# Who Gets the Credit? And Does It Matter?

## Household vs. Firm Lending across Countries

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**Abstract**: While the theoretical and empirical finance literature has focused almost exclusively on enterprise credit, about half of credit extended by banks to the private sector in a sample of 45 developing and developed countries is to households. The share of household credit in total credit increases as countries grow richer and financial systems develop. Cross-country regressions, however, suggest a positive and significant impact on GDP per capita growth only of enterprise but not household credit. These two findings together partly explain why previous studies, such as Aghion et al. (2005), have found a small or insignificant effect of finance on growth in high-income countries. We also find that countries with a lower share of manufacturing, a higher degree of urbanization and more market-oriented financial systems, have a higher share of household credit. It is thus mostly socio-economic trends that determine credit composition, while policies influencing banking market structure and regulatory policies are not robustly related to credit composition.

JEL Codes: D14; G21; G28
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## 1. Introduction

The theoretical and empirical finance literature has focused on enterprise credit. Most theoretical models with endogenous financial intermediation focus on an enterprise in need of external finance for investment or production purposes (see Levine, 2005 for an overview). The empirical finance and growth literature has been motivated by the observation of financing constraints for enterprises in many developing countries (McKinnon, 1973) and industry and firm-level data have been used to address the causality issue (Rajan and Zingales, 1998; Beck, Demirguc-Kunt and Maksimovic, 2005). Even the microfinance revolution started from the observation that lack of access to credit is the only constraint that holds poor entrepreneurs back (Armendariz de Aghion and Morduch, 2005).

However, the focus on enterprise credit in both the theoretical and the empirical finance literature does not sit well with reality. Household credit is a major part of overall private sector credit in many countries and its importance has been increasing. For example, the share of credit to households as share of total credit has increased from 27 percent in 1980 to 58 percent in 2000 in South Korea, from 12 percent to 56 percent in the U.K., and from 31 percent to 58 percent in Uruguay. During the period from 1994 to 2005, household credit was greater than firm credit in 18 out of 45 countries for which data are available. What explains the cross-country variation in the share of firm and household credit? Does the increasing importance of household credit have implications for the finance-growth link?

This paper (i) documents the important role that private sector lending to households plays in many financial systems around the world, (ii) assesses whether bank lending to

enterprises and households have independent impacts on GDP per capita growth, and (iii) relates the share of household in total credit to different socio-economic country characteristics as well as financial sector policies. First, we decompose a standard measure of financial development – claims of deposit money banks on the private domestic sector relative to GDP – into credit to enterprises and credit to households and document the variation of this decomposition across countries and over time. Second, we assess whether measures of bank lending to enterprises and to households enter independently in standard OLS and IV cross-country growth regressions. Third, we use cross-country regressions to explore different country characteristics that can explain cross-country variation in the share of household credit.

Understanding cross-country variation in household and enterprise credit is important for several reasons. First, understanding the determinants and consequences of credit composition can have important repercussions for theory. If household credit has an independent impact on growth, this has repercussions for how theory should model the link between financial sector development and economic growth. Second, decomposing overall bank lending into its components might help us understand why the effect of financial development on growth varies across countries at different levels of economic development and provide insights into the channels through which financial systems foster economic development. Specifically, Aghion, Howitt, and Mayer-Foulkes (2005) and Rioja and Valev (2004 a,b) show that there are non-linearities between financial sector development and economic growth. Finally, finding a differential impact of enterprise and household credit on growth can have important implications for policy makers who are interested in maximizing the growth effect of financial sector policies.

While the corporate finance literature has focused on enterprise credit, the household finance literature has focused mostly on asset allocation decisions (Campbell, 2006). Theory has

shown how financial development allows enterprises to overcome financing constraints with positive repercussions for investment, innovation and economic growth.[1] Empirical studies have documented the link between financial market imperfections, firms' financing constraints, firm growth and economy-wide growth.[2] Relaxing liquidity constraints on households and providing them with easier access to credit can result in lower excess sensitivity of household consumption to business cycle variations (Jappelli and Pagano, 1989; Bacchetta and Gerlach, 1997; Ludvigson, 1999). While household credit might thus help households to smooth out their consumption and potentially lead to welfare improvements, theory provides ambiguous predictions about the effect of household credit on economic growth. While Jappelli and Pagano (1994) show that alleviating credit constraints on households reduces the savings rate, with negative repercussions for economic growth, Galor and Zeira (1993) and De Gregorio (1996) show that household credit can foster economic development if it increases human capital accumulation. Specifically, Jappelli and Pagano (1994) show for a sample of 25 middle- and high-income countries that lower liquidity constraints on households, proxied by the loan-to-value ratio for mortgages, are associated with a lower savings rate and lower GDP per capita growth, while De Gregorio (1996) shows for a sample of 20 OECD countries that higher loan-to-value ratios are associated with higher secondary school enrolment, but not with economic growth.[3] Both theory and previous empirical work thus provide ambiguous predictions, with the effect of household credit on economic growth mainly depending on the use of the credit. Unlike our paper, most previous empirical work has been limited to OECD countries.

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[1] See, among others, Boyd and Prescott (1986), Greenwood and Jovanovic (1990) and King and Levine (1993).
[2] See, for example, Demirguc-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Love (2003), Beck, Demirguc-Kunt and Maksimovic (2005).
[3] The literature using micro-level data on household credit also provides ambiguous results. Karlan and Zinman (2006) find a positive effect, while Coleman (1999) finds no effect of microcredit on households' welfare in South Africa and Thailand, respectively.

Theory also provides little guidance regarding which factors should drive the composition of credit to the private sector.[4] We therefore relate our analysis of cross-country variation in the share of household credit to the basic analytics of credit provision by financial institutions – economizing on transaction costs and improving risk management (Diamond 1984, Ramakrishnan and Thakor 1984, Boyd and Prescott 1986, Williamson 1986, Allen 1990, among many others). Household loans are typically of smaller size and households typically are harder to evaluate and have less collateral to offer, so that both transaction costs and information asymmetries constitute a higher hurdle. In our cross-country analysis, we will therefore relate different country characteristics to the degree to which financial institutions can overcome these market frictions.

Analyzing credit composition across countries and over time shows that the share of household credit increases as countries develop economically and financially. Cross-country regressions with data averaged over 1994 to 2005 suggest, however, that only bank lending to enterprises, but not to households, is linked to GDP per capita growth. The increasing importance of household credit for higher-income countries and its insignificance in growth regressions can explain the non-linear relationship of overall financial development with economic growth documented by other studies. Exploring country characteristics related to credit composition shows that the share of household credit is related both to demand and supply-side constraints, but not to banking market structure or regulatory policies. Specifically, the share of household credit is higher in more urban societies and in countries with smaller manufacturing sectors. Market-based financial systems where firms can access alternative

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[4] While Jappelli and Pagano (1989) discuss the determinants of consumer debt, rather than the composition of credit, they provide useful discussion on some supply and demand side factors of consumer credit. On the supply side, they concentrate on interest spreads and on indicators of credit rationing and on the demand side, on tax incentives to borrow, the age structure of the population, the earnings profiles of consumers, and their preferences.

financing sources through capital markets have a higher share of household credit. While overall institutional development is positively correlated with the share of household credit in total credit, effective contract enforcement is negatively associated with the household credit share. Once we control for legal origin and the religious composition of countries, however, the correlation with institutional development and legal system efficiency turns insignificant.

This paper is related to a large body of literature on finance and growth, as surveyed by Levine (2005). Aghion, Howitt, and Mayer-Foulkes (2005), however, provide theoretical and empirical evidence that financial sector development helps countries catch up to the productivity and thus income level of high-income countries, while it is not related to growth in high-income countries. Along similar lines, Rioja and Valev (2004a,b) show that financial sector development has a strong growth effect for middle-income, but a smaller effect in high-income countries. Neither of these papers, however, has considered the composition of credit.[5] This paper is the first to assess the independent impact of firm and household credit on economic growth across a broad sample of countries.

This paper is also related to the literature on the determinants of financial sector development. Researchers have focused on macroeconomic stability, legal system efficiency and the information framework as explaining cross-country variation in financial sector development (Boyd, Levine and Smith, 2001; Djankov, McLiesh and Shleifer, 2007; Beck, 2006). Market and ownership structure have also been related to cross-country variation in financial sector development (La Porta, Lopez-de-Silanes and Shleifer, 2002; Demirguc-Kunt, Laeven, Levine, 2004; Claessens, Demirguc-Kunt and Huizinga, 2001). Finally, bank regulatory and supervisory approaches have been shown to be critically linked to differences in financial

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[5] Buyukkarabacak and Krause (2005) show that a higher share of credit to households in total credit is associated with higher trade deficits, while Buyukkarabacak and Valev (2006) show that firm and household credit growth enter individually and separately into banking crisis prediction models.

sector development (Barth, Caprio and Levine, 2006, La Porta, Lopez-de-Silanes and Shleifer, 2006; Beck, Demirguc-Kunt and Levine, 2006). This paper assesses whether these different policies have a differential impact on enterprise vs. household credit.

This paper is a first attempt at understanding the composition of bank lending across countries and is therefore subject to several caveats. First, the definition of household vs. firm credit is not homogenous across countries and our variable is therefore subject to measurement error. Further, a strict separation into firm and household credit might not be possible in the case of proprietorships. Second, cross-country regressions are subject to the usual biases of endogeneity and simultaneity. While in the growth regressions we control for these biases by employing instrumental variables, our estimations of credit composition across countries do not control for endogeneity and we therefore do not interpret the findings as causal relationships. Finally, due to data constraints, we focus on bank lending to households and ignore lending to households by non-financial institutions, an increasing phenomenon in many high- and middle-income countries.

The remainder of the paper is organized as follows. Section 2 discusses the construction of our main variable of interest. Section 3 presents the results from cross-country growth regressions when introducing separate measure of enterprise and household credit. Section 4 explores country characteristics and policies associated with credit composition. Section 5 concludes.

## 2. Decomposing Bank Lending

Standard financial sector indicators focus on the aggregate value of credit to the private sector by deposit money banks, but do not distinguish between lending to households and lending to firms. We compile data from national central bank reports, annual bulletins, and other statistical sources where disaggregated credit data are available. Our dataset includes 45 countries spanning different time periods depending on data availability but with a significant overlap during the period from 1994 to 2005. In order to avoid discrepancies between different countries we standardized our data collection methodology by focusing on the collection of data on credit to non-financial corporations and/or private enterprises/businesses by deposit money banks, where available. If private credit is reported for various economic sectors, we define business credit as the sum of loans to industry, construction, services, agriculture, and trade. We then use the credit series from the Financial Structure Database of Beck, Demirguc-Kunt and Levine (2000) to obtain the distribution of credit into enterprise credit and household credit as the difference between overall credit and enterprise credit. While we have annual data available, we will use mostly averages over the period 1994 to 2005.

Table 1 presents the large variation in overall banking sector development and the relative importance of enterprise and household credit across our 45 sample countries. Specifically, we present Bank Credit to GDP – total claims of deposit money banks on the private sector as ratio of GDP - and its two components – Enterprise Credit to GDP and Household Credit to GDP. We also present the relative share of enterprise and household credit in total bank credit. Whereas Bank Credit to GDP was 14% over the sample period in Russia, it was 160% in Switzerland. Enterprise Credit to GDP varied from 9% in Argentina to 86% in Malaysia, while Household Credit to GDP varied from 3% in Russia to 99% in Switzerland.

Whereas Canada, Denmark and the U.S. had a household credit share well over 70% of total bank credit during 1994-2005, the household credit share was 17% in Poland and Egypt and 10% in Malaysia during the same period.

The correlations in Table 2 indicate that both Enterprise Credit to GDP and Household Credit to GDP are positively and significantly correlated with Bank Credit to GDP. As banking sectors develop, however, the share of household credit increases, as can be seen from the positive and significant correlation of Household Credit Share with Bank Credit to GDP. Similarly, while economically more developed countries have higher ratios of both enterprise and household credit to GDP, the relative importance of household credit increases.

Economic development can influence the provision of household credit both through the supply and demand channels. On the one hand, rising incomes will allow a larger share of households to overcome the threshold of minimum loan size for consumer and mortgage loans (Beck, Demirguc-Kunt and Martinez Peria, 2007). On the other hand, the cost of financial service provision declines with economic development (Harrison, Sussman and Zeira, 1999). Both trends should increase the share of household credit in total bank lending. Figures 1 and 2 illustrate the positive correlation between economic and banking sector development and the importance of household credit. Specifically, we show the average Bank Credit to GDP ratios and the shares of household credit in total credit across three different groups of economic development. In particular, we divide countries into three groups, according to the 33$^{rd}$ and the 66$^{th}$ percentile of GDP per capita in the sample. Bank Credit to GDP increases with GDP per capita, from 25% to 58% to 94%. We observe a similar pattern with regards to the share of household credit. Whereas household credit is 40% of total credit in the lowest third, it is 63% of

total credit in the middle third of countries, and 72% in the richest third. Thus, the *share* of household credit is greater in countries that are more developed financially and economically.

We also observe sizeable variation in the household credit share over time for the countries where historical disaggregated credit data are available. While most of the countries in our sample experienced an increasing trend in the household credit share, there are some countries for which this increase was more pronounced. For example, in Iceland the share of household credit increased from 15% in 1985 to 50% in 2005, while South Korea also experienced a substantial increase in the household credit share from 35% to 60% in that same time period. For a sample of six countries (Iceland, Japan, Korea, Portugal, UK and US) for which we have longer time-series data, the share of household credit in total bank lending increased from 31.6% in 1980 to 55.4% in 2000, a trend that paralleled the increase in Bank Credit to GDP (Figure 2).

## 3. Enterprise vs. Household Lending – Does it Matter?

This section assesses whether there is an independent impact of bank lending to enterprises and households on GDP per capita growth. We will be utilizing standard OLS and IV cross-country growth regressions, introducing separate indicators of bank lending to enterprises as ratio to GDP and bank lending to households as ratio to GDP. This section first discusses the methodology and set of conditioning information and then the main results.

### 3.1. Methodology

We run cross-country growth regressions to assess the impact of bank lending to enterprises and households on economic growth, averaged over the sample period 1994 to 2005.

$$g(i) = [y(i,t) - y(i,t-1)]/11 = \quad \alpha_1 + \beta_1 \text{Enterprise Credit to GDP}(i) +$$

$$+ \beta_2 \text{Household Credit to GDP}(i) + \gamma'C(i) + \delta y(i,t-1) + \varepsilon(i)$$

where $y(i)$ is log of real GDP per capita and C is a set of conditioning information. The coefficients of interest are $\beta_1$ and $\beta_2$. We run regressions where we force $\beta_1 = \beta_2$, thus replicating the standard finance and growth regression with the aggregate measure of Bank Credit to GDP, regressions with $\beta_1 = 0$, regressions with $\beta_2 = 0$ and regressions where we allow $\beta_1$, $\beta_2$ to enter independently.

To assess the strength of the independent link between bank lending to enterprises and households and economic growth, we control for other potential determinants of economic growth in our regressions. Following the finance and growth literature, our set of conditioning information includes (i) the log of initial real GDP per capita to control for convergence, (ii) secondary school enrolment to control for human capital accumulation, (iii) the share of exports and imports to GDP, (iv) the inflation rate and (v) the ratio of government expenditures to GDP.[6] All data are averaged over the sample period 1994 to 2005, with the exception of initial GDP per capita, measured in 1994. We include most regressors, including Enterprise Credit to GDP and Household Credit to GDP in logs, to take account of potential non-linearities in their relationship with GDP per capita growth.

GDP per capita growth varied significantly across our sample over the period 1994 to 2005, ranging from -0.6% in Russia to 5.5% in Korea. While it is positively correlated with Bank Credit to GDP only at the 12% significance level, its correlation with Enterprise Credit to GDP is positive and significant at the 1% level. There is no significant correlation of GDP per capita growth with Household Credit to GDP.

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[6] Similar sets of conditioning information were used by Beck, Levine and Loayza (2000) and Beck and Levine (2004).

OLS regressions suffer from several biases, including omitted variable, measurement and endogeneity biases. We therefore use instrumental variable regressions to extract the exogenous components of bank lending to enterprises and households and relate them to GDP per capita growth. Following the seminal work by La Porta et al. (1997, 1998) who identified variation in countries' legal origin of countries as a historical exogenous factor explaining current variation in countries' level of financial development, an extensive literature has utilized this variable to extract the exogenous component of financial development.[7] Stulz and Williamson (2003), on the other hand, suggest religious composition as important driver of cross-country differences in financial development.[8]

Table 3 presents regressions of the logs of Enterprise Credit to GDP and Household Credit to GDP on the included exogenous variables from the second stage regressions, legal origin dummies and indicators of religious composition. Specifically, we include dummy variables indicating British Common Law countries, French Civil Code countries, German Civil Code countries and Scandinavian Civil Code countries, with transition economies being the omitted category. We include the share of population belonging to the Catholic, Muslim and Protestant denominations in 1980, with data from La Porta et al. (1999).

The Table 3 regressions suggest that the exogenous excluded variables – legal origin and religious composition – can jointly explain variation in both Enterprise Credit to GDP and Household Credit to GDP after controlling for the included exogenous variables. Specifically, Catholic countries have lower levels of Enterprise Credit to GDP. Also, British and French legal

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[7] Specifically, an extensive literature has discussed the empirical observation that British Common Law countries have better developed financial systems than French Civil Code countries, with German and Scandinavian Civil Code systems falling in between. As most countries acquired their legal system through colonization or occupation several centuries ago, legal origin can be considered an exogenous variable. See Beck and Levine (2005) for an overview.

[8] Specifically, they show that countries with predominantly Protestant population have stronger creditor rights.

origin countries have significantly higher levels of Household Credit to GDP than the omitted

category of transition economies.[9]


### 3.2. Results

The Table 4 results show a positive and significant relationship between enterprise credit

and GDP per capita growth, but an insignificant relationship between household credit and GDP

per capita growth. Columns 1 to 4 present simple OLS regression utilizing indicators of overall

banking sector credit to GDP, enterprise credit to GDP and household credit to GDP controlling

for an array of other country characteristics.

The column 1 regression confirms the previous finding of a positive and significant

relationship between banking sector development and GDP per capita growth. Bank Credit to

GDP enters positively and significantly at the 5% level. The column 2 regression shows a

positive and significant relationship between Enterprise Credit to GDP and GDP per capita

growth, while the column 3 regression shows an insignificant relationship between Household

Credit to GDP and GDP per capita growth.  When we include both Enterprise Credit to GDP and

Household Credit to GDP, our findings are confirmed (column 4).[10] Among the variables in the

set of conditioning information, only government consumption enters consistently with a

negative and significant coefficient.  In unreported regressions, we confirm our findings in a

smaller sample that excludes 13 transition economies. Throughout all of the analyses in this

paper, we identify and assess the potential impact of outliers by following the methodology of

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[9] The results suggest that legal origin explains primarily the variation of enterprise credit whereas religious composition explains primarily the variation of household credit. This does not mean that Enterprise Credit to GDP does not vary across different legal families or that Household Credit to GDP does not vary across countries with different religious preferences.  Rather, these variables cannot explain residual variation in the two types of credit after controlling for initial GDP per capita and other country factors that we will include in the second stage regressions.
[10] Further, a difference test between the coefficient on Enterprise Credit to GDP and Household Credit to GDP is significant.

Besley, Kuh, and Welsch (1980).[11] For example, for regression (4) we identify Poland as outlier that might drive the finding on Enterprise Credit to GDP. The results hold when excluding Poland from the analysis. Even when excluding South Africa and Poland, two countries that might drive the insignificant result on Household Credit to GDP, our findings are confirmed.

The effect of Enterprise Credit to GDP is not only statistically, but also economically significant. Take Poland and the U.S., the countries at the $25^{th}$ and $75^{th}$ percentiles of Enterprise Credit to GDP. The regression results in column 4 suggest that if Poland had the level of Enterprise Credit to GDP as the U.S., it would have grown 1.1 percentage points faster per year over the period 1994 to 2005. This economic effect is almost identical to the economic effect of Bank Credit. Specifically, using the column 1 estimate and comparing Pakistan and Thailand, the countries at the $25^{th}$ and $75^{th}$ percentiles of Bank Credit to GDP, yields a similar effect of Bank Credit to GDP of 1.1 percentage points growth per year.

The relationship between Enterprise Credit to GDP and GDP per capita growth is robust to controlling for endogeneity and simultaneity and measurement biases (column 5). When instrumenting for both Enterprise and Household Credit to GDP with legal origin and religion, Enterprise Credit to GDP continues to enter positively and significantly. The Sargan test of overidentifying restrictions is not rejected, suggesting that legal origin and religious composition affect GDP per capita growth only through one of the explanatory variables. As reported in Table 3, the first stage F-tests confirm the relevance of our excluded exogenous variables.[12] While

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[11] Specifically, we (i) compute the change in the coefficient on Enterprise Credit to GDP when the ith observation is omitted from the regression, (ii) scale the change by the estimated standard error of the coefficient, (iii) take the absolute value, and (iv) call the result $\Delta\beta_i$. Then, we use the Besley, Kuh, and Welsch recommendation of a critical value of two, and identify those observations where abs $(\Delta\beta_i) > 2/\text{sqrt}(n)$, where abs(x) yields the absolute value of x, sqrt(x) yields the square root of x, and n represents the number of observations in the regression.

[12] We considered additional specification tests, available on request. Specifically, the Anderson canonical correlations likelihood ratio test of instrument relevance, Shea's partial R squares measure of instrument relevance and the Cragg-Donald test of weak instruments provide evidence that both the legal origin and the religious composition variables are valid and relevant instruments. Similar, we do not find that either the legal origin or the

subject to the usual caveats of cross-country instrumental variable regression – bias due to lagged dependent variable, potentially weak instruments and lack of instruments for other explanatory variables – these findings suggest that the relationship between Enterprise Credit to GDP and GDP per capita growth is not driven by endogeneity or simultaneity and measurement biases.

The results in Table 4 suggest that only the component of private sector lending going to enterprises is robustly linked with economic growth, while bank lending to households is not. Given that the statistical and economic significance of Bank Credit to GDP and Enterprise Credit to GDP are almost the same, and that the R square increases when we use Enterprise Credit to GDP instead of Bank Credit to GDP, our results suggest that Enterprise Credit to GDP might be a better measure of the growth enhancing role of financial sectors than Bank Credit to GDP. Our results confirm theoretical predictions that financial institutions and markets foster economic growth through alleviating firms' financing constraints. They are consistent with the empirical finance and growth literature analyzing the relationship between financial sector development and firms' financing constraints and growth. They are also consistent with an ambiguous relationship between household credit and economic growth, with positive effects through human capital allocation and negative effects through dampening the savings rate canceling each other out.

Several studies have found that the finance-growth link is much weaker or even non-existent for high-income countries (Aghion, Howitt and Mayer-Foulkes, 2005, Rioja and Valev, 2004a,b). Could the lack of significance of Household Credit to GDP in growth regressions and the positive correlation of the share of household credit in total credit with GDP per capita

religious composition set of instrumental variables are redundant in the sense that including either set of instrumental variables improves the asymptotic efficiency of the estimation. See Baum, Shaffer and Stillmann (2003) for a discussion of these different test statistics.

explain why the relationship between banking sector development and economic growth turns insignificant for high-income countries?

The regressions in Table 5 show that Bank Credit to GDP is only significant for countries at or below the median of initial GDP per capita, while Enterprise Credit to GDP is significant at the 10% level up to the 75$^{th}$ percentile of initial GDP per capita. Here, we add interaction terms of Bank Credit to GDP (column 1), Enterprise Credit to GDP (column 2) and Household Credit to GDP (column 3) with the log of initial GDP per capita to assess whether there is a differential effect of banking sector development across different levels of economic development. Further, we report the overall effect of banking sector development at different levels of initial GDP per capita. The column 1 regression of Table 5 shows that the relationship between banking sector development and GDP per capita growth decreases in the level of economic development and turns insignificant for high income countries.[13] Specifically, while Bank Credit to GDP is significant both at the 25$^{th}$ and 50$^{th}$ percentile of GDP per capita, it is insignificant at the 75$^{th}$ percentile. Overall, the relationship between Bank Credit to GDP and GDP per capita growth is significant at the 10% for 27 of the 43 countries in our sample. The column 2 regression, on the other hand, shows that Enterprise Credit/GDP has a significant relationship with GDP per capita growth for 34 of the 43 countries in our sample, as it is significant at least at the 10% level for the 25$^{th}$, 50$^{th}$ and 75$^{th}$ percentiles of GDP per capita. The relationship between Household Credit to GDP and GDP per capita growth is insignificant, irrespective of the level of initial GDP per capita.

Figures 3 and 4 illustrate that the estimation for the relationship between enterprise credit to GDP and growth is more precise than the estimation between overall credit to GDP and

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[13] The fact that both Bank Credit to GDP, initial income and their interaction are insignificant, can be explained by the very high correlation between the three variables.

growth. Specifically, we show the marginal effect of Bank Credit to GDP (Figure 3) and Enterprise Credit to GDP (Figure 4) on GDP per capita growth at different levels of initial GDP per capita, as well as the 5% level significance band. While both relationships clearly slope downwards, the significance bands for Bank Credit to GDP are wider, resulting in an insignificant relationship with GDP per capita both at the low end of our sample in terms of initial economic development, as well as in the upper third. The relationship between Enterprise Credit to GDP and GDP per capita growth, on the other hand, is more precisely estimated. Specifically, the relationship between Bank Credit to GDP and growth is significant for GDP per capita between 1,000 and 8,000 dollars, while the relationship between Enterprise Credit to GDP and growth is significant for GDP per capita of up to 16,000 dollars.

Summarizing, the positive impact of financial development on growth has been driven by bank lending to enterprises rather than to households. While borrowing by households might have other positive effects such as reduced consumption volatility over lifetime, there is no independent impact of bank lending to household on medium-term economic development.[14] The increasing importance of household credit in total credit in high-income countries documented in section 2 also explains why the impact of overall bank lending on GDP per capita growth in these countries is insignificant. The relationship between Enterprise Credit to GDP and GDP per capita growth turns insignificant at higher levels of GDP per capita than the relationship between Bank Credit to GDP and GDP per capita growth. The finding that credit composition matters for the impact of finance on growth also raises the question of what drives credit composition across countries. We turn to this question in the next section.

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[14] Jappelli and Pagano (1989) show that the excess sensitivity of consumption to current income fluctuations is higher in countries where consumers borrow less.

## 4. Enterprise vs. Household Lending – Who Gets the Credit?

While section 3 has established a significant relationship between credit composition and GDP per capita growth, we now turn to country characteristics and policies that explain this variation across countries. This section first discusses the explanatory variables that we will be utilizing in our analysis before turning to the results.

### 4.1. Explanatory variables

While the theoretical literature does not provide us with any direct guidance to which variables should explain best the composition of credit, we can use the basic intuition of models of endogenous financial intermediation.[15] Financial markets and institutions arise to overcome market frictions, such as transaction costs and information asymmetries. The efficiency of financial institutions and markets, however, is also impacted by the severity of these same market frictions. Transaction costs include a high fixed cost element as processing a loan entails certain costs that are independent of the loan size of transaction, which in turn makes loans to borrowers with small borrowing needs prohibitively expensive. Similarly, high information barriers make loans to more opaque borrowers more difficult. Households typically want to borrow small amounts of loans and limited information is available about their repayment prospects. While durable consumer goods such as cars or houses in the case of mortgages are often provided as collateral, it is costly to enforce their recovery in case of default or political pressures makes it impossible.

What do the severity of market frictions imply for the composition of credit to household and firm credit? To which extent can lenders use the recent technological advances to expand

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[15] See Levine (2005) for an overview.

lending to households?  First, we expect a higher share of consumer lending if there is sufficient

clientele in order to overcome scale diseconomies of lending to borrowers with small financing

needs.  Second, the environment in which lenders work has to be conducive.  In the following,

we will discuss different variables, organized into groups, associated with transaction costs and

information asymmetries.   Specifically, we will consider (i) elements of economic structure

related to supply and demand of firm and household credit, (ii) elements of the contractual,

information and macroeconomic environments shown to be important for banking sector

development, (iii) banking market structure and (iv) bank regulatory policies. We will test the

relationship between credit composition and different groups of country traits before performing

a horserace among these different groups.  Table 6 provides descriptive statistics of the different

variables.[16]


**Economic and financial structure**

We include several country traits that proxy for supply and demand factors associated

with household vs. firm credit. A large number of similar loans can help lenders overcome

diseconomies of scale, as can geographic concentration of borrowers and we therefore conjecture

that the **share of urban population** in a country is positively associated with a higher share of

household credit in total credit. A higher share of the population working in the **informal**

**economy**, on the other hand, is likely to be negatively associated with household credit, as

households working in the informal sector lack the necessary formal documentation to access

formal banking services.  A higher **share of manufacturing** is also expected to be negatively

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[16] While we have already shown a positive relationship between the share of household credit and economic
development, we will not include GDP per capita in our regression analysis because of multicollinearity concerns.
First, GDP per capita is highly correlated with many other country characteristics; however, we are interested, which
of these country traits explain the composition of credit.  Second, once controlling for other country traits, GDP per
capita often does not enter significantly anymore.

associated with the share of household credit in total bank credit, as it might indicate a higher demand from enterprises. Finally, as capital markets gain in importance and thus the opportunities for enterprises to access alternative external finance sources rather than being limited to bank finance (Demirguc-Kunt and Levine, 2001), banks are forced to look for alternative lending opportunities. We therefore conjecture that the share of household credit in total bank lending increases as markets gain in importance vis-à-vis banks, as measured by **financial structure**, the log ratio of value traded to bank credit**,** using data from Beck, Demirguc-Kunt and Levine (2000).

**Contractual, information and macroeconomic framework**

While the literature has established a robust relationship between macroeconomic stability, the efficiency of the contractual and information framework and bank lending, this framework might have a differential impact on firm and household credit with repercussions for the composition of overall bank credit. A priori, the relationship between the contractual framework and the share of household credit is ambiguous. On the one hand, lenders might have to rely more on the contractual framework for "small" borrowers than in the case of large business borrowers. On the other hand, the sums at play in household credit might be too small for the lender to engage the legal system in the first place. Similarly, it is a –priori not clear whether there is any differential effect of inflation on the composition of total private sector lending. On the one hand, most consumer lending is short-term and might therefore be less affected by monetary instability than firm credit. On the other hand, household credit in many countries includes mortgages, which are mostly at the long-end of the yield curve. When it comes to systems of credit information sharing, we would expect a stronger effect on household

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credit, as households are typically more informationally opaque than medium-size and large

enterprises. Consumer lending in both advanced and emerging markets has increasingly relied

on historic information about borrowers and credit scoring models, both of which rely on

effective credit registries and bureaus (Berger, Frame and Miller, 2005).

We will use an indicator of **creditor rights** in and outside of bankruptcy, an indicator of

the **cost of contract enforcement** and an indicator of the efficiency and breadth of **credit**

**information sharing,** using data from the World Bank's Doing Business database. We will also

include an overall measure of **institutional development**, as developed by Kaufman, Kraay and

Mastruzzi (2004) and the **inflation rate**, as measured by the log difference of the Consumer

Price Index.


**Banking sector development and structure**

We also assess whether credit composition varies with the development and structure of a

country's banking system. A priori it does not seem clear whether private or government-owned

banks and domestic or foreign-owned banks should be more inclined towards household or firm

credit. On the one hand, foreign banks might be more inclined towards the consumer credit

market if they can apply innovative and cost-effective technologies from their home market in

the host market. On the other hand, if the cost structure is too high or important institutions,

such as credit registries, are not in place, foreign banks might be reluctant to go down-market.

Theory has also provided conflicting predictions on the relationship between banking market

concentration, competitiveness and access to credit for "small" and opaque borrowers, so that it

is a-priori not clear whether we expect a positive or negative relationship.[17]

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[17] While theory and some empirical work suggest that market power might entice banks to invest in long-term
relationships with small and opaque enterprises as they know that they can regain the initial investment in the

To measure banking sector development and structure, we use **Bank Credit to GDP**, the market share of **government-owned banks**, the market share of **foreign-owned banks** and the market share of the **largest five banks** to proxy for the market structure of banking systems, using data from Barth, Caprio and Levine (2006).

## Bank regulatory policies

Regulatory policies might impact the business environment in which banks work and thus the ease with which they can overcome transaction costs and risks related to lending to households.  We therefore include several indicators capturing different dimensions of the regulatory framework.  We use an indicator of **activity restrictions on banks** that indicates to which extent banks cannot extend their business into insurance and capital market activity and non-financial sector subsidiaries. Further, **entry into banking** indicates restrictions on the licensing of new banks. Both indicators are from Barth, Caprio and Levine (2006). Finally, Heritage Foundation's **banking freedom** indicator is an overall measure of the extent to which government does not interfere into banks' business by limiting foreign bank entry, restricting banks' activities and providing deposit insurance. To the extent that household lending depends on innovation and thus a competitive and contestable banking market, we would expect a higher share of household credit in economies with fewer restrictions. Finally, we consider the relationship between the **deductibility of mortgage interest** from income taxation, conjecturing that this will foster the demand for consumer, especially mortgage credit.

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relationship at a later stage (Petersen and Rajan, 1995; Bonaccorsi di Patti and Dell'Ariccia, 2004), other empirical papers point to the healthy effect of competition on availability of lending to SMEs (Cetorelli and Strahan, 2004; Beck, Demirguc-Kunt and Maksimovic, 2004). See Berger et al. (2004) for an overview.

**4.2. Results**

The Table 7 results show that market-based financial systems, a lower share of manufacturing, a higher degree of urbanization, less effective contract enforcement systems, and institutional development are associated with a higher share of household credit, even after controlling for an array of other country traits. Table 7 presents cross-country regression of the share of household credit in total credit on the different country characteristics discussed in the previous section. We first present regressions with the four separate groups of variables before testing their robustness in a horserace. Finally, we control for legal origin and religious composition, country traits that we showed are associated with the importance of enterprise and household credit relative to GDP. As these are simple OLS regressions, we do not imply any causality from our findings.

We start with a core group of variables that measure different demand and supply factors that capture the economic and financial structure. We find that more market-based financial systems, a higher share of manufacturing in GDP and a higher share of urban population are positively and significantly at the 5% level associated with a higher share of household credit in total credit (Column 1). A higher degree of informality in the economy, on the other hand, is associated with a lower share of household credit in total credit, although this result is significant only at the 10% level.

The Column 2 results suggest that countries with less effective contract enforcement have a higher share of household credit in total credit, while there is a positive association with the overall level of institutional development. Neither creditor rights, nor credit information sharing nor inflation, however, enter significantly in this regression. These findings suggest that while the importance of credit to households, as opposed to firms, increases as countries develop their

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overall institutional framework, effective contract enforcement is more relevant to firm credit. There are several explanations one could think of. In the case of small consumer loans, credit to household might rely on the law of large numbers and less on the contractual system in the first place. On the other hand, consumer loans for cars or for housing might be better secured than firm credit and therefore require less reliance on the formal contractual framework. The existence and efficiency of credit registries are not related to a higher share of household credit. In unreported regressions, we also considered the separate effect of private and public credit registries but could not find any significant relationship either. Macroeconomic stability – while important for overall financial sector development - does not seem robustly correlated with credit composition, once we control for other country traits.

The column 3 regression shows that there is no correlation of the banking market structure with the importance of household versus firm credit. Neither the overall level of banking sector development, nor the concentration of the banking market nor the share of government and foreign-owned banks enter significantly at the 10% level. The low R square of 21% is further testimony to the little relevance that banking market structure has for the composition of credit.

The column 4 regressions suggest that bank regulatory and tax variables can explain little of the cross-country variation in the composition of overall credit. While banking freedom enters positively and significantly at the 5% level and the deductibility of mortgage interest positively and significantly at the 10% level, none of the other regulatory variables enter significantly. The very low R square of 32% further underlines the little that regulatory and tax variables can explain in cross-country variation in credit composition.

The column 5 regression presents a horserace of the variables that are significant at least at the 10% level in columns 1 through 4. We find that the relative importance of capital markets vis-à-vis banks, a higher degree of urbanization, a lower share of manufacturing, better developed institutions and less effective contractual systems continue to predict a higher share of household credit, while the importance of the informal economy, banking freedom and the deductibility of mortgage interest lose their significance in this horserace.

Urbanization, financial structure and the share of manufacturing are the strongest country correlates explaining credit composition. To gauge the economic significance of the different country characteristics, we multiply the coefficients in column 5 with the respective standard deviations. A change of one standard deviation in urbanization, financial structure and manufacturing is associated with a change in the share of household credit between 6 and 6.5 percentage points, or approximately a third of one standard deviation of the share of household credit. A one standard deviation change in contract enforcement and institutional development can explain a change in the share of household credit of 5.7 and 3.4 percentage points, respectively. Overall, the variables included in the horserace regression can explain almost two thirds of the overall cross-country variation in credit composition.

The column 6 regression shows that only financial structure, urbanization and the importance of the informal sector continue to significantly explain credit composition once we control for legal origin and religious composition, while the share of manufacturing in GDP, institutional development, cost of contract enforcement, banking freedom and mortgage interest deductibility do not enter significantly. This regression includes both endogenous country characteristics that change over time and historically predetermined country characteristics, thus ignoring the fact the latter might very well influence the former. Both legal origin and religious

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composition explain credit composition:[18] Common law and French Civil law countries have a higher share of household credit, relative to the omitted category of transition economies, while societies with a higher share of Muslim population have a lower share of household credit. As a large literature explains the relationship between legal origin and religion, on the one side, and institutional and legal system development and bank regulatory policies, on the other side, it is not surprising that these endogenous variables lose their significance once we control for legal origin and religious composition

The regressions in columns 7 and 8 show that urbanization, the share of manufacturing, banking sector development and inflation explain the share of household credit across countries and over time. Here, we limit our sample to 23 countries, for which we have at least 10 years of data to explore what explains credit composition across time and countries. While regression 7 uses annual data, regression 8 uses five-year averages. We use random effects regressions, consistent with the Hausman tests. These regressions confirm that a higher degree of urbanization and a higher share of manufacturing are associated with a higher share of household credit, while financial structure is not associated with variation in credit composition across countries and over time in this more limited sample. Unlike in the cross-country regressions, we now also find that a higher level of banking development and lower inflation rates are associated with a higher share of household in total credit. The differences between cross-country and panel regressions should not be overemphasized as we are working with different samples, and a large number of explanatory variables do not have time-series variation.

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[18] F-tests of legal origin dummies and of the religious composition variables are both significant at the 1% level.

## 5. Concluding Remarks

This paper is a first attempt to decompose bank credit to the private sector into household and firm credit for a large sample of countries. The data show that household credit is an important part of the lending activities of banks. In fact, in many countries, banks lend more to households than to firms. This observation puts into perspective the large theoretical and empirical literature that has studied the determinants and effects of private credit from the standpoint of firm credit only.

We find that it is bank lending to enterprises, not to households that drives the positive impact of financial development on economic growth. Further, the insignificant relationship between household lending and growth together with the increasing share of bank lending to households in economically more developed countries go some way towards explaining the non-linear finance-growth relationship. Specifically, while total bank lending to GDP is not robustly linked to GDP per capita growth in high-income countries, the relationship between enterprise lending to GDP and economic growth is much more precisely estimated across our sample, with even many high-income countries showing a significant relationship.

What country characteristics explain the credit composition? On the demand side, we show that the share of the informal economy, the importance of manufacturing and urbanization play a role, proxying for the market that lenders can rely on for household credit. Furthermore, competition from other financial markets influences the distribution of bank credit, as the share of household credit is larger in countries where capital markets are relatively more important than banks. Interestingly, credit information sharing does not affect the two types of credit in different ways, while contract enforcement seems to be more important for firm than for household lending. While not significant in the cross-sectional analysis, we find that higher

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levels of banking sector development and lower inflation are associated with a higher share of household in total credit in a smaller panel over time. Neither banking market structure nor regulatory policies show any robust correlation with credit composition. These results suggest that the relative importance of bank lending to households and enterprises across countries is mostly driven by factors not immediately subject to policy decisions, but rather by differences in economic and financial structure. This also puts the previous finding of an insignificant impact of household lending on growth in a different light.

Our findings justify the focus of the existing finance and growth literature on enterprise as opposed to household credit. They add further evidence that financial systems foster economic growth by alleviating firms' financing constraints. And they can partly explain the lack of a significant finance-growth link in high-income countries.

This exploration of enterprise versus household credit across countries is an initial assessment of the factors that drive credit composition and its effects. More research is needed. First, expanding the existing data towards panel data sets with longer time-series dimension will allow more rigorous testing of both determinants and effects of credit composition. Second, relating credit composition to other financial and real sector outcomes, such as banking fragility and income and consumption volatility, seem promising and important directions of future research.

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**Appendix Table A1. Enterprise credit definitions**

| Country | Variable definitions |
| --- | --- |
| Argentina | Financing by activities: credit to production, industry, construction, services, electricity, and commerce. |
| Australia | Bank lending classified by sector: commercial lending |
| Austria | Financial liabilities of non-financial corporations: short-term and long-term loans. |
| Belgium | Loans originally granted by credit institutions to Belgian non-financial corporation |
| Bulgaria | Commercial banks credit: credit to private enterprises, total |
| Canada | Business loans from chartered banks |
| Costa Rica | Credit from deposit money banks: credit to production, industry, construction, services, electricity, and commerce. |
| Czech Republic | Banking statistics: loans: sectoral breakdown, commercial banks, non-financial corporations |
| Denmark | Bank lending to non-financial corporations. |
| Egypt | Banks lending by private sector: private businesses: local and foreign currency |
| Estonia | Loans granted by groups of customers: commercial undertakings |
| Finland | Finnish MFIs' euro-denominated loans, non-financial corporations, stock |
| France | Lending by credit institutions to non-financial corporations: total |
| Germany | Lending to domestic enterprises and self-employed persons/total/commercial banks |
| Greece | Domestic MFI credit to domestic enterprises |
| Hungary | Credits to enterprises and small entrepreneurs |
| Iceland | Deposit money banks credit to industries |
| India | Distribution of outstanding credit of scheduled commercial banks according to occupation: everything but personal and miscellaneous. |
| Indonesia | Outstanding credit by commercial banks by group of debtor: Rupiah and foreign currency by private enterprises |
| Ireland | Sectoral distribution of advances: All financial institutions |
| Jamaica | Commercial banks analysis of loans and advances: everything but government and personal credit |
| Japan | Loans and discounts outstanding by sector (by Type of Major Industries):domestically licensed banks |
| Kenya | Commercial banks: distribution of credit facilities: private sector credit to industry, trade and business services |
| Korea | Financial assets and liabilities outstanding: bank Loans: business Sector |
| Latvia | Banking and monetary statistics: loans granted by credit institutions: loans to domestic enterprises and private persons: private enterprises |
| Lithuania | Loads to Non-financial Corporations and Households: Non-financial Corporations |
| Macedonia | Deposit Money Banks : Total Claims to Enterprises |
| Malaysia | Loans by Sector: Commercial Banks: Industry, Construction, Business Services (Everything but Consumption Credit) |
| Mexico | Credit granted by the commercial bank: Enterprises and persons with enterprise activity |
| Netherlands | Monetary Financial Institutions Loans to the Private Sector: non-financial Corporations |

| | |
|---|---|
| New Zealand | Sector Credit: Resident NZ Claims of registered banks: Agriculture and Business Credit |
| Pakistan | Classification of Scheduled Banks Advances by Borrower: Industry, Commerce, Construction (Everything but Personal and Other Credit) |
| Poland | Commercial banks credit to non-financial corporations |
| Portugal | Domestic credit to non-financial Corporations |
| Russia | Bulletin of Banking Statistics: Credit extended to Enterprises |
| Slovak Republic | Analytical Accounts of the Banking Sector: Domestic Credit: Credit to Enterprises |
| Slovenia | Deposit Money Banks Claims on Domestics Non-Monetary sectors: Claims on Enterprises |
| South Africa | Total Credit Extended by All Monetary Institutions Net of Household Credit |
| Sweden | Lending to non-financial enterprises: banks |
| Switzerland | Lending to companies by company size and type of loan:total |
| Thailand | Commercial Bank Credit to Industry, construction, Trade and Services |
| Turkey | Deposit Money Banks Credit to Enterprises |
| UK | UK resident banks lending to private sector, net of lending to individuals |
| USA | Commercial Banks Credit: Commercial and Industrial Loans |
| Uruguay | Commercial Bank Credit to Agriculture, Industry, Commerce and Services |

## Appendix Table A2. Variables - definitions and sources

| Variable | Definition | Source |
|---|---|---|
| Bank Credit to GDP | Total outstanding claims of deposit money banks on private sector as ratio to GDP | Beck, Demirguc-Kunt and Levine (2000) |
| Enterprise Credit to GDP | Total outstanding claims of deposit money banks on enterprise sector as ratio to GDP | See Appendix Table A1 |
| Household Credit to GDP | Total outstanding claims of deposit money banks on households as ratio to GDP | See Appendix Table A1 |
| GDP per capita | | World Development Indicators (WDI) |
| Secondary enrolment | Share of the respective age cohort enrolled in secondary schools | WDI |
| Government consumption | Total govt. expenditures relative to GDP | WDI |
| Trade | Ratio of exports and imports to GDP | WDI |
| Inflation | Average log difference in the Consumer Price Index over the sample period | WDI |
| Legal origin dummies | Origin country of each country's legal system | La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) |
| Catholic, Protestant and Muslim population shares | Share of population with the respective religious belief in total population | La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) |
| Financial Structure | Log ratio of stock market value traded to bank credit to private sector | Own calculations based on Beck, Demirguc-Kunt and Levine (2000) |
| Urbanization | Share of population living in urban areas | WDI |
| Informal economy | Ratio of informal output relative to GDP | WDI |
| Manufacturing | Share of manufacturing value added in GDP | WDI |
| Institutional Development | Average of six principal component indicators measuring voice and accountability, political stability, absence of corruption, rule of law, regulatory quality and government effectiveness. | Kaufman, Kraay and Mastruzzi (2004) |
| Creditor rights | Rights of secured creditors inside and outside corporate bankruptcy | Doing Business Database |
| Credit information sharing | Index of the existence and efficiency of credit information sharing systems | Doing Business Database |
| Contract enforcement costs | Average costs of enforcing a claim relative to a typical contract value | Doing Business Database |
| Concentration | Five-bank concentration ratio | Barth, Caprio, and Levine (2006) |
| Government Bank Share | Share of majority government-owned banks in total banking assets | Barth, Caprio, and Levine (2006) |
| Foreign Bank Share | Share of majority foreign-owned banks in total banking assets | Barth, Caprio, and Levine (2006) |

| | | |
|---|---|---|
| Activity restrictions | Indicator of the extent to which bank activities in the securities, insurance, and real estate markets and ownership and control of nonfinancial firms are restricted | Barth, Caprio, and Levine (2006) |
| Bank entry restrictions | Regulatory requirements for new banks | Barth, Caprio, and Levine (2006) |
| Mortgage deductibility | Dummy that takes value one if mortgage interest payments can be deducted from taxable income | Own calculations |
| Banking Freedom | Indicator of the absence of government interference in the banking system, such as regulatory restrictions, restrictions on foreign bank entry and deposit insurance. | Heritage Foundation |

Figure 1. Income and the composition of private credit
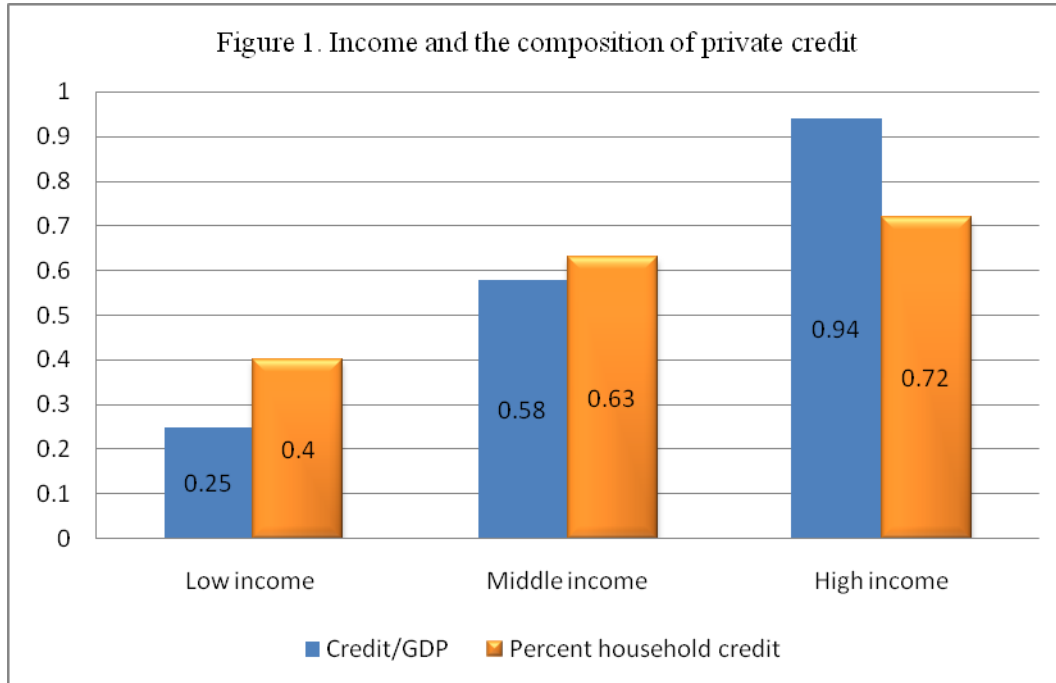
Low income: Per capita GDP < $3,890; Middle income $3,890 – $21,182;
High income > $21,182.



Figure 2. The composition of private credit over time - 1980-2000.
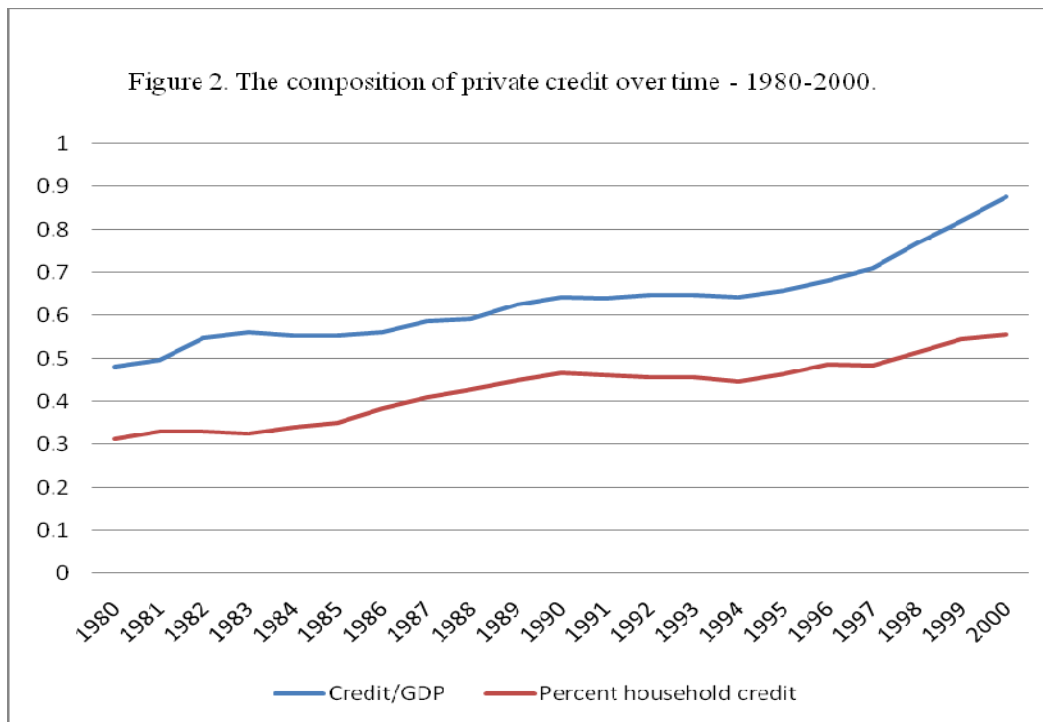
The graph depicts the average for Iceland, Japan, Korea, Portugal, UK, and the US

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**Figure 3: The relationship between Bank Credit to GDP and GDP per capita growth at different levels of GDP per capita**
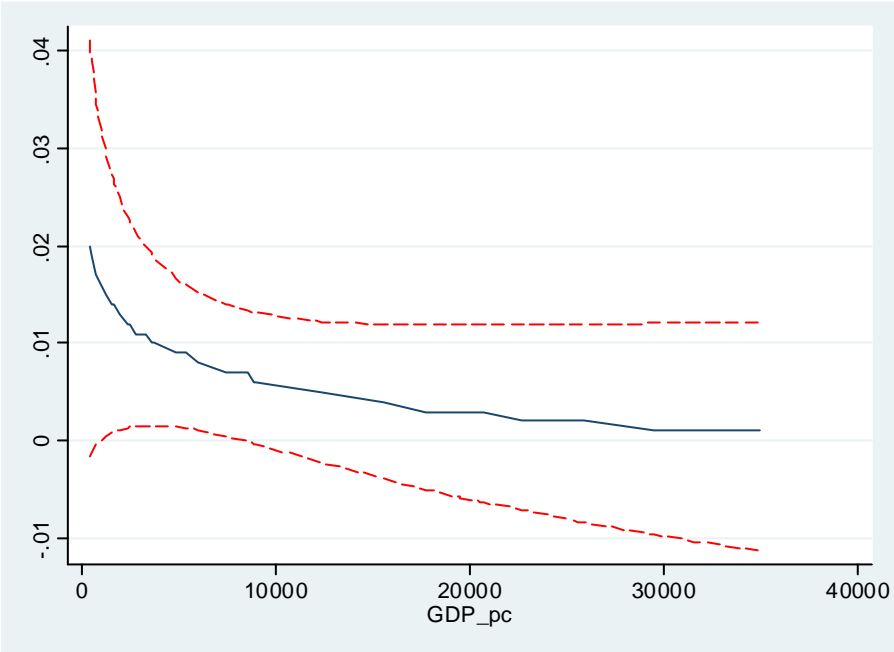


The graph shows the marginal effect of Bank Credit to GDP across different levels of initial GDP per capita. The dotted lines indicate the 95% confidence intervals.

**Figure 4: The relationship between Enterprise Credit to GDP and GDP per capita growth at different levels of GDP per capita**
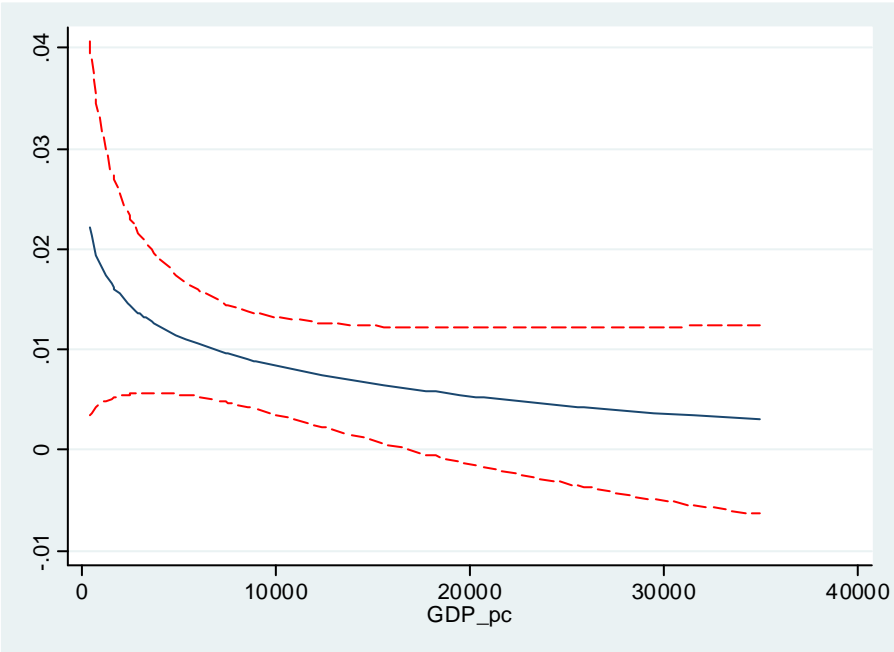


The graph shows the marginal effect of Enterprise Credit to GDP across different levels of initial GDP per capita. The dotted lines indicate the 95% confidence intervals.

**Table 1: Banking sector development and credit composition across countries, 1994-2005**

Bank Credit to GDP is total claims of deposit money banks on private domestic non-financial sector as ratio to GDP. Enterprise Credit to GDP is total claims of deposit money banks on enterprises as ratio to GDP. Household Credit to GDP is total claims of deposit money banks on households as ratio to GDP. Enterprise and Household Credit Share are the relative shares in total credit.

| | Bank Credit to GDP | Enterprise Credit to GDP | Household Credit to GDP | Enterprise Credit Share | Household Credit Share |
|---|---|---|---|---|---|
| Argentina | 0.207 | 0.087 | 0.120 | 0.419 | 0.581 |
| Australia | 0.831 | 0.282 | 0.549 | 0.339 | 0.661 |
| Austria | 0.994 | 0.654 | 0.352 | 0.658 | 0.354 |
| Belgium | 0.756 | 0.319 | 0.437 | 0.422 | 0.578 |
| Bulgaria | 0.206 | 0.147 | 0.076 | 0.712 | 0.367 |
| Canada | 0.648 | 0.133 | 0.532 | 0.205 | 0.821 |
| Costa Rica | 0.233 | 0.113 | 0.133 | 0.486 | 0.570 |
| Czech Republic | 0.508 | 0.318 | 0.173 | 0.626 | 0.341 |
| Denmark | 0.853 | 0.129 | 0.724 | 0.151 | 0.849 |
| Egypt | 0.425 | 0.353 | 0.072 | 0.831 | 0.169 |
| Estonia | 0.285 | 0.180 | 0.114 | 0.630 | 0.398 |
| Finland | 0.621 | 0.231 | 0.409 | 0.371 | 0.658 |
| France | 0.854 | 0.340 | 0.512 | 0.398 | 0.599 |
| Germany | 0.959 | 0.607 | 0.372 | 0.633 | 0.388 |
| Greece | 0.637 | 0.384 | 0.287 | 0.602 | 0.450 |
| Hungary | 0.234 | 0.190 | 0.042 | 0.811 | 0.178 |
| Iceland | 0.910 | 0.492 | 0.418 | 0.541 | 0.459 |
| India | 0.221 | 0.155 | 0.067 | 0.699 | 0.300 |
| Indonesia | 0.282 | 0.169 | 0.081 | 0.601 | 0.287 |
| Ireland | 1.109 | 0.715 | 0.430 | 0.645 | 0.388 |
| Jamaica | 0.197 | 0.102 | 0.098 | 0.515 | 0.496 |
| Japan | 1.101 | 0.757 | 0.344 | 0.688 | 0.312 |
| Kenya | 0.255 | 0.200 | 0.053 | 0.783 | 0.209 |
| Korea | 0.678 | 0.308 | 0.369 | 0.455 | 0.545 |
| Latvia | 0.197 | 0.162 | 0.039 | 0.823 | 0.200 |
| Lithuania | 0.157 | 0.113 | 0.050 | 0.721 | 0.321 |
| Macedonia | 0.185 | 0.139 | 0.046 | 0.753 | 0.250 |
| Malaysia | 0.971 | 0.856 | 0.102 | 0.882 | 0.105 |
| Mexico | 0.199 | 0.087 | 0.100 | 0.438 | 0.501 |
| Netherlands | 1.259 | 0.467 | 0.792 | 0.371 | 0.629 |
| New Zealand | 1.122 | 0.438 | 0.692 | 0.391 | 0.617 |
| Pakistan | 0.225 | 0.176 | 0.049 | 0.781 | 0.219 |
| Poland | 0.206 | 0.166 | 0.040 | 0.806 | 0.194 |
| Portugal | 1.100 | 0.512 | 0.588 | 0.466 | 0.534 |
| Russia | 0.141 | 0.115 | 0.033 | 0.816 | 0.235 |
| Slovakia | 0.426 | 0.267 | 0.152 | 0.629 | 0.357 |
| Slovenia | 0.322 | 0.236 | 0.098 | 0.731 | 0.303 |
| South Africa | 0.662 | 0.324 | 0.338 | 0.489 | 0.511 |
| Sweden | 0.618 | 0.235 | 0.384 | 0.380 | 0.620 |
| Switzerland | 1.603 | 0.612 | 0.991 | 0.382 | 0.618 |
| Thailand | 0.907 | 0.728 | 0.179 | 0.803 | 0.197 |
| Turkey | 0.162 | 0.106 | 0.056 | 0.652 | 0.348 |
| United Kingdom | 1.262 | 0.555 | 0.707 | 0.440 | 0.560 |

| | | | | | |
|---|---|---|---|---|---|
| United States | 0.398 | 0.095 | 0.304 | 0.237 | 0.763 |
| Uruguay | 0.371 | 0.188 | 0.183 | 0.508 | 0.492 |
| | | | | | |
| Average | 0.589 | 0.310 | 0.282 | 0.571 | 0.434 |
| Standard deviation | 0.386 | 0.211 | 0.245 | 0.186 | 0.186 |

## Table 2: Correlations

Bank Credit to GDP is total claims of deposit money banks on private domestic non-financial sector as ratio to GDP. Enterprise Credit to GDP is total claims of deposit money banks on enterprises as ratio to GDP. Household Credit to GDP is total claims of deposit money banks on households as ratio to GDP. Enterprise and Household Credit Share are the relative shares in total credit.

| | Bank Credit to GDP | Enterprise Credit to GDP | Household Credit to GDP | Enterprise Credit share | Household Credit Share |
|---|---|---|---|---|---|
| Enterprise Credit to GDP | 0.8241*** | | | | |
| Household Credit to GDP | 0.8719*** | 0.4423*** | | | |
| Enterprise Credit Share | -0.3799*** | 0.1365 | -0.7184*** | | |
| Household Credit Share | 0.3740** | -0.1416 | 0.7196*** | -0.9873*** | |
| GDP per capita | 0.6924*** | 0.4212*** | 0.7739*** | -0.6234*** | 0.6346*** |

## Table 3: Exogenous determinants of Enterprise and Household Credit to GDP

The regressions are the first stage regressions for the IV regression in column 5 of Table 4. Both Enterprise and Household Credit to GDP are in logs. Initial income per capita is the log of real GDP per capita in 1994, secondary enrolment is the share of the respective age cohort enrolled in secondary schools, government consumption is total govt. expenditures relative to GDP, Trade is the ratio of exports and imports to GDP, Inflation is the average log difference in the Consumer Price Index over the sample period, the legal origin dummies indicate the origin country of each country's legal system, and Catholic, Protestant and Muslim population share is the share of population with the respective religious belief in total population. All regressions are run with OLS and robust standard errors are reported. *,**,*** indicate significance at the 10%, 5% and 1% level, respectively.

| | Enterprise Credit to GDP | Household Credit to GDP |
|---|---|---|
| Initial income per capita | 0.379 | 0.619 |
| | (0.012)** | (0.000)*** |
| Secondary enrolment | -0.005 | -0.001 |
| | (0.401) | (0.784) |
| Government consumption | -0.004 | 0.235 |
| | (0.990) | (0.590) |
| Trade | 0.374 | 0.108 |
| | (0.020)** | (0.515) |
| Inflation | -1.994 | -1.871 |
| | (0.078)* | (0.057)* |
| French legal origin | 0.265 | 0.986 |
| | (0.343) | (0.002)*** |
| German legal origin | 0.439 | 0.561 |
| | (0.246) | (0.224) |
| British legal origin | 0.513 | 0.962 |
| | (0.078)* | (0.003)*** |
| Scandinavian legal origin | 0.575 | 0.125 |
| | (0.199) | (0.757) |
| Catholic population share | -0.006 | -0.003 |
| | (0.021)** | (0.290) |
| Muslim population share | 0.001 | -0.002 |
| | (0.801) | (0.577) |
| Protestant population share | -0.008 | 0.008 |
| | (0.093)* | (0.152) |
| Constant | -5.421 | -8.418 |
| | (0.000)*** | (0.000)*** |
| Observations | 43 | 43 |
| R-squared | 0.555 | 0.857 |
| | | |
| F test legal origin (p-value) | 0.248 | 0.0071 |
| F test religion (p-value) | 0.0657 | 0.1391 |
| F test all excluded variables (p-value) | 0.0181 | 0.0068 |

## Table 4: Enterprise Credit, Household Credit and Economic Growth

Dependent variable is the average annual growth rate of real GDP per capita. Initial income per capita is the log of real GDP per capita in 1994, secondary enrolment is the share of the respective age cohort enrolled in secondary schools, government consumption is total govt. expenditures relative to GDP, Trade is the ratio of exports and imports to GDP, Inflation is the average log difference in the Consumer Price Index over the sample period, Bank Credit to GDP is total claims of deposit money banks on private domestic non-financial sector as ratio to GDP. Enterprise Credit to GDP is total claims of deposit money banks on enterprises as ratio to GDP, Household Credit to GDP is total claims of deposit money banks on households as ratio to GDP. Regressions (1) – (4) are OLS regressions, regression (5) is IV regression, with the first stage regressions reported in Table 3. Robust standard errors are reported. *,**,*** indicate significance at the 10%, 5% and 1% level, respectively.

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Initial income per capita | -0.001 | -0.000 | 0.002 | 0.001 | 0.001 |
|  | (0.803) | (0.852) | (0.616) | (0.743) | (0.760) |
| Secondary enrolment | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|  | (0.683) | (0.376) | (0.912) | (0.398) | (0.367) |
| Government consumption | -0.020 | -0.021 | -0.023 | -0.021 | -0.020 |
|  | (0.020)** | (0.014)** | (0.012)** | (0.017)** | (0.022)** |
| Trade | 0.005 | 0.005 | 0.007 | 0.005 | 0.004 |
|  | (0.052)* | (0.057)* | (0.028)** | (0.086)* | (0.207) |
| Inflation | 0.005 | 0.002 | -0.016 | -0.001 | 0.003 |
|  | (0.824) | (0.914) | (0.493) | (0.960) | (0.888) |
| Bank Credit to GDP | 0.008 |  |  |  |  |
|  | (0.021)** |  |  |  |  |
| Enterprise Credit to GDP |  | 0.009 |  | 0.010 | 0.014 |
|  |  | (0.000)*** |  | (0.000)*** | (0.041)** |
| Household Credit to GDP |  |  | 0.002 | -0.002 | -0.004 |
|  |  |  | (0.636) | (0.446) | (0.351) |
| Constant | 0.062 | 0.065 | 0.043 | 0.052 | 0.051 |
|  | (0.008)*** | (0.002)*** | (0.159) | (0.074)* | (0.138) |
| Observations | 43 | 43 | 43 | 43 | 43 |
| R-squared | 0.334 | 0.404 | 0.263 | 0.415 | 0.393 |
| Sargan test (p-value) |  |  |  |  | 0.666 |

# Table 5: Enterprise Credit, Household Credit and Economic Growth – Non-linearities

Dependent variable is the average annual growth rate of real GDP per capita. Initial income per capita is the log of real GDP per capita in 1994, secondary enrolment is the share of the respective age cohort enrolled in secondary schools, government consumption is total govt. expenditures relative to GDP, Trade is the ratio of exports and imports to GDP, Inflation is the average log difference in the Consumer Price Index over the sample period, Bank Credit to GDP is total claims of deposit money banks on private domestic non-financial sector as ratio to GDP. Enterprise Credit to GDP is total claims of deposit money banks on enterprises as ratio to GDP, Household Credit to GDP is total claims of deposit money banks on households as ratio to GDP. All regressions are run with OLS and robust standard errors are reported. *,**,*** indicate significance at the 10%, 5% and 1% level, respectively. The effects of Bank, Enterprise and Household Credit to GDP are evaluated at the 25th, 50th and 75th percentile of initial income per capita using lincom commands in Stata.

| | (1) | (2) | (3) |
|---|---|---|---|
| Initial income per capita | -0.004 | -0.003 | -0.000 |
| | (0.381) | (0.558) | (0.939) |
| Secondary enrollment | 0.000 | 0.000 | 0.000 |
| | (0.957) | (0.947) | (0.461) |
| Government consumption | -0.017 | -0.017 | -0.020 |
| | (0.073)* | (0.081)* | (0.037)** |
| Trade | 0.005 | 0.003 | 0.004 |
| | (0.165) | (0.275) | (0.205) |
| Inflation | 0.010 | 0.005 | -0.001 |
| | (0.657) | (0.808) | (0.944) |
| Bank Credit to GDP | 0.046 | | |
| | (0.137) | | |
| Bank Credit to GDP* | -0.004 | | |
| Initial income per capita | (0.200) | | |
| Enterprise Credit to GDP | | 0.048 | 0.010 |
| | | (0.077)* | (0.000)*** |
| Household Credit to GDP | | -0.003 | 0.005 |
| | | (0.322) | (0.807) |
| Enterprise Credit to GDP* | | -0.004 | |
| Initial income per capita | | (0.146) | |
| Household Credit to GDP* | | | -0.001 |
| Initial income per capita | | | (0.699) |
| Constant | 0.092 | 0.087 | 0.067 |
| | (0.022)** | (0.057)* | (0.273) |
| Observations | 43 | 43 | 43 |
| R-squared | 0.380 | 0.453 | 0.419 |
| | | | |
| | | | |
| Effect on 25th percentile of initial income | .0012** | .0143*** | -0.0014 |
| Effect on 50th percentile of initial income | .0079** | .0107*** | -0.0025 |
| Effect on 75th percentile of initial income | 0.003 | .0055* | -0.0032 |

## Table 6: Country characteristics - descriptive statistics

Financial Structure is the log ratio of stock market value traded to bank credit to private sector. Urbanization is the share of population living in urban areas. Informal economy is the ratio of informal output relative to GDP. Manufacturing is the share of manufacturing value added in GDP. Institutional development is the average of six principal component indicators measuring voice and accountability, political stability, absence of corruption, rule of law, regulatory quality and government effectiveness. Creditor rights is the rights of secured creditors inside and outside corporate bankruptcy. Credit information sharing is an index of the existence and efficiency of credit information sharing systems. Contract enforcement costs are the average costs of enforcing a claim relative to a typical contract value. Inflation is the average annual log difference of the Consumer Price Index over the sample period. Bank Credit to GDP is total claims of deposit money banks on private domestic non-financial sector as ratio to GDP. Concentration is the five-bank concentration ratio. Government and foreign bank shares are the share of majority government or foreign-owned banks in total banking assets. Activity restrictions is an indicator of the extent to which bank activities in the securities, insurance, and real estate markets and ownership and control of nonfinancial firms are restricted. Bank entry restrictions are the regulatory requirements for new banks. Mortgage deductibility is a dummy that takes value one if mortgage interest payments can be deducted from taxable income. Banking freedom indicates the absence of government interference in the banking system, such as regulatory restrictions, restrictions on foreign bank entry and deposit insurance.

| Variable | Mean | Standard deviation | Maximum | Minimum |
|---|---|---|---|---|
| Financial Structure | 0.61 | 0.77 | 4.17 | 0.00 |
| Urbanization | 65.71 | 17.96 | 97.15 | 20.02 |
| Informal economy | 24.93 | 10.97 | 52.6 | 8.8 |
| Manufacturing | 19.88 | 4.88 | 31.17 | 11.43 |
| Institutional development | 0.76 | 0.82 | 1.91 | -0.87 |
| Creditor rights | 5.61 | 2.17 | 10 | 1 |
| Credit information sharing | 4.41 | 1.56 | 6 | 0 |
| Contract enforcement cost | 17.75 | 19.37 | 126.5 | 4.8 |
| Inflation | 0.06 | 0.08 | 0.44 | 0.00 |
| Bank Credit to GDP | 0.60 | 0.38 | 1.6 | 0.14 |
| Concentration | 0.67 | 0.18 | 1 | 0.30 |
| Government bank share | 19.41 | 23.07 | 80 | 0 |
| Foreign bank share | 15.60 | 24.01 | 99 | 0 |
| Activity restrictions | 8.68 | 2.44 | 14 | 4 |
| Bank entry restrictions | 7.13 | 1.28 | 8 | 2 |
| Mortgage deductibility | 0.14 | 0.35 | 1 | 0 |
| Banking freedom | 63.00 | 16.63 | 90 | 30 |

### Table 7: What explains the share of household credit in total credit across countries?

The dependent is the share of household credit in total credit. The explanatory variables are defined in Tables 3 and 6. Column (1)-(6) regressions are run with OLS and regressions (7) and (8) with random effects. Robust standard errors are reported. *,**,*** indicate significance at the 10%, 5% and 1% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Financial Structure | 0.049 | | | | 0.065 | 0.047 | -0.002 | -0.006 |
| | (0.026)** | | | | (0.006)*** | (0.072)* | (0.722) | (0.558) |
| Urbanization | 0.216 | | | | 0.162 | 0.192 | 0.190 | 0.389 |
| | (0.000)*** | | | | (0.022)** | (0.014)** | (0.010)** | (0.000)*** |
| Manufacturing | -0.192 | | | | -0.247 | -0.099 | -0.104 | -0.214 |
| | (0.018)** | | | | (0.004)*** | (0.275) | (0.060)* | (0.005)*** |
| Informal economy | -0.006 | | | | -0.000 | -0.004 | | |
| | (0.010)*** | | | | (0.924) | (0.042)** | | |
| Institutional development | | 0.181 | | | 0.133 | -0.031 | | |
| | | (0.000)*** | | | (0.021)** | (0.563) | | |
| Creditor rights | | -0.014 | | | | | | |
| | | (0.230) | | | | | | |
| Enforcement costs | | 0.002 | | | 0.003 | 0.000 | | |
| | | (0.007)*** | | | (0.007)*** | (0.870) | | |
| Credit information sharing | | -0.001 | | | | | | |
| | | (0.928) | | | | | | |
| Inflation | | -0.032 | | | | | -0.004 | -0.002 |
| | | (0.906) | | | | | (0.000)*** | (0.028)** |
| Bank credit to GDP | | | 0.067 | | | | 0.094 | 0.052 |
| | | | (0.208) | | | | (0.000)*** | (0.027)** |
| Concentration | | | 0.149 | | | | | |
| | | | (0.473) | | | | | |
| Govt. bank share | | | -0.002 | | | | | |
| | | | (0.317) | | | | | |
| Foreign bank share | | | -0.000 | | | | | |
| | | | (0.757) | | | | | |
| Banking freedom | | | | 0.004 | -0.000 | 0.000 | | |
| | | | | (0.032)** | (0.972) | (0.790) | | |
| Mortgage deductibility | | | | 0.139 | -0.008 | -0.009 | | |
| | | | | (0.078)* | (0.900) | (0.889) | | |
| Activity Restrictions | | | | -0.006 | | | | |
| | | | | (0.629) | | | | |
| Entry restrictions | | | | -0.001 | | | | |
| | | | | (0.969) | | | | |
| German legal origin | | | | | | 0.086 | | |
| | | | | | | (0.340) | | |
| British legal origin | | | | | | 0.181 | | |
| | | | | | | (0.014)** | | |
| French legal origin | | | | | | 0.209 | | |
| | | | | | | (0.001)*** | | |
| Scandinavian legal origin | | | | | | 0.179 | | |
| | | | | | | (0.252) | | |
| Protestant population share | | | | | | 0.002 | | |
| | | | | | | (0.148) | | |
| Catholic population share | | | | | | 0.001 | | |
| | | | | | | (0.326) | | |
| Muslim population share | | | | | | -0.002 | | |
| | | | | | | (0.023)** | | |
| Constant | 0.233 | 0.339 | 0.424 | 0.197 | 0.313 | -0.177 | -0.061 | -0.472 |
| | (0.384) | (0.000)*** | (0.015)** | (0.356) | (0.278) | (0.628) | (0.865) | (0.218) |
| Observations | 42 | 45 | 38 | 38 | 42 | 42 | 259 | 77 |
| Countries | 42 | 45 | 38 | 38 | 42 | 42 | 23 | 23 |
| R-squared | 0.549 | 0.435 | 0.213 | 0.319 | 0.635 | 0.819 | | |