macroeconomic factors were reflected in European economies in a different ways. Most importantly for the household debt leverage, the drop in interest rates since the late 1990s had a crucial effect on newly contracted debt of households as the clear co-movement of interest rates with debt growth suggests (see Annex, Table 1). The low or even negative real interest rates have been often singled out as one of the major causes of extensive household debt expansion, often linked to deficient monetary transmission of the single interest rate set by the European Central Bank.<sup>15</sup>

Discounted for domestic inflation, the three-month Euribor in some peripheral countries has indeed experienced consistently negative values, effectively translating into negative interest rates. Concerning the credit finance available to households, however, the picture of negative borrowing costs is not as clear as stylised facts would suggest. With the exception of high-inflation periods in Bulgaria and the Baltic countries,<sup>16</sup> the annual percentage rate charge

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<sup>13</sup> In a large sample of UK households, Brown et al. have demonstrated that people positive of their future income held six times and fifteen times more debt than households pessimistic of their future income in 1995 and 2000 respectively. The results were relevant, even after controlling for income. Such expectations did not corroborate actual income changes, as reported in subsequent surveys.

<sup>14</sup> Brown, S., G. Garino, K. Taylor & S.W. Price (2005), "Debt and Financial Expectations: An Individual- and Household-Level Analysis", *Economic Inquiry*, 43(1), 100-120.

<sup>15</sup> Krugman, P. (2012), "Revenge of the Optimum Currency Area", *NBER Macroeconomics Annual 2012*, Vol. 27, 1-15.

<sup>16</sup> Since all Baltic countries and Bulgaria had their currencies pegged to the euro, this development would give reason to the effects of the exchange rates on negative exchange rates, being susceptible to the Balassa-

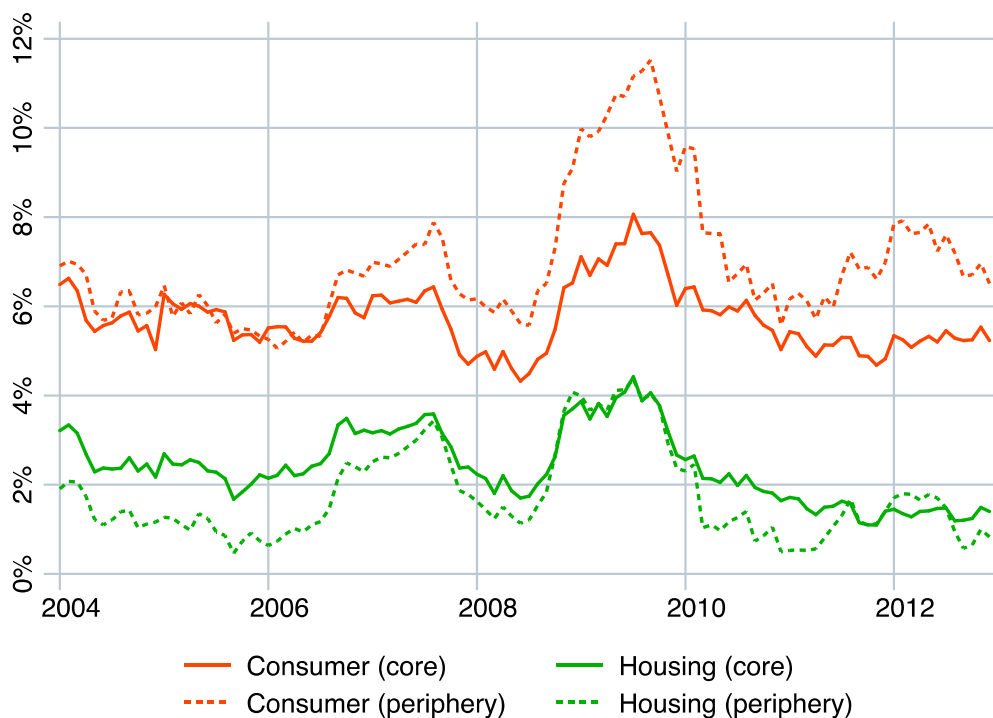
(APRC) kept its values nil or positive (see Figure 4). Even in countries with the most significant real-estate bubbles in the euro area context (Spain and Ireland) real mortgage APRC was indeed virtually zero during the pre-crisis period, but not consistently negative.

When observing real interest rates in the region identified above as having more volatile household-debt development in previous years (the approximate periphery), the interest rates were on balance only moderately lower in the pre-crisis periods, as reported in Figure 3. This finding indicates that interest rates on their own cannot explain the significant differentiation in the rise of household debt, but rather refers to the overall economic boom and other effects causing the appreciation of assets ordinarily used as collateral.

During the initial stages of the crisis, the core countries' real cost of credit saw very little change. This was less the case in the periphery. Since households with high leverage are likely to react excessively to changes in interest rates, the relatively high rise in consumer-credit real interest rates in the period between late 2008 and early 2010 would explain the very rapid initial adjustment of the consumer credit in the periphery, as well as the relative calm at the core.

Although non-negligible, the difference in interest rates cannot explain, however, the extent of the differentiated situation across Europe in its entirety. The cost of consumer credit was comparable in both country groups described above, while the peripheral countries registered a more significant temporary rise in consumer-credit stocks during the pre-crisis period. Future maturity of the market, income expectations and self-enforcing optimism appear therefore to affect credit expansion as much as market forces and the cost of credit.

Figure 3. Real Annual Percentage Rate (APR) in EU periphery and core (stock-weighted averages)



Sources: ECRI, ECB.

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Samuelson effect of naturally higher inflation, especially if such countries are catching up in economic terms.

The pro-active monetary policy helped to keep APRC low after the initial surge starting in late 2008 as a consequence of a global credit crunch. The borrowing rates, nonetheless, kept falling from 2009 onwards, despite the decreasing cost of credit, thus confirming that future growth expectations and other cyclical effects are on balance more critical in determining household debt development than the supply or cost of credit itself.

There is also a clear asymmetry in the differential between the periphery and the core in terms of credit type. While consumer-credit real APRC in the periphery registers similar or higher levels than in the core, mortgage loans are similar or lower. Such development is on a general level a combination of higher inflation in the periphery countries with higher risk premiums on unsecured loans in the periphery. More importantly, however, the spreads in consumer-loans' APRC increased after the crisis, reflecting the worsening economic situation in the periphery. In this respect, the development of unsecured consumer credit followed a similar pattern to the case of loans to non-financial companies (i.e. the spread with the core rose), while mortgage APRC remained low in the periphery or even lower than in the core, despite the rising risk of the markets.

Furthermore, the indisputable correlation between interest rates and effective borrowing would suggest that deleveraging would have proceeded faster if it was not for the intervention of central banks and resulting lower interest rates. Moreover, lower interest rates are therefore also partially caused by the fall in newly contracted loans as competition for a shrinking market decreases margins. While the effects of the crisis on interest rates were lower due to this monetary expansion and a lower demand for credit, the spreads between values of consumer credit and housing-loan interest rates have risen substantially (see Figure 4), most significantly in the peripheral regions. The underlying logic is one of increasing the risk-premium of non-secured loans as the economic situation deteriorates. In other words, the deterioration in the economic situation of households has naturally increased the risk premium on loans without collateral, therefore raising the average interest rates for – largely unsecured – consumer credit.

Figure 4. Real consumer credit and housing loan APRC in EU27



Sources: ECRI, ECB.

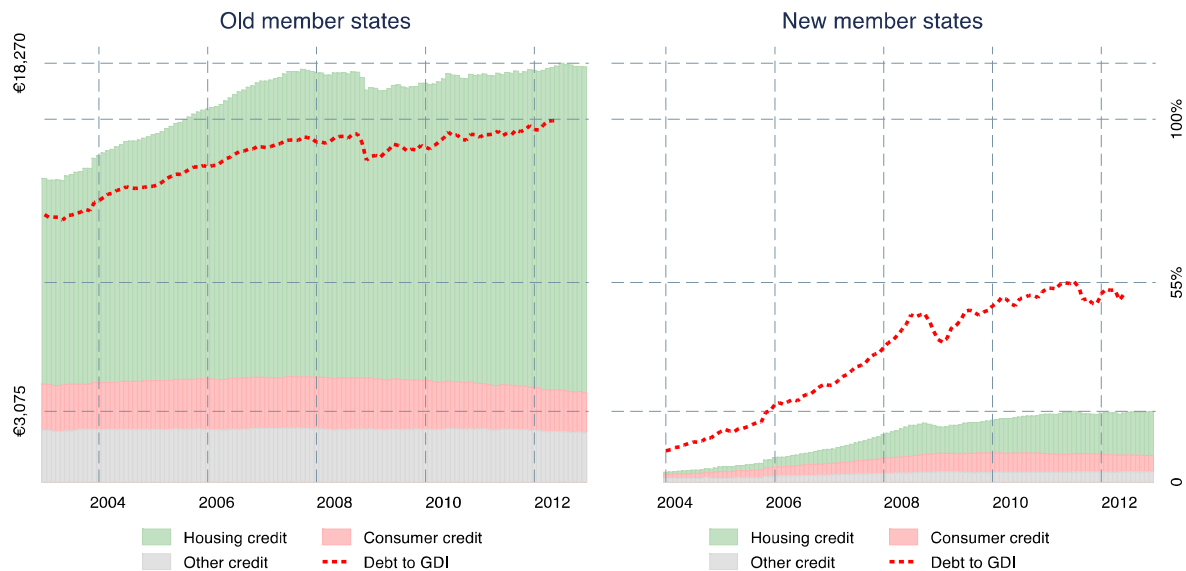
### 2.3 The four-tier Europe of household debt

While policy initiatives such as the single market and the common currency had an immediate effect on European economies, their underlining heterogeneous character has partly explained the very divergent effects of similar cyclical phenomena. Inflation propensity, the social acceptance of short-term debt, consumer-default proceedings, the maturity of the market or, for instance, home-ownership ranging from 42% in Germany to 97% in Bulgaria, all prepared a heterogeneous breeding ground for the effects of household debt during the boom and the bust. Due to the dissimilarity of EU economies, comparable cyclical phenomena had strikingly different effects on households and their debt despite – or, indeed, because of – the advanced market and effective monetary integration. As much as the common currency, legislative convergence or harmonisation in terms of credit provisioning to households could also have potentially very divergent repercussions. It is therefore essential to identify the main stakes of this European heterogeneity.

Besides the approximate division between the European core and periphery introduced above in respect to mortgage and consumer credit penetration, the European continent could also be divided into two distinct groups in terms of past economic development and household-credit markets' maturity. New member states (accession after 2004), presented

substantially lower levels of household indebtedness than old member states and correspondingly much higher rates of credit expansion before the crisis (see Figure 5). Compared to this group, even maturing peripheral old member states have registered relatively low rates of household-debt build-up.

Figure 5. Real household debt per capita and leverage to gross disposable income in new and old member states



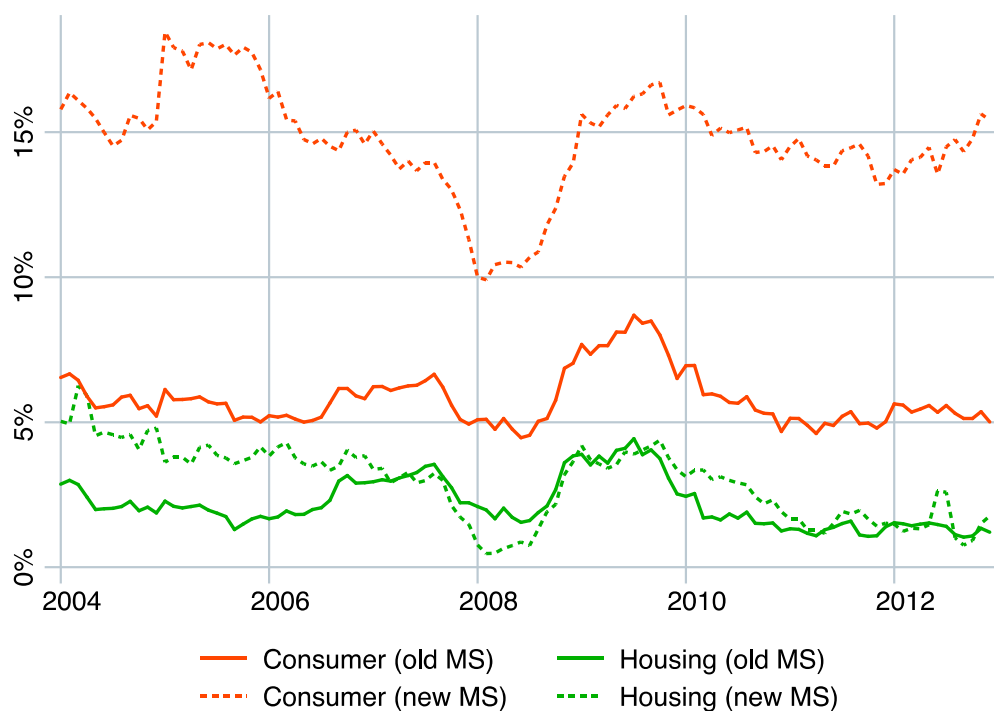
Sources: ECRI, ECB, Eurostat.

When the Central and Eastern European countries emerged from being centrally planned economic systems, credit markets in their Western form barely existed. Credit providers were state-managed, credit was rationed according different criteria from solvency and the price of real estate was kept low by housing policies and price regulation.

The levels of household leverage of Eastern European countries in early 1990s were roughly comparable with those in post-war Western Europe, characterised by low mortgage penetration and virtually non-existent consumer credit. Contrary to post-war Europe, however, financial institutions existed in the Western markets and were able and willing to provide credit to these emerging markets, albeit with a higher risk premium, reflecting the opportunity in the immature markets to establish their activities.

The availability of credit supply was significant in the early stages of transition in the current new member states. The recession accompanying the economic transition; high inflation linked to price liberalisation and consolidating monetary policy, exchange-rate volatility and overall economic instability were, however, not a good prerequisite for stable and easily predictable lending. Financial institutions therefore appropriately adjusted their interest rates to the regional risk premiums. The cost of household loans, especially consumer credit, is significantly higher in new member states than in the old ones (see Figure 6), suggesting higher risk premiums but also lower competition and higher non-rate fees on short-term loans. The surprisingly low cost of housing loans, on the other hand, reflects the low maturity of real-estate markets compared to the West and therefore potentially high returns in the case of future asset liquidation by the lender. This was not the case for unsecured consumer credit, which remained loans risky and therefore costly.

Figure 6. New and old member states real interest rates (weighted by stocks)



Source: ECRI, ECB.

One way for consumers in new member states to circumvent higher interest rates on domestically-denominated debt was to contract debt in the foreign currency of a financially stable country with liquid asset markets, where financial institutions could finance themselves easily (before the creation of the common currency mostly the Deutschmark and Swiss Franc; euros in subsequent periods). In boom times, foreign-currency loans were not destabilising. On the contrary, foreign-currency loans were an opportunity not only to borrow at lower rates but also, in countries with floating exchange rate, to speculate on the high probability of rising unit-labour costs in developing Eastern European economies, and thus on the appreciation of domestic currencies. This supposition turned out to be false in the long term, however, and soon transformed into a systemic risk element and contributed to the depth of the recession in new member states, which reinforced the overall divergence of European household-credit markets.

The high 'euroisation' and 'francisation' of households' liabilities in Eastern Europe generated a shock to the new member state economies, as their currencies fell,<sup>17</sup> generating a substantial increase in nominal interest rates and large losses for households in the most exposed countries. Exposure to foreign-currency loans subsequently decreased but nevertheless contributed substantially to macroeconomic instability in new member states. The rapid rise in the cost of consumer credit had detrimental effects on consumption.

## 2.4 Converging or diverging?

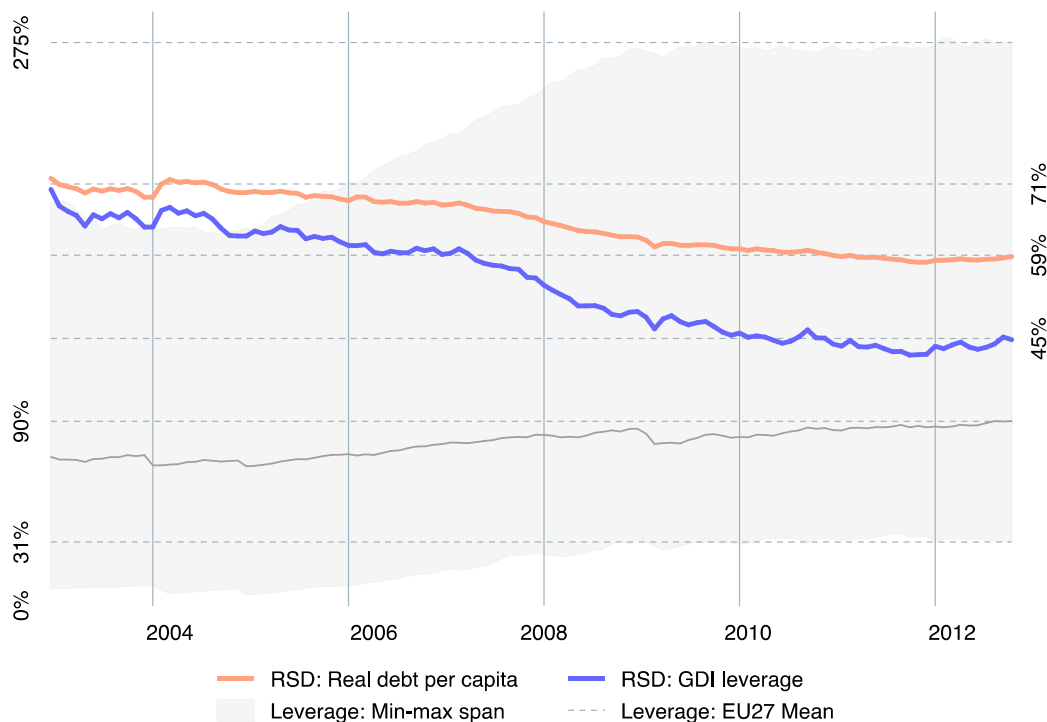
The rapid expansion of household debt in the new member states has also been viewed as an expected and on balance healthy catch-up process and convergence of consumption patterns. The catch-up process of debt to gross disposable income (GDI) – or leverage – is, however,

<sup>17</sup> Fiorante, A. (2011), "Foreign currency indebtedness: a potential systemic risk in emerging Europe", ECRI Commentary No. 8, 5 December.

not convincing in this respect. Firstly, although new member states have been increasing their household debt quickly in relative (percentage) terms to their initial base, mature Western and Southern European markets have been increasing their household debt even more rapidly in absolute terms (in net flows) and in some instances even in relative terms (to GDI).

Another element of the perceived convergence was the story of Southern European countries (i.e. Spain, Greece and Portugal) that emerged in the 1970s and 1980s from specific politico-economic systems and started to catch up in terms of household debt during the 1990s. In the early to mid-2000s, however, this convergence of debt to income started to stagnate on the EU level, as those countries exceeded the mean leverage of other old member states and continued to grow in a largely speculative way until the crisis. The effect of this divergence was partially eliminated during the recession due to higher deleveraging efforts in the peripheral countries, the divergence has slowed down in the later stages of the crisis and the trend remains very weak (see Figure 7).

Figure 7. The relative standard deviation (RSD) of debt to GDI (leverage) and household debt per capita between 2003 and 2012



Sources: ECRI, ECB, Eurostat.

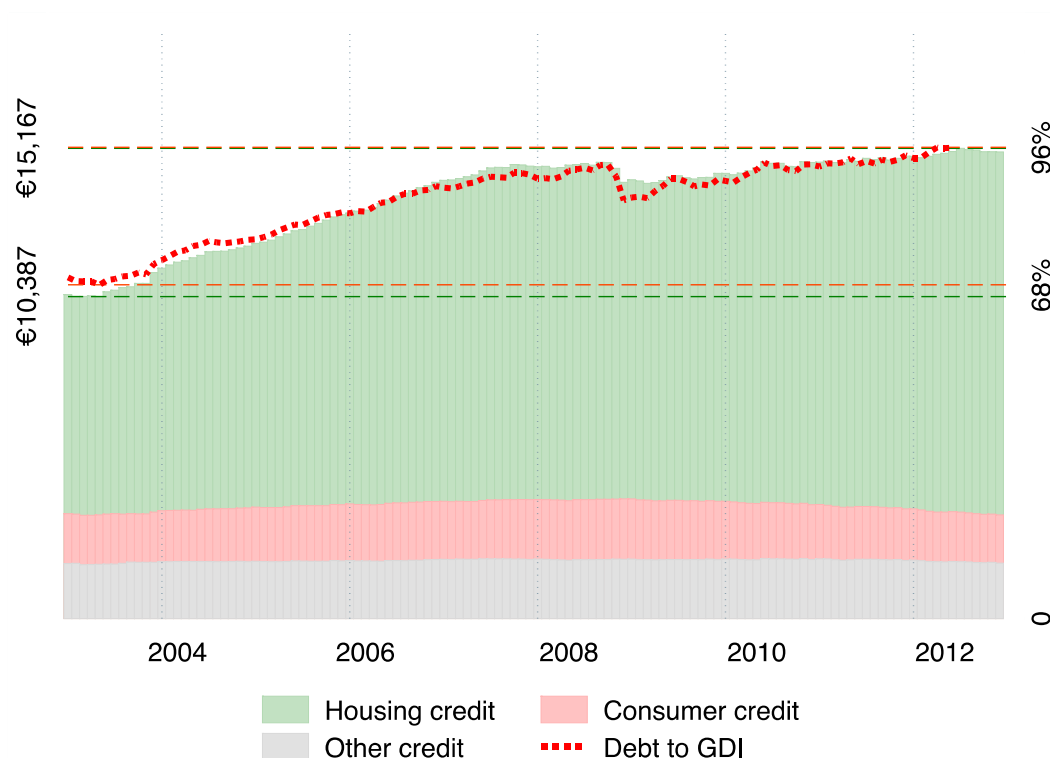
Notes: The RSD is a standard measure of relative variance; its decreasing value implies convergence. The grey area illustrates the span between the lowest and the highest degree of leverage (debt to GDI) in EU 27.

### 3. Run-up to the crisis

Although the development of EU aggregate household debt cannot be described as a bubble (Figure 8), the stocks of debt within the EU tell a different story, as demonstrated in the preceding chapter. Household debt expanded substantially mainly in less mature markets, where it therefore contributed more to the economic growth during the pre-crisis period. Beyond factors already described, a closer look at credit types demonstrated the underlining logic of this differentiated development.



Figure 8. Real household debt per capita by type and debt to GDI (leverage) in EU27 between 2003 and 2012



Source: ECRI, ECB, Eurostat.

### 3.1 Specific characteristics of the housing-credit expansion

Real estate bubbles are generally less frequent than stock market bubbles, but the market inflexibility and the structural changes that they introduce to the economy during the build-up make them more severe in terms of consequences. Numerous causes contributed to the expansion of mortgage markets between the late 1990s and mid-2000s. Among the economic, psychological and interest-rate related conditions already mentioned, which improved steadily in the period, the low maturity of some mortgage markets, which were catching up in peripheral economies, contributed to the general perception that housing-loan expansion is a sign of a general European convergence and household empowerment.

A significant contributing factor was the rise in the supply of varied mortgage products and the overall higher availability of housing credit.<sup>18</sup> With the development of securitisation, the potential pool of mortgage investors increased radically, as did the supply and variety of mortgage products to channel such investments. The establishment of the European single market in financial services has also been a contributing factor in increasing competition and thus decreasing the cost of mortgage products and thus pushing up the amount of housing loans. Across Western Europe, the growth in features such as long-term, interest-only and 100% loan-to-value contributed to the lowering instalments on households, especially in the initial periods of mortgages, thereby increasing the potential pool of borrowers. As prices of collateral assets rose, the perceived riskiness of mortgages also decreased, allowing for lower down-payments, higher loan-to-value ratios and overall reduced requirements for income, since the risk of foreclosure constituted less of a strain on the quality of security and could be

<sup>18</sup> Scanlon, K., J. Lunde & C. Whitehead (2008), "Mortgage Product Innovation in Advanced Economies: More Choice, More Risk", *European Journal of Housing Policy*, 8(2), 109-131.

redeemed at lower stages once the collateral was liquidated, supposedly at a higher market price. The required declaration of multiple annual incomes and thus the long-term solvency of the borrower was substituted by requirements regarding the appropriateness of monthly income to instalment payments; effectively reducing the capacity to take into account unemployment or income shock risks. This led to a higher number of mortgage loans but is associated with intrinsically higher risk.

The quintessential boom-time-only mortgage product available to European households in many countries has been the interest-only housing loan. The fact that principal is not being repaid under this product and that instalments were thus significantly lower than under a usual mortgage, encouraged more speculative property purchases and contributed to the inflation of asset prices and, in turn, to the perceived sustainability of expanding mortgage markets. If asset prices were to rise, an interest-only mortgage is a great source of investment, while risks are low if the borrower keeps its long-term solvency. If, however, income or prices of collateral fall, the repercussions both on the lender and on the creditor are proportionally greater. The expansion of such products had a naturally weakening effect on the real estate market and the economy as non-traditional and more sophisticated mortgage products have generally higher propensity to default.<sup>19</sup>

Households are usually the main mortgage contractors, purchasers of real estate and the initiators of high asset prices and of the debt expansion. However, asset prices have been driven significantly by the exponential growth in real estate and construction industries. For instance in Spain, unlike in Ireland, the mortgage expansion has not been as significant on the parts of households. Significant drivers of real-estate prices and housing-loans in Spain have been construction and development companies, i.a. responding to foreign demand for real estate destined for recreational purposes.<sup>20</sup> The speculative character of housing loans by non-financial companies is underlined by the high ratio of subsequent non-performing loans in the real-estate development sector.

Even though the Europe-wide rise in availability of housing credit has not been as driven by political considerations as in the US, housing affordability has become part of political discourse in the past 20 years, starting in the UK and expanding to continental Europe at the turn of the century. The political sensitivity of housing and home ownership had played a non-negligible role in the expansion, also considering the expenditure restraints of governments. Promotion of house ownership, tax exemptions and legislative relief on mortgages were a seemingly cost-efficient alternative to other provisions with similar goals, such as social housing.

Concerning possible effects of the unstable housing debt on the banking sector, the picture also varies. In countries such as Ireland, the burst of the real-estate bubble and subsequent high household-default ratios put substantial strain on the banks' assets and their overall solvency. This meant that the household credit bubble had direct consequences on the rise in government debt as a result of support for the banking sector. In other countries, however, the direct effect of delinquent household debt was lower during the first stages of the crisis when household default ratios were kept relatively low.

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<sup>19</sup> Lin, C.-C., L.J. Prather, T.-H. Chu & J.-T. Tsay (2013), "Differential default risk among traditional and non-traditional mortgage products and capital adequacy standards", *International Review of Financial Analysis*, 27(0), 115-122.

<sup>20</sup> Conefrey, T. & J. Gerald (2010), "Managing housing bubbles in regional economies under EMU: Ireland and Spain", *National Institute Economic Review*.

### 3.2 Consumer credit

Many microeconomic studies prove that households with mortgage credit are more prone to take on a consumer loan, although if controlled for household income, the effects are somehow less tangible.<sup>21</sup> There are good reasons to believe that the increase of mortgage credits had a knock-on effect on the consumer credit as households increased their expenditure on housing equipment and accessories. In addition, mortgages increase awareness of financial products and put households more at ease with a financial liability, thereby generating potential for smaller amounts of consumer credit.

Considering the greater flexibility of consumer credit and lower principal sums, it is therefore not surprising that consumer credit went through an even more radical development than housing loans. Between 1995 and the peak in 2008, the real amount of consumer credit expanded by approximately 150% in Europe, while the US market consumer-credit market grew by only 60% during the same period, although from a much higher level. The rapid development of consumer-credit markets has facilitated access to short-term loans, which played an increasing role in European households' portfolios during the boom years.

The same causal logic mentioned in the preceding chapters also applies to consumer credit. Lower interest rates, more financial products, larger investment pool due to securitisation, new distributional channels as well as increasing convenience of credit all increased the potential of credit supply and demand. The credit-card market has been expanding at extraordinary rates as their development was relatively delayed in comparison with the US, contributing to the higher rates of consumer-credit growth in Europe. In Britain, Italy or Greece, the stock of credit card debt increased more than five times during the ten years before the crisis, while credit-card debt in the US increased just two fold during the same period.

Such expansion before the crisis was critical to promoting consumption since spending was no longer conditioned by the immediate liquidity constraints but rather – in an ideal case – by the long-term solvency of consumers who optimise their short-term cash flows. This rendered personal finance management more efficient, avoided small-scale liquidity traps, further lessening the liquidity constraints of households, thus encouraging economic growth in boom times.

Although consumer credit is often the focal point of discussions on over-indebtedness, mainly due its higher accessibility compared to mortgage credit, its contribution to the overall household indebtedness and the exposure to credit markets in Europe is almost negligible. At its peak in 2009, consumer credit represented just over 13% of household debt in the euro area, including partially collateralised leasing credit, while housing loans represented 72%.

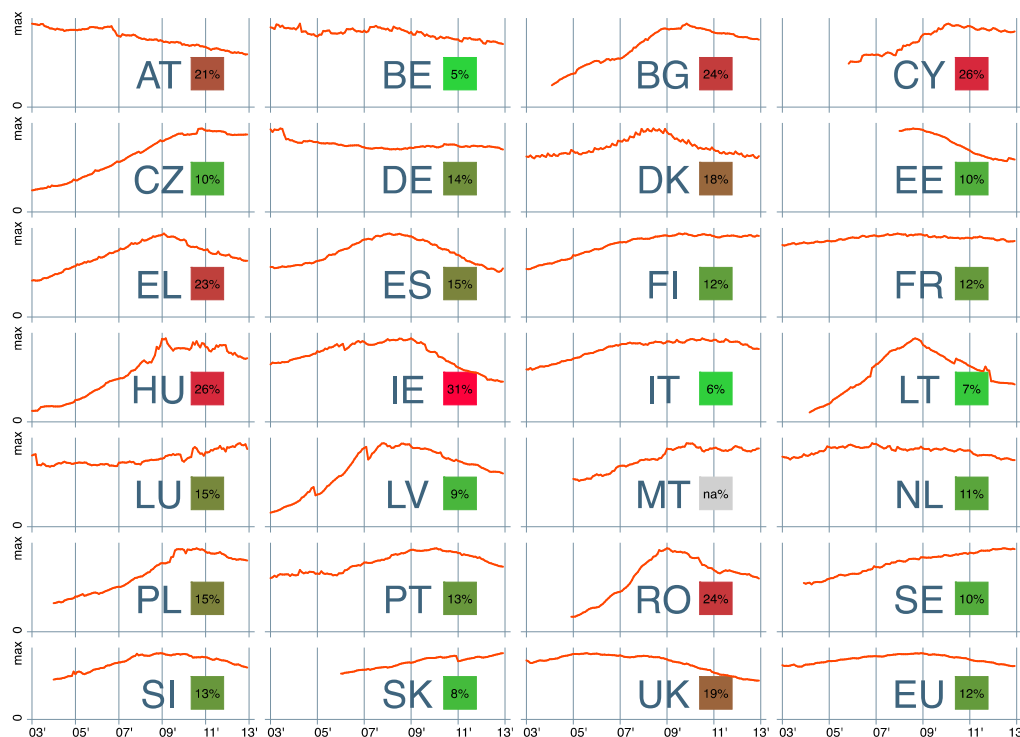
The high sensitivity of consumer credit to GDP and even more so to income expectations (see Annex) meant that the perceived overhang of consumer credit has been largely reduced or eliminated in countries where it expanded substantially in the early 2000s (see Figure 9). More importantly, the association between pre-crisis credit expansion and the consequent retrenchment shows that its growth in many countries during boom times was fragile and based on over-optimistic expectations (see Chapter 4.1). In countries with a longer tradition of consumer credit, the reduction has been substantially lower, implying a higher financial maturity of consumers and a rather different approach to consumer credit based on cash-

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<sup>21</sup> Costa, S. (2012), "Households' Default Probability: An Analysis Based on the Results of the HFCS", *Economic Bulletin and Financial Stability Report*.

flow optimisation more than short-termism and betting on higher future income. Such a different underlying nature of consumer credit should also be taken into consideration when analysing any legislative measures for consumer credit.

Figure 9. Real values of consumer credit (line) in EU27 and consumer credit to gross disposable income at peak levels (shades and percentage)



Source: ECRI, ECB

#### 4. Deleveraging – dangerous or necessary?

As highly leveraged households are more sensitive to changes in income and interest rates,<sup>22</sup> systematically significant shocks to the economy have a stronger impact on households' financial stability and consumption in countries with high household debt. It could therefore be expected that economic crises have greater impact on countries with a higher potential drop in demand and investment as well as banking sector destabilisation due to higher loan delinquency.

Although involvement of household indebtedness in bringing about the double-dip recession that hit most of Europe in 2009, and subsequently in late 2011, was negligible, lower disposable income had a disproportionate impact on household consumption, since the ratio of debt service to income increased. In the same vein, the adjustment to new expected income reduced the usual consumption pattern and led to substantially lower domestic demand for goods and services, creating deflationary pressure and deepening the recession. In this theoretical framework, household debt overhang indeed has a clearly negative effect during crises and the largely positive economic effect of household debt expansion before the crisis has thus largely detrimental effects on consumption during the

<sup>22</sup> Debelle, G. (2004), "Household debt and the macroeconomy", *BIS Quarterly Review*, March, 51–64.

recession.<sup>23</sup> In a context of fiscal consolidation and government unwillingness or incapacity to take on more debt to sustain the economic activity and smoothen the downturn, households' deleveraging efforts even coincided with an economically difficult period during which investments were postponed as neither private nor public demand could guarantee returns, largely contributing to the fiscal-retrenchment multiplier recently adjusted by the IMF.<sup>24</sup>

While credit has a clearly positive effect on the short-term growth with positive spillovers for the future, generating substantial multipliers, it is also associated with long-term concerns of excessive debt accumulation. Even in economically peaceful times, excessive debt overhangs can strain on economy if the debt service becomes too detrimental to consumption. Research on the effects of a too high debt-to-GDP ratio has found a largely positive association between household credit and economic growth. Cecchetti et al. (2011)<sup>25</sup> calculated a very approximate estimate of debt values upon which the debt can become detrimental to GDP growth. They observed a reversal in the positive association between household debt and GDP growth at a debt-to-GDP ratio of 85%. Such research has, however, recently been put in doubt<sup>26</sup> and should therefore be considered with the utmost precaution. More importantly, the association between high debt to income and slower economic growth does not imply a direct causality.

In the European context, only Cyprus, Denmark, the Netherlands and the UK attain levels identified by Cecchetti et al., with Portugal and Spain ranking close below. More than nominal values of such limits per se, however, the main conclusion is that there are theoretical optimum debt levels – although most probably varying and relative – that are most likely to sustain maximum economic growth and that at a certain level, debt overhang could be detrimental to the economy. The most intuitive question would therefore be whether an immediate deleveraging would be the right thing to do in order to foster higher growth.

Such a conclusion would be rather doubtful, on the one hand due to the self-enforcing multiplier effects that household deleveraging has on demand and, on the other, due to the incapacity of the state to sustain demand through higher expenditure, as is often the case during less severe recessions. More importantly, as is mentioned in the subsequent chapters of this report, perceived sustainable levels of household debt can vary substantially between countries. It is therefore not clear where the debt overhang is of detrimental value to economic growth.

Furthermore, quick household-credit retrenchment under the recession can actually lead to an even deeper recession, thereby further destabilising household income and the extent of negative effects of household-debt overhang.<sup>27</sup> Successful deleveraging after the build-up of debt overhangs generally proceeds during recovery (Roxburgh et al. 2012), which allows the household to partly reduce their nominal debt and partly grow out of the excessive leverage.

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<sup>23</sup> Dynan, K., A. Mian & K. Pence (2012), "Is A Household Debt Overhang Holding Back Consumption?", *Brookings Papers on Economic Activity*.

<sup>24</sup> Chmelar, A. (2012), "Household Debt in Europe's Periphery: The dangers of a prolonged recession", ECRI Commentary No. 12, 22 November.

<sup>25</sup> Cecchetti, S., M. Mohanty & F. Zampolli (2011), "The real effects of debt", pp. 25–27.

<sup>26</sup> Herndon, T., M. Ash & R. Pollin (2013), "Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff", Political Economy Research Institute Working Paper Series, 322.

<sup>27</sup> Chmelar, A. (2012), "Household Debt in Europe's Periphery: The dangers of a prolonged recession", ECRI Commentary No. 12, 22 November.

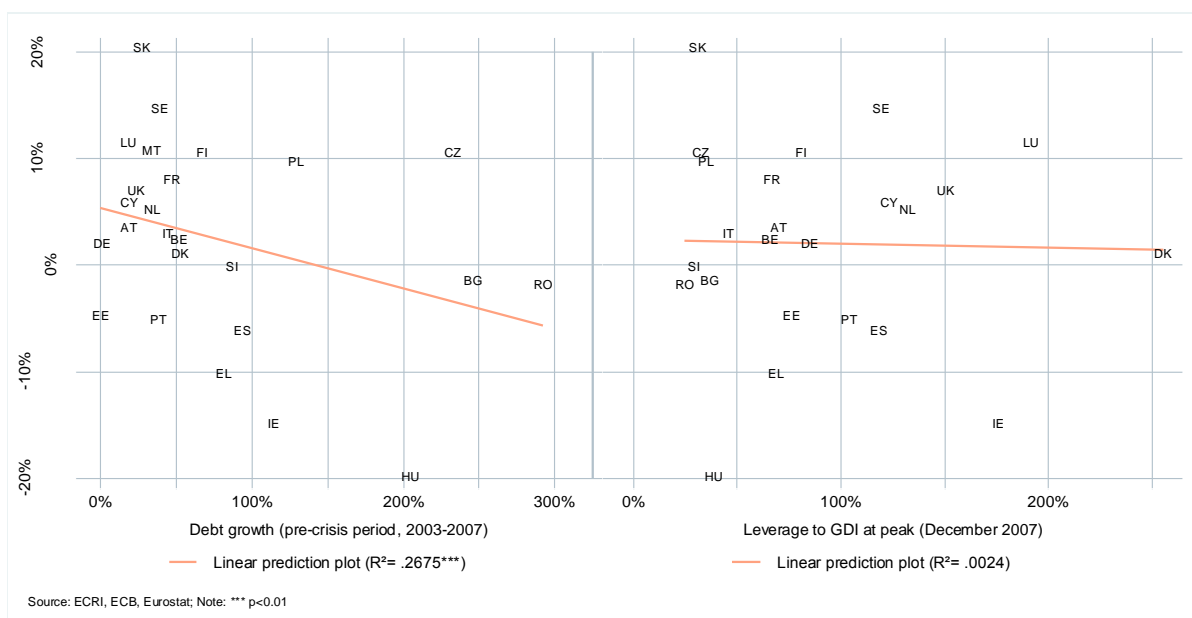
A different way for the household sector to reduce their debt is to shift the cost onto the financial sector and ultimately onto the government or the lender of last resort. In countries with a low enforceability of evictions and more debtor-centred personal insolvency rules, a non-negligible part of the debt overhang was eliminated through personal defaults. Unlike Spain and Portugal, where the ratio of delinquent loans was kept at very low levels between 2 and 4%, in Ireland and Greece this *de facto* elimination occurred due to high non-performing loan ratios of 12 and 14% respectively.<sup>28</sup> While the effect on consumption in Ireland was potentially tangible and could have helped the household sector to pick up, the context of the deep recession in Greece does not allow a similar conclusion.

#### 4.1 Perceived household-debt sustainability levels

It is a stylised fact that there is a relationship between debt sustainability and the output of the economy or the disposable income of households. As expectations of future growth decrease, we might anticipate a lowering of debt to income, especially in countries with high debt-to-income ratios. This is, however, not what is happening during the ongoing deleveraging episode.

In the past four years of low growth and recessions, households with the biggest leverage in the EU27 do not necessarily reduce their debt levels more than those with a lower one. The relationship between debt reduction as a reaction to the crisis and the overall leverage levels in the EU is statistically insignificant (see Figure 10). This implies a counterintuitive conclusion that, at least in macroeconomic terms, households do not reduce their debt because they are too indebted. Instead, the main indicator of debt-overhang reduction appears to be its recent build-up with a highly significant correlation.

Figure 10. Rates of household-debt growth during the crisis (2009–2012) in relation to debt pre-crisis expansion (2003–2007) and to household debt-to-GDI ratio



This sheds light on two major problems of household debt development before and during the crisis. It is not the level of debt that determines the necessity to reduce the debt; it is rather the perception of the sustainability of debt, determined significantly by the time when the debt has built up. It also shows that debt-reduction cannot be dictated or determined by

<sup>28</sup> Chmelar, A. (2012), *ibid.*

pointing to single ratios to GDP or to disposable income. The perceived or real sustainability of debt levels depend on different variables than income per se.

Two conclusions could be drawn from this argumentation. Either the debt levels were sustainable but the culture of higher debt did not have time to adjust to new income expectations, or the exuberance of credit expansion before the crisis was irrational and the credit taken out was not sufficiently consolidated in household portfolios. It does not imply that the bulk of the credit expansion before the crisis was speculative in nature, but rather that it was the result of an over-optimistic reaction to lower credit constraints and that indeed could be depicted as subconsciously speculating on – *ex post* unrealistic – future income.

## 5. Conclusion: Lessons from the crisis

Household debt in Europe was an important driver of economic growth until the mid-2000s. On the other hand, debt overhang and the contraction of demand has been just as important an impediment to the return of growth. Both lenders and borrowers had not sufficiently accounted for the risk that the business cycle would shift downwards. Therefore, one lesson to be drawn from the recent crisis is the inappropriate income expectation related to future growth, which ultimately led to borrowing and lending based on ill-informed or irrational income expectations, and subsequently to over-indebted households and a highly leveraged population.

The financial crisis has indeed emphasised the focus of EU legislators on better facilitating responsible lending and borrowing. This is reflected in the review of the Consumer Credit Directive (CCD) as well as in the Commission's Proposal for a Directive on Credit Agreements Related to Residential Property, generally referred to as the Mortgage Credit Directive (MCD). The European Commission is also undertaking several assessments of how to ease and prevent household over-indebtedness.

The lessons from the financial crisis can at least partially be acknowledged through revision of both the legal and market environment in which the European participants of the household credit process operate. Both the CCD and the forthcoming MCD include provisions important for pricing, advertising, information to be provided to the consumer, to name but a few. Because of the significant implications of the crisis on European households with mortgages, the Commission Proposal for the MCD includes provisions of special importance for the post-financial crisis household credit market. For instance, its provisions directed towards mortgage brokers are crucial to prevent the moral hazard brought about by the practice of quick securitisation, under which brokers are commensurately less liable for the long-term soundness of their deal if the risk is quickly passed on to a widely dispersed pool of investors, therefore absolving the brokers of the large part of the risk, while preserving the profits of a newly contracted deal. The requirement to provide the consumer with full and clear information prior to the contract also has an important implication, not just in increasing consumer financial literacy per se, but in informing of the probability of interest rate fluctuations in the course of the whole business cycle to realise the risks of economic downturn. This is an essential part of preventing the detrimental effects of varying interest rates and of foreign-currency loans in mortgages, effectively distorting the rational expectations of consumers.

Tackling household over-indebtedness through legislation is a rather problematic mission, however, given its complex and abstract nature. To this date, no definition of household over-indebtedness has been generally approved, which makes it difficult to design concrete

measures to address it. Household over-indebtedness is a combination of several household problems brought about by the crisis, including unemployment, unexpected drops in real income and welfare retrenchment. Furthermore, household over-indebtedness should not be associated only with financial credit, as over-indebtedness can result also from other obligations than financial debt and households can be classed as over-indebted without having any financial credit.<sup>29</sup>

The impact of household over-indebtedness and insolvencies, and in turn their impact on the financial stability and revival of not only households but also financial institutions, has also triggered stronger policy discussions about the state of EU legislation on defaults and foreclosures. The approach to consumer defaults and foreclosures could also be legislated as to be appropriate to the economic conjuncture. Huge losses are generated from the fact that foreclosures and evictions divest otherwise long-term solvent individuals of their homes, which are then liquidated at a lower price, leading to the fall of the asset prices and further exacerbating the mortgage crisis, or become vacant, which generates costs for the whole of society and does not improve the situation of lenders. Although most of the responsibility lies clearly with borrowers and lenders, absolving both groups would generate moral hazard, there is a case for them not being completely left behind during exceptional economic problems. States should be able to step in to avoid the long-term consequences of short-term income losses, while ensuring that the long-term liability would remain on both the borrowers and lender's side. In other terms, governments could provide guarantees redeemable after recovery by the borrowers to avoid excessive dead-weight losses during recessions and thus provide necessary macroeconomic stability. Whether this role could or should be undertaken under current fiscal constraints is another question.

Nonetheless, many of the causes of the recent credit expansion could not have been prevented by legislators. It comes as an evident lesson of the crisis that central bankers also have part of the responsibility to control asset prices, as regulators and policy-makers are not able to control such phenomena. Politicians should also rethink their encouragement of home ownership as in many instances it has led to asset bubbles and massive uncovered liabilities. If home ownership is to be promoted not as a goal per se, but as a social policy to stabilise the income of households and to improve their welfare, then other alternatives should be considered for lower-income groups that comprise the group of households that were previously considered as sub-prime borrowers.

In addition to posing restrictions, the legislative framework should also be reviewed from the perspective of what it should facilitate. For lenders to be able to lend responsibly, they need to have access to sufficient information about the consumer and the right to process this information in order to make robust creditworthiness assessments on which to base their lending decision. For this purpose, the role of credit reporting systems should not be neglected. Well functioning credit reporting systems promote a level playing field among creditors as more creditors have sufficient information about the consumer's creditworthiness, which increases consumer choice and mobility. When all creditors have sufficient information to lend only to those consumers without excessive debt burden, credit reporting directly contributes to preventing household over-indebtedness in society. For the legislative environment to facilitate the necessary credit data access and rights of use to

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<sup>29</sup> Pyykkö, E. (2013), *Towards Better Use of Credit Reporting in Europe*, Report of ECRI/CEPS Task Force, Centre for European Policy Studies and European Credit Research Institute, Brussels, forthcoming.



creditors, not only CCD, MCD, but also data protection legislation should form a consistent legislative framework.<sup>30</sup>

However, the provisions in the above-mentioned directives can provide only part of the many measures needed to prevent excessive household leveraging and facilitate responsible lending. Future financially stable household credit markets need not only an effective enforcement of EU directives, but also active dialogue among market participants. This means codes of conduct for creditors and consumer empowerment and financial education for households. Consistently, new measures continue to be explored at both national and EU level to assist both creditors and borrowers in responsible lending and borrowing. The Standing Committee on Consumer Protection and Financial Innovation (SCConFin) of the European Banking Authority is currently working on good practices (and possibly guidelines) on responsible lending and on the treatment of borrowers in payment difficulties. Their work is based on a survey of the Committee's members undertaken in 2012, which identified indebtedness and responsible credit, transparency, mis-selling of financial products, security, and specific issues such as foreign currency loans and payment protection as current supervisory concerns regarding consumer protection.<sup>31</sup> Another important set of guidelines has recently been provided by the Financial Stability Board in its Principles for Sound Residential Mortgage Underwriting Practices.<sup>32</sup> These guidelines deal with the effective verification of income and other financial information, reasonable debt service coverage, appropriate loan-to-value ratios, effective collateral management, and prudent use of mortgage insurance.

Specific guidelines and codes of conduct also provide an important tool for balancing the household credit markets throughout very heterogeneous EU member states. The market environments for household credit differ significantly among countries, which is why the identification of unambiguous and specific measures for responsible lending and fighting excessive household leveraging is practically impossible. Nevertheless, this aspect emphasises the role of proper implementation and enforcement of the relevant EU directives in the member states.

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<sup>30</sup> Pyykkö, E. (2013), *Towards Better Use of Credit Reporting in Europe*, Report of ECRI/CEPS Task Force, Centre for European Policy Studies and European Credit Research Institute, Brussels, forthcoming.

<sup>31</sup> EBA (2013), *Report on consumer trends – Supervisory concerns regarding consumer protection issues in 2012/13*, European Banking Authority, 18 March 2013.

<sup>32</sup> FSB (2012), *FSB Principles for Sound Residential Mortgage Underwriting Practices*, Financial Stability Board, Basel.

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## Annex

Table 1. Individual correlation levels between GDP and interest rates between 2003 and 2012 in EU27

Austria						Belgium					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.841*** 0.000	0.2695*** 0.003	-0.4297*** 0.000	-0.2092** 0.030	-0.5346*** 0.000	All debt	0.5176*** 0.000	N/A	N/A	N/A	N/A
Consumer credit	-0.7309*** 0.000	-0.184** 0.044	0.4849*** 0.000	0.2883*** 0.003	0.5818*** 0.000	Consumer credit	-0.4674*** 0.000	N/A	N/A	N/A	N/A
Housing credit	0.851*** 0.000	0.274*** 0.003	-0.4132*** 0.000	-0.147 0.130	-0.4803*** 0.000	Housing credit	0.2276** 0.014	N/A	N/A	N/A	N/A
Bulgaria						Cyprus					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.5923*** 0.000	0.863*** 0.000	0.554*** 0.000	0.5938*** 0.000	0.4858*** 0.000	All debt	0.5523*** 0.000	-0.3103** 0.016	-0.4503*** 0.000	-0.210 0.107	-0.3146** 0.014
Consumer credit	0.6305*** 0.000	0.8505*** 0.000	0.8024*** 0.000	0.4464*** 0.000	0.353*** 0.002	Consumer credit	0.6104*** 0.000	-0.142 0.279	-0.5973*** 0.000	0.285** 0.027	0.081 0.538
Housing credit	0.6021*** 0.000	0.8805*** 0.000	0.5616*** 0.000	0.6473*** 0.000	0.5456*** 0.000	Housing credit	0.5895*** 0.000	-0.32** 0.013	-0.5238*** 0.000	-0.118 0.369	-0.2499* 0.054
Czech Republic						Germany					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.8495*** 0.000	0.3211*** 0.001	-0.2333** 0.015	0.068 0.482	-0.2231** 0.020	All debt	-0.039 0.682	-0.063 0.494	-0.3336*** 0.000	-0.2772*** 0.004	-0.4599*** 0.000
Consumer credit	0.8743*** 0.000	0.2156** 0.025	-0.139 0.153	0.067 0.493	-0.118 0.226	Consumer credit	-0.6859*** 0.000	0.37*** 0.000	0.1897** 0.038	0.4224*** 0.000	0.1643* 0.089
Housing credit	0.8758*** 0.000	0.2554*** 0.008	-0.2009** 0.037	0.056 0.564	-0.1805* 0.062	Housing credit	-0.7514*** 0.000	0.753*** 0.000	0.6125*** 0.000	0.5337*** 0.000	0.4705*** 0.000
Denmark						Estonia					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.3604*** 0.000	-0.1987** 0.030	-0.2913*** 0.001	-0.485*** 0.000	-0.574*** 0.000	All debt	-0.2474* 0.066	-0.8254*** 0.000	0.6203*** 0.000	-0.7419*** 0.000	0.4442*** 0.000
Consumer credit	0.6674*** 0.000	0.5398*** 0.000	0.5988*** 0.000	0.2804*** 0.003	0.4823*** 0.000	Consumer credit	-0.038 0.782	-0.928*** 0.000	0.8207*** 0.000	-0.9207*** 0.000	0.206 0.114
Housing credit	0.4211*** 0.000	-0.1903** 0.037	-0.2555*** 0.005	-0.4354*** 0.000	-0.5094*** 0.000	Housing credit	-0.2823** 0.035	-0.8932*** 0.000	0.6547*** 0.000	-0.8106*** 0.000	0.4441*** 0.000
Greece						Spain					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.3446*** 0.000	0.2235** 0.014	-0.3196*** 0.000	0.128 0.186	-0.2025** 0.036	All debt	0.8283*** 0.000	0.5395*** 0.000	0.146 0.112	0.4352*** 0.000	0.3066*** 0.001
Consumer credit	0.6261*** 0.000	-0.006 0.952	-0.120 0.191	-0.046 0.640	-0.079 0.417	Consumer credit	0.7377*** 0.000	0.6863*** 0.000	0.5896*** 0.000	0.4561*** 0.000	0.5966*** 0.000
Housing credit	0.4583*** 0.000	0.100 0.279	-0.2632*** 0.004	0.027 0.779	-0.1822* 0.059	Housing credit	0.851*** 0.000	0.574*** 0.000	0.1923** 0.035	0.4841*** 0.000	0.385*** 0.000
Finland						France					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.6439*** 0.000	0.1528* 0.096	-0.3415*** 0.000	-0.8158*** 0.000	-0.8622*** 0.000	All debt	0.7621*** 0.000	-0.3302*** 0.000	-0.2188** 0.016	-0.135 0.165	-0.134 0.166
Consumer credit	0.7529*** 0.000	0.2194** 0.016	-0.134 0.146	-0.6761*** 0.000	-0.6403*** 0.000	Consumer credit	0.8077*** 0.000	-0.027 0.772	0.2768*** 0.002	0.219** 0.023	0.3285*** 0.001
Housing credit	0.689*** 0.000	0.1744* 0.057	-0.29*** 0.001	-0.7859*** 0.000	-0.8174*** 0.000	Housing credit	0.7756*** 0.000	-0.3257*** 0.000	-0.2016** 0.027	-0.095 0.327	-0.089 0.358
Hungary						Ireland					
	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC		GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.321*** 0.000	-0.6195*** 0.000	-0.5997*** 0.000	-0.6273*** 0.000	-0.5192*** 0.000	All debt	0.904*** 0.000	-0.113 0.220	0.4473*** 0.000	0.012 0.905	0.4049*** 0.000
Consumer credit	0.2843*** 0.002	-0.6157*** 0.000	-0.5681*** 0.000	-0.5897*** 0.000	-0.4608*** 0.000	Consumer credit	0.448*** 0.000	-0.282*** 0.002	0.5284*** 0.000	-0.3242*** 0.001	0.111 0.254
Housing credit	0.4365*** 0.000	-0.5137*** 0.000	-0.562*** 0.000	-0.4802*** 0.000	-0.3492*** 0.000	Housing credit	0.8928*** 0.000	-0.138 0.134	0.4015*** 0.000	0.042 0.663	0.434*** 0.000

**Italy**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.024 0.801	-0.4317*** 0.000	-0.113 0.218	-0.4079*** 0.000	-0.4066*** 0.000
Consumer credit	0.2755*** 0.003	-0.4581*** 0.000	0.045 0.629	-0.139 0.151	0.029 0.768
Housing credit	0.1846** 0.047	-0.4832*** 0.000	-0.023 0.805	-0.3032*** 0.001	-0.192** 0.047

**Luxembourg**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.7303*** 0.000	N/A	N/A	N/A	N/A
Consumer credit	0.3842*** 0.000	N/A	N/A	N/A	N/A
Housing credit	0.8099*** 0.000	N/A	N/A	N/A	N/A

**Malta**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.7956*** 0.000	-0.7622*** 0.000	-0.7657*** 0.000	-0.139 0.286	-0.2305* 0.074
Consumer credit	0.7666*** 0.000	-0.8008*** 0.000	-0.81*** 0.000	0.4498*** 0.000	0.3757*** 0.003
Housing credit	0.7906*** 0.000	-0.7506*** 0.000	-0.7637*** 0.000	-0.056 0.671	-0.148 0.256

**Poland**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.9084*** 0.000	0.3053*** 0.003	-0.2374** 0.020	-0.4081*** 0.000	-0.7315*** 0.000
Consumer credit	0.8873*** 0.000	0.3091*** 0.002	-0.2148** 0.036	-0.3521*** 0.000	-0.675*** 0.000
Housing credit	0.9035*** 0.000	0.2898*** 0.004	-0.3231*** 0.001	-0.3952*** 0.000	-0.7726*** 0.000

**Romania**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.3177*** 0.002	0.091 0.446	-0.2591** 0.028	-0.117 0.326	-0.5091*** 0.000
Consumer credit	0.3691*** 0.000	0.7097*** 0.000	0.3619*** 0.002	0.449*** 0.000	-0.031 0.799
Housing credit	0.2146** 0.039	-0.2918** 0.013	-0.6481*** 0.000	-0.2679** 0.023	-0.4975*** 0.000

**Slovenia**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.6426*** 0.000	0.4529*** 0.000	-0.4944*** 0.000	0.4337*** 0.000	-0.4287*** 0.000
Consumer credit	0.8464*** 0.000	0.7181*** 0.000	0.002 0.988	0.5273*** 0.000	-0.050 0.610
Housing credit	0.5661*** 0.000	0.3665*** 0.000	-0.5699*** 0.000	0.409*** 0.000	-0.4581*** 0.000

**United Kingdom**

	GDP	Consumer APRC	Housing APRC	Real Cons. APRC	Real Housing APRC
All debt	0.2439*** 0.008	N/A	N/A	N/A	N/A
Consumer credit	0.077 0.413	N/A	N/A	N/A	N/A
Housing credit	0.4738*** 0.000	N/A	N/A	N/A	N/A

**Lithuania**

	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.5706*** 0.000	0.7926*** 0.000	0.055 0.592	0.3991*** 0.000	-0.434*** 0.000
Consumer credit	0.7133*** 0.000	0.4143*** 0.000	0.6093*** 0.000	-0.035 0.732	-0.4904*** 0.000
Housing credit	0.5814*** 0.000	0.7807*** 0.000	0.048 0.635	0.4048*** 0.000	-0.4045*** 0.000

**Latvia**

	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.5644*** 0.000	0.8169*** 0.000	0.069 0.481	0.3494*** 0.000	-0.144 0.136
Consumer credit	0.7245*** 0.000	0.5856*** 0.000	0.2796*** 0.003	0.106 0.277	-0.2633*** 0.006
Housing credit	0.6415*** 0.000	0.7308*** 0.000	0.142 0.144	0.267*** 0.005	-0.1751* 0.070

**Netherlands**

	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.8265*** 0.000	N/A	N/A	N/A	N/A
Consumer credit	0.2216** 0.017	N/A	N/A	N/A	N/A
Housing credit	0.7966*** 0.000	N/A	N/A	N/A	N/A

**Portugal**

	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.3027*** 0.001	0.4954*** 0.000	0.103 0.265	0.4524*** 0.000	0.150 0.121
Consumer credit	0.4328*** 0.000	0.4267*** 0.000	-0.011 0.909	0.6297*** 0.000	0.4019*** 0.000
Housing credit	0.3483*** 0.000	0.449*** 0.000	0.058 0.529	0.4744*** 0.000	0.1919** 0.047

**Sweden**

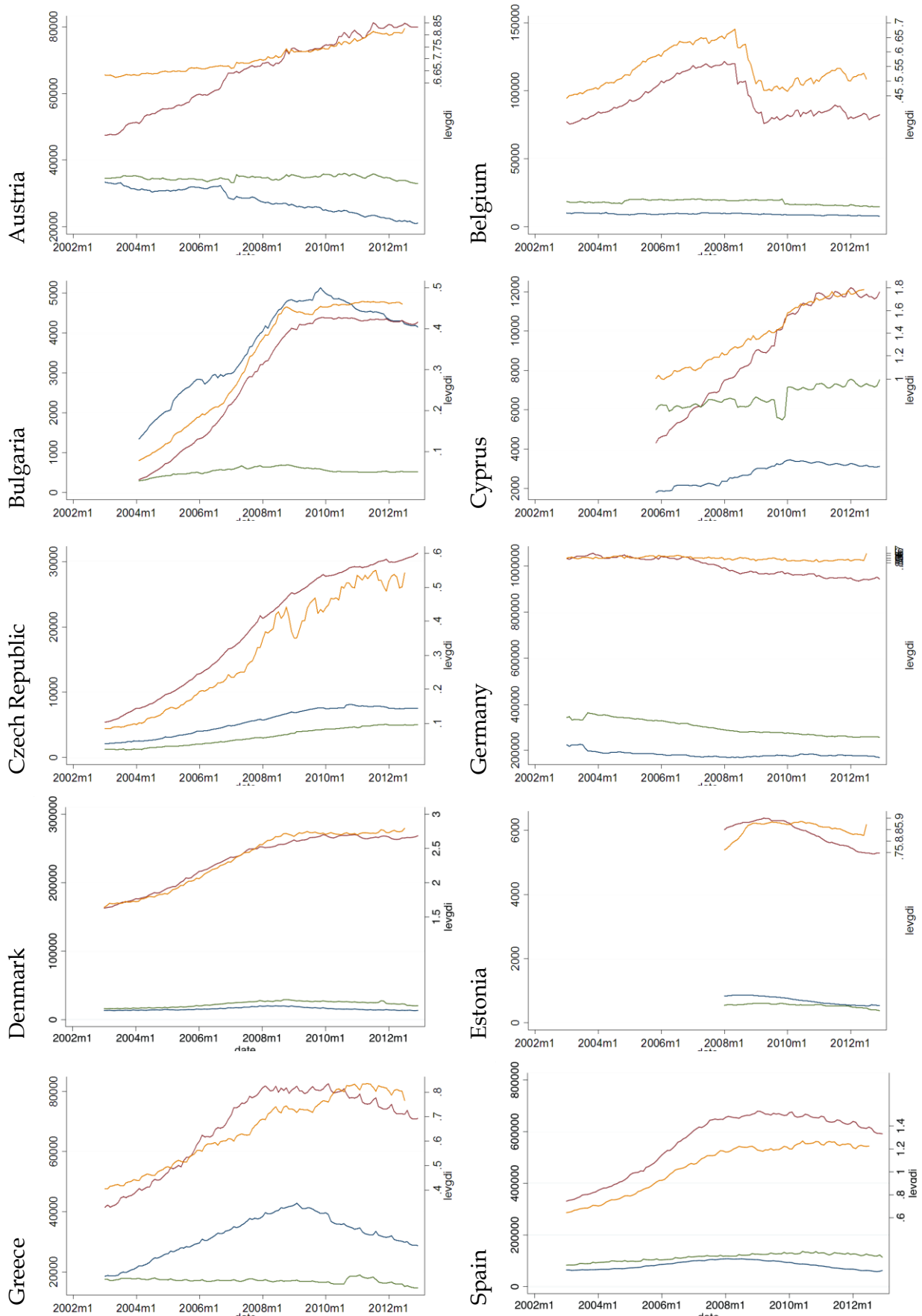
	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.7903*** 0.000	0.2932*** 0.005	-0.074 0.489	0.387*** 0.000	0.067 0.532
Consumer credit	0.7323*** 0.000	0.2178** 0.040	-0.119 0.267	0.1826* 0.087	-0.121 0.258
Housing credit	0.7692*** 0.000	0.095 0.375	-0.2755*** 0.009	0.127 0.237	-0.2315** 0.029

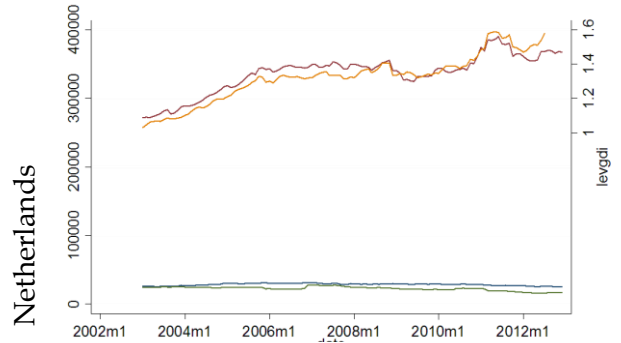
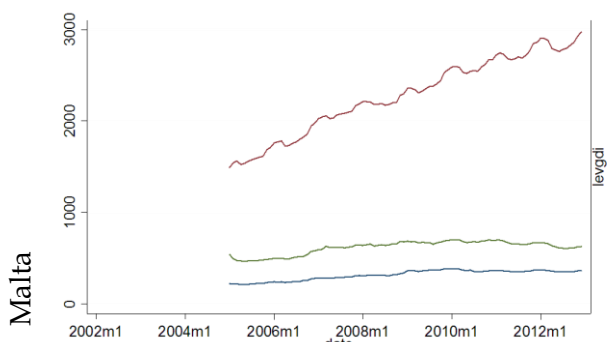
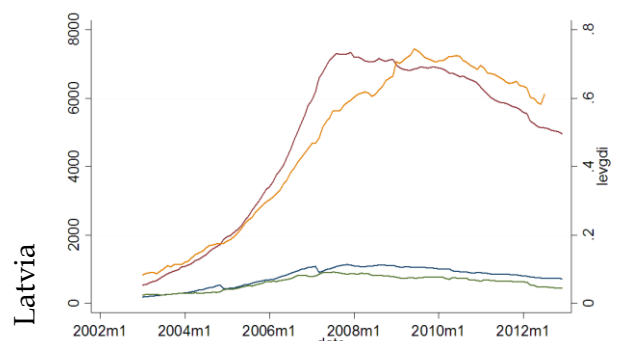
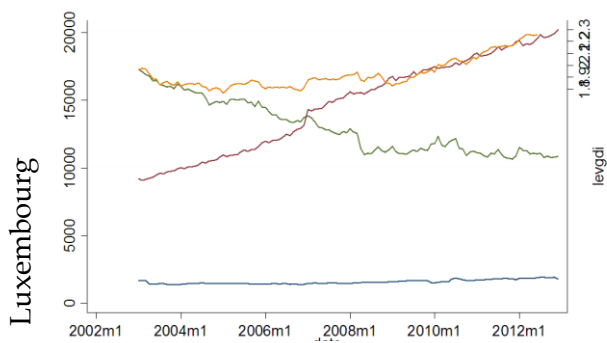
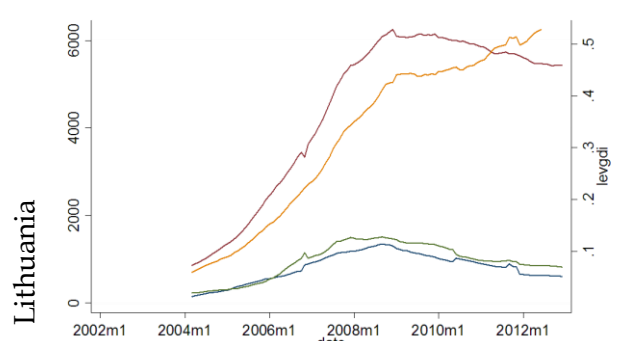
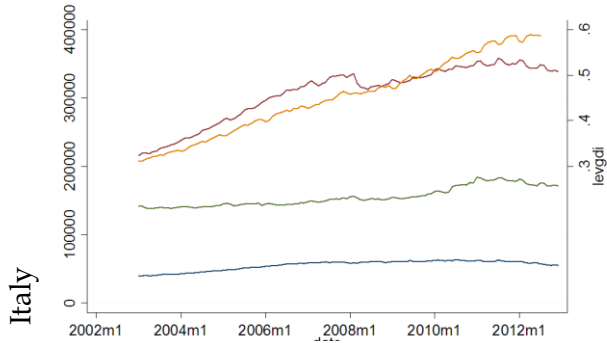
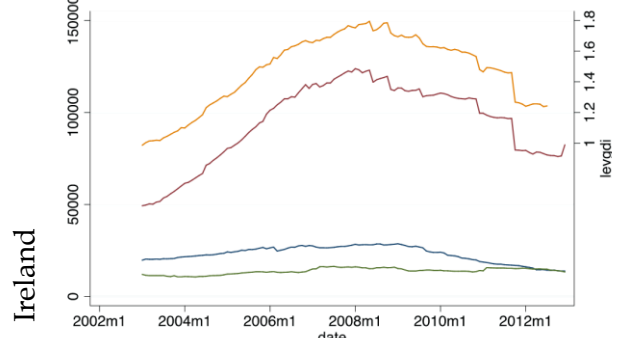
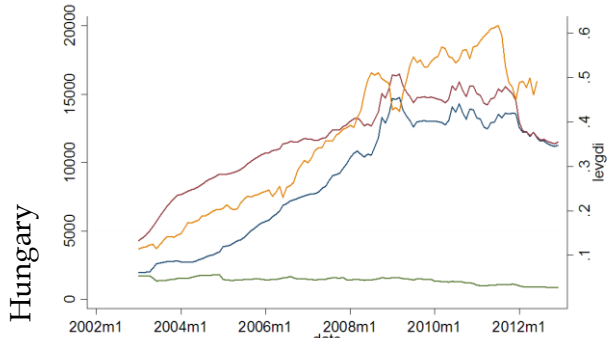
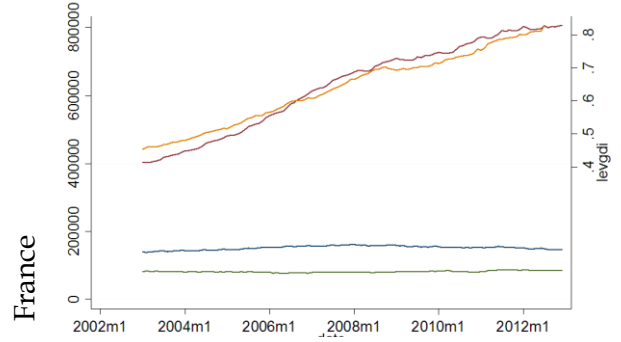
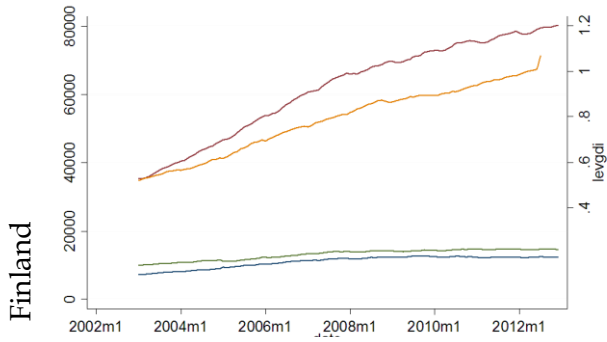
**Slovakia**

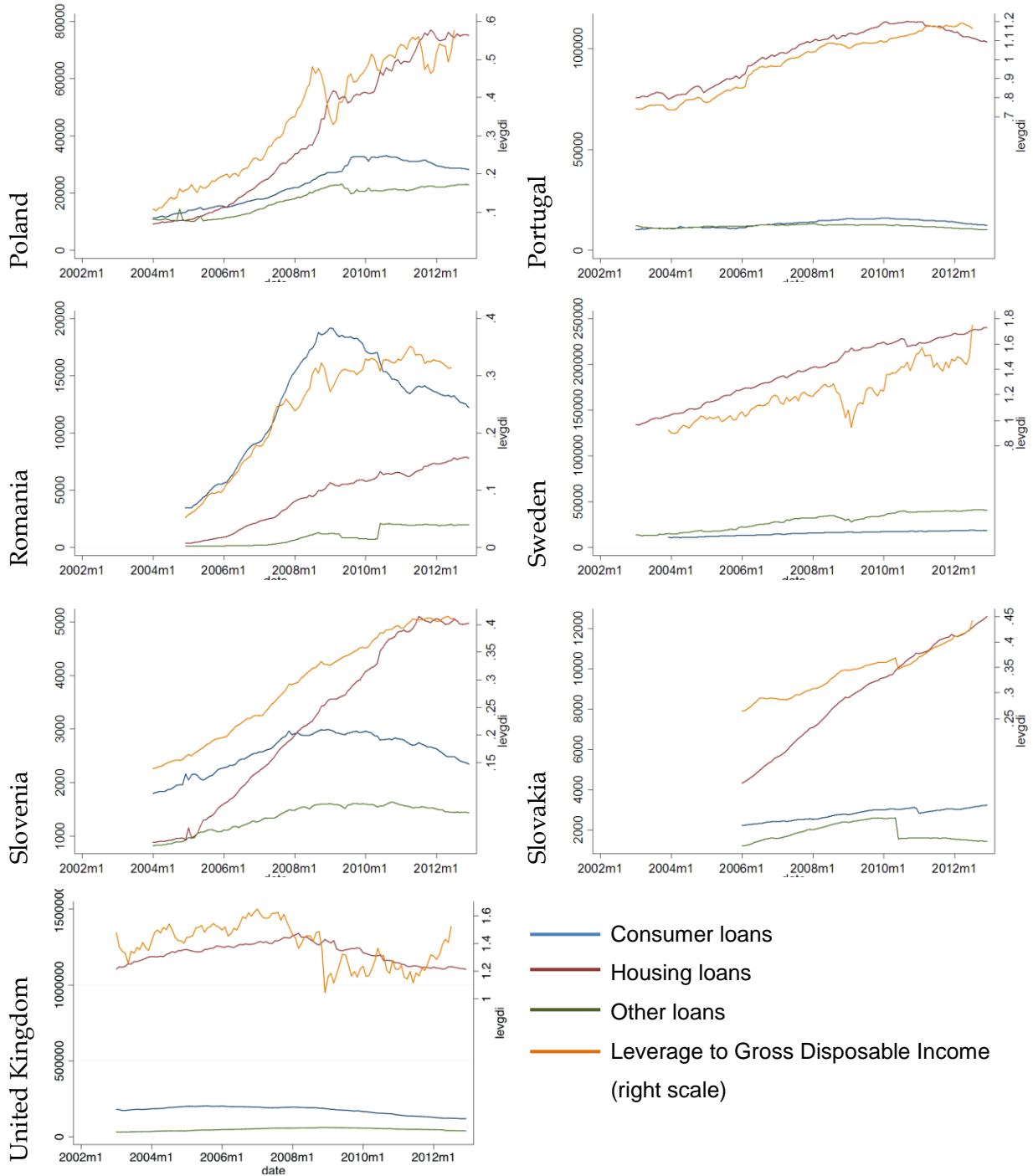
	GDP	Consumer APRC	Housing APRC	Consumer APRC	Real Housing APRC
All debt	0.7485*** 0.000	0.4742*** 0.000	-0.7436*** 0.000	0.3286*** 0.002	-0.2789** 0.010
Consumer credit	0.7234*** 0.000	0.4463*** 0.000	-0.6948*** 0.000	0.4287*** 0.000	-0.104 0.348
Housing credit	0.7498*** 0.000	0.499*** 0.000	-0.7771*** 0.000	0.3274*** 0.002	-0.3158*** 0.003

Note: \*  $p \leq 0.1$  \*\*  $p \leq 0.05$  \*\*\*  $p \leq 0.01$

Figure 11. Real household debt (left scale) and debt to GDI income (right scale) in EU27







Sources: ECB, Eurostat and ECRI.

Note: Debt amounts (left scale) are in constant thousands of 2010 euros. Leverage (right scale) is a ratio.

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EUROPEAN CREDIT RESEARCH INSTITUTE (ECRI)  
at the CENTRE FOR EUROPEAN POLICY STUDIES (CEPS)

1 Place du Congrès  
1000 Brussels, Belgium

Tel: +32 2 229 39 11 • Fax: +32 2 219 41 51  
info@ecri.eu • www.ecri.eu • www.ceps.eu

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