

# Securitization and Economic Activity: The Credit Composition Channel<sup>1</sup>

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**Abstract:** Using an international panel of 104 countries over 1995 to 2012, we analyze the relationship between country-level securitization and economic activity. Our findings suggest that securitization is negatively related to various proxies of economic activity – even prior to the crisis of 2007-2009. We explain this finding by securitization spurring consumption at the expense of investment and capital formation. Consistent with this, we find that securitization of household loans is negatively associated with economic activity, whereas business securitization displays a weak positive association with it, and that household securitization increases an economy’s consumption-investment ratio. Our results inform recent initiatives aiming at reviving securitization markets, as they indicate that the impact of securitization crucially depends on the underlying collateral.

**Keywords:** Securitization market, household securitization, business securitization, economic growth

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## 1. Introduction

Securitization is an important element of modern financial systems. Starting in the early 60s, securitization of mortgage loans became first common in the U.S. Securitization steadily became more widespread until the 2000s, when it reached around 50% of outstanding mortgage and consumer loans in the U.S. The years prior to the crisis of 2007-2009 were then characterized by a boom in worldwide securitization markets. Between 2000 and 2006, issuance of securitization products more than tripled, from less than \$700 billion to about \$2.800 billion.<sup>2</sup> The crisis then caused an effective breakdown of securitization markets. Securitization activities retreated to levels only seen before the 2000s and have stabilized at a low level since then.

Among the carnage, a discussion has emerged about the future of securitization. Several policy-makers have spoken out against, but also in favor of securitization markets. Recently, the European Central Bank and the Bank of England (2013) have issued a paper stating their intention to revive securitization markets, focusing on the high quality segment of the ABS market.

Clearly, there are economic benefits and costs to securitization. First and foremost, securitization allows banks to shift risk off their balance sheet and frees up capital for new lending. Securitization is also an important risk management tool, allowing banks to achieve a more diversified pool of exposures. This should lower their cost of taking on risks, the benefit of which should, at least partially, be passed on to borrowers in the form of more favorable lending conditions and higher credit availability. Securitization also allows banks to better insulate themselves from funding shocks, potentially stabilizing credit extension.

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<sup>2</sup> Sources: the Flow of Funds database and the AB Alert and CM Alert databases.

On the downside, securitization has demonstrated the potential to worsen the efficiency of financial intermediation. The main reason is the presence of informational problems. In particular, banks, which tend to securitize, become less exposed to borrower risk, which undermines their incentives to screen and monitor. This may result in lower quality lending, and erodes the benefits of intermediation -- relative to market-financing. High complexity has also been identified as a potential cost to securitization, as it reduces the ease with which outsiders can evaluate securitization products, potentially resulting in inefficient investment decisions.

There is significant body of evidence supporting the idea that securitization affects intermediation. The literature has typically focused on the impact of securitization on banks themselves (such as their lending -behavior or their risk-taking), the impact on loan conditions (e.g., the pricing of loans) and the impact on borrowers (such as their likelihood of default). This focus on the micro-level has clear advantages in providing good settings for identification.

In this paper we consider the relationship between securitization and *aggregate* outcomes, in particular economic activity. While identification is more challenging at the aggregate level, this focus offers distinct advantages. Securitization is likely to be associated with important externalities that cannot be captured by micro-studies. For example, while securitization may very well increase profits and lower risk for the bank that is shedding the risk, it may be detrimental to the buyers of securitization products. In addition, securitization may also affect the efficiency of capital allocation in the economy (it can either increase or decrease it), which has implications that will not be visible at the immediate bank-firm nexus.

Specifically, in this paper we exploit country-level variations in securitization activities to analyze the relationship between securitization and economic aggregates. Based on a large international sample of securitization issuances from 1995 to 2012, we find securitization

activities to be negatively correlated with proxies for economic activity, such as GDP per capita growth, capital formation and changes in new firm establishments. The effect is economically significant and is not driven by the period of the Global Financial Crisis, suggesting that it is a structural property of securitization.

What can explain this finding? Our results indicate that the effect is neither driven by the amount nor the quality of credit in the economy, which rules out most of the common channels for why securitization affects macroeconomic outcomes. We put forward a new channel, based on the idea that securitization affects the aggregate *composition* of credit in the economy. Securitization of residential mortgage and consumer loans (which are more homogenous and less information sensitive) is easier than for business loans. The development of securitization is thus expected to broadly favor loans to households, as opposed to loans to business. As both types of borrowers are competing for an economy's scarce resources, this may result in an aggregate reduction in investment and lower economic activity.<sup>3</sup>

The data is broadly consistent with the *credit composition channel*. We show that only securitization of loans to households is negatively related to economic activity. Securitization of business loans instead displays as a positive association with economic activity, albeit a weak one. In addition, we find that securitization increases an economy's consumption-investment ratio. Furthermore, securitization has a more pronounced (negative) impact on proxies of the supply side of the economy than on economic growth. This is consistent with a shift from investment to consumption constraining the supply side of the economy, while potentially boosting demand (and hence leading to a more muted impact on GDP).

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<sup>3</sup> Consistent with the different implication for economic activity, Beck et al. (2012) show that, for a sample of developed and developing economies, enterprise credit facilitates economic growth whereas household credit has no impact on growth. Sassi and Gasmı (2014), studying 27 European countries, find that enterprise credit is positively related to economic growth whereas household credit has a negative effect.

Our results carry clear policy messages. Securitization may not only have effects on the parties immediately involved in the securitization process, but also for the wider economy. Most importantly, the results suggest that the impact of securitization depends on the underlying type of collateral. While securitization of business loans may encourage investment and spur economic activity, securitization of consumer loans may at the aggregate divert resources away from productive purposes. The ongoing debate on whether to revive securitization should thus put a focus on which part of the securitization market to stimulate. In this respect it is interesting to note that Andy Haldane, head of financial stability at the Bank of England, voices a preference for securitization of SME credits relative to securitization of household loans.<sup>4</sup> Our findings reinforce this view.

The remainder of this paper is organized as follows. The following section discusses various channels that have been emphasized in the literature and through which securitization may affect economic activity. We relate them to the *credit composition channel* and form hypotheses. Section 3 describes the data and the empirical methodology. Section 4 contains the empirical results. The final section concludes and discusses implications for policy.

## **2. Securitization and Economic Activity: Channels and Hypotheses**

The channels emphasized by previous literature can be broadly categorized into two groups, depending on how they may potentially affect economic output.

First, there are channels suggesting that securitization changes *credit volume* in the economy. This may, in turn, lead to more economic activity if it alleviates financing constraints of firms.

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<sup>4</sup> Fleming, S. (2013, December 10). BoE policy maker backs ‘bogeyman’ of bundled debt. *Financial Times*. Retrieved from: <http://www.ft.com/intl/cms/s/0/fdeeb11e-61bb-11e3-916e-00144feabdc0.html#axzz331ogsK29>

To the contrary, it may also reduce economic activity if it causes excessive debt burdens and defaults. There are various reasons for why securitization activities are expected to affect the amount of credit in the economy, or more broadly, lending conditions. Securitization lowers the risks on banks' balance sheets and allows to free economic and/or regulatory capital.<sup>5</sup> This should encourage banks to increase their lending activities and charge lower rates to borrowers. Nadauld and Weisbach (2012) provide micro-evidence for this, showing that securitization in the form of CLOs lowers the price of corporate debt. Moreover, securitization techniques allow banks to improve their risk management, which should reduce the cost of taking on risk. Loutskina and Strahan (2009) find that securitization lowers the impact of funding shocks to loan supply. More broadly, there is evidence that banks pass on risk management benefits from credit risk transfer techniques to borrowers (Cebenoyan and Strahan (2004), Franke and Krahen (2005), Hirtle (2009) and Norden, Bustin and Wagner (2014)).

Second, there are channels suggesting that securitization has a macroeconomic impact by affecting *credit quality*. By reducing constraints at the side of banks, securitization should lead to a more efficient allocation of capital in the economy (that is, capital flows to the most productive firms and risk is efficiently spread among a diverse group of investors). Stein (2010), in particular, argues that securitization enhances the allocation of risks by transferring them from banks to outside investors. On the downside, there is evidence that securitization reduces credit quality by undermining monitoring and screening incentives of banks. Marsh (2006) finds that the announcement effect of a new bank loan is weakened when a bank actively uses securitization techniques, consistent with informational problems. Keys et al. (2010) show that

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<sup>5</sup> Securitization may also be driven by regulatory capital arbitrage in case there remains implicit recourse on securitizers (Acharya et al. 2013), or when it leads to asset substitution (Jones (2000) and Agostino and Mazzuca (2011)).

securitization has negative effects on the screening incentives of lenders. However, Agarwal et al. (2012) find no evidence of adverse selection in default risk in mortgage securitizations, whereas Benmelech et al. (2012) find that adverse selection problems in corporate loan securitizations are less severe than commonly believed.

The *credit volume* and *credit quality channel* of securitization are also echoed in the literature on financial development (starting from King and Levine (1993) and surveyed in Levine (2005)). While we focus here on a specific type of financial innovation, this literature studies financial development more broadly. It emphasizes that financial development can have a positive impact on economic growth by reducing financing constraints (akin to the *credit volume channel*) and by affecting the efficiency of intermediation and the allocation of capital in the economy (the *credit quality channel*).

In this paper we emphasize a new channel, which we term the *credit composition channel* of securitization. Household loans, especially mortgages, are more homogenous and can hence more readily be used as collateral in securitization pools (Loutskina, 2011). This is in contrast to business loans, which typically are also more relationship-based. Business loans require more monitoring and screening and are less easily securitized without causing efficiency losses. We would thus expect that general developments in securitization techniques have a bigger impact on household loans than on business loans. Financial development is thus expected to reduce the cost of household credit relative to business loans and increase relative credit availability. In equilibrium, this should lead to a greater share of national output being used for consumption, instead of investment, which may depress growth by reducing capital accumulation.<sup>6</sup>

We thus hypothesize that

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<sup>6</sup> Note that the *credit composition channel* is not orthogonal to the other two channels in that it relies on securitization affecting the volume (or other characteristics) of either lending type. Rather, it is a general equilibrium consequence of the two micro channels.

*H1: Countries with more securitization have lower economic growth as securitization favors household loans to corporate loans and discourages investment.*

From this follow two more hypotheses, relating to securitization of household and business loans separately:

*H2: Countries with more securitization of household loans have lower economic growth.*

*H3: Countries with more securitization of business loans have higher economic growth.*

### **3. Data and methodology**

The data for this study has been collected from a number of sources, namely, the AB Alert and CM Alert databases, World Development Indicators (WDI), Penn World Table 8, the banking crisis database from Laeven and Valencia (2013), the World Bank regulation and supervision database and Global Financial Development Database (GFDD).

We conduct our empirical analysis by employing the following country fixed effects panel data model:

$$Growth_{i,t} = \alpha_i + \beta * Securitization_{i,t-1} + \delta' * X_{i,t} + \theta_t + \varepsilon_{i,t}$$

where the dependent variable  $Growth_{i,t}$  denotes economic growth. The subindices  $i$  and  $t$  refer to country and time, respectively.  $X_{i,t}$  is a set of control variables at country level. We use GDP per capita growth as the main proxy for economic growth. Alternatively, we consider growth



rates of gross capital formation and growth rates of new firm density.<sup>7</sup> The three measures come from the WDI. In our analysis of the tradeoff between consumption and investment, we proxy the importance of consumption relative to investment with the consumption share, which is defined as the ratio of consumption to the sum of consumption and investment, constructed from Penn World Table 8. We model the relationship between the consumption share and various securitization variables similar to the growth regressions:

$$Consumption\ Share_{i,t} = \alpha_i + \beta * Securitization_{i,t-1} + \delta' * X_{i,t} + \theta_t + \varepsilon_{i,t}$$

Our variable of interest  $Securitization_{i,t-1}$  represents total securitization issued in country  $i$  in year  $t-1$ . For our baseline analysis, summing up the amount of each securitization issue in a given country of a given year, we obtain a yearly aggregate amount of securitization, divided by the size of the economy, as the primary proxy for securitization intensity. In addition, we consider also the number of securitization deals normalized by the GDP as an alternative, which indicates how common securitization is used in a given country. We collect the data on securitization issuance from the AB Alert and CM Alert databases.<sup>8</sup> The two databases include all securitizations in the world that are rated by at least one major rating agency. The database distinguishes securitization issuances according to the underlying collateral. The main types are public and private asset-backed securities (ABS), mortgage-backed securities (MBS) and collateralized debt obligations (CDO), sponsored both by financial and non-financial firms. The

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<sup>7</sup> Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Firm density refers to new firm registration per 1,000 people aged 15-64. The data on new firm density growth is available for a smaller panel since 2004 and we hence only use it in our main regressions.

<sup>8</sup> See Table A1 for securitization issuances by collateral countries since 1995.

databases, however, do not cover government-sponsored securitizations, Fannie Mae and Freddie Mac, and asset-back commercial papers (ABCP).

The two databases contain essential information on the location of collateral, types of underlying collateral, the amount of assets securitized, and the identity of the issuer. For our purpose, we classify securitizations into two groups, depending on whether the underlying is a household loan or not.<sup>9</sup> Some choices had to be made since the distinction between household and other credits is not always clear-cut.<sup>10</sup> Next, following Maddaloni and Peydro (2011), we create our securitization variables according to the nationality of the securitized collateral.<sup>11</sup> All securitization variables are lagged by one period to mitigate the concern of reverse causality. To capture possibly different effects of these two types of securitization, in some regressions we replace the total securitization measure with household and business securitization.

In order to further reduce endogeneity problems and deal with possible business cycle effects, we also employ dynamic panel regressions as a robustness check. Following the literature, we use system GMM estimation based on five-year non-overlapping averages of all variables. System GMM estimation has various advantages (Arellano and Bover, 1995; Blundell and Bond, 1998). Among others, it allows us to control for both initial GDP of countries and lagged dependent variables. Moreover, it instruments all independent variables, including securitization measures, using their lagged levels and first-differences (the internal instruments). The validity of instruments is tested through Hansen test for overidentifying restrictions.<sup>12</sup>

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<sup>9</sup> See Appendix A3 for the final classification.

<sup>10</sup> Our empirical results do not rely on the contentious classifications.

<sup>11</sup> We drop the deals that involve collateral from more than one country. Securitization measures are matched to variables on economic growth according to the country and the year of issuance.

<sup>12</sup> Due to the short length of the panel, an AR(2) test cannot be run. When 4-year averages are used instead of 5 – years, the test can be carried out and suggests that instrumentation is valid.

We include a set of country-level control variables, which are commonly used in the financial development literature (see, for example, Beck et al. (2014)). First, we include indicators controlling for domestic credit and stock market development, measured by domestic credit over GDP and stock traded over GDP, respectively. The credit variable controls for any direct effect of securitization on economic growth, coming through a general expansion in credit (but not taking into account changes in the composition). In addition, we include trade over GDP to measure the openness of the economy and inflation to control for macroeconomic stability. Furthermore, we control for government expenditure defined as the share of government final consumption in GDP, urbanization and education level of the country. All these macroeconomic controls come from WDI. Since securitization activities may also affect output through increasing the likelihood of crisis, we include dummies for banking crises from Laeven and Valencia (2013) to see whether or not we capture this indirect effect. We also employ regulatory variables as additional controls (from the World Bank regulation and supervision database (Barth et al., 2013)) as a robustness check to make sure that the results are not driven by a general deregulation trend in bank activities and capital stringency accompanied by lax supervision and private monitoring. In addition, we include the country-level nonperforming loans to gross loans taken from the Global Financial Development Database (GFDD) to capture, at least partially, the presence of *the credit quality channel*. For details of data sources and variable definitions, please refer to Table A2.

Finally, we include year dummies,  $\theta_t$ , to control for year specific effects. For most specifications, we estimate panel fixed effects models with standard errors clustered at the country-level, relying on within country variations to show the relationship between securitization and economic growth.

Figure 2 shows the trends of household and business securitization over the past two decades. Household securitization is clearly the predominant form of securitization, at least until the global financial crisis. During 2007 and 2008 both types of securitization collapsed and the large difference in issuances between both securitization types by and large disappeared.

Table 1 presents the summary statistics of our sample. The sample consists of 104 countries. More than half of these countries used securitizations at least once over the period of 1995 to 2012. *Securitization over GDP* has a sample mean of 0.378% and a maximum of 14.381%. In terms of types of collaterals, household securitization is the primary market segment. In particular, its sample mean, 0.242%, accounts for two-thirds of average securitization over GDP.

Table 2 presents the pairwise correlation matrix between main variables. First, the three measures of economic growth are positively correlated with each other, as expected. Second, *Securitization over GDP* is negatively correlated with GDP per capita growth at the 10% significance level. Both types of securitization are negatively related to the three measures of economic growth, though the correlation is not statistically significant. Furthermore, the correlation between household and business securitization is rather limited around 0.677.<sup>13</sup> It is also important to note that securitization measures and consumption share are negatively correlated, albeit not significantly so. Finally, the measure of the relative importance of consumption is strongly negatively correlated with GDP, hinting at the potential importance of the composition channel.

While in our empirical analysis we exploit within country variation in securitization, it is interesting to see whether there is also a relationship between securitization and economic activity across countries. Figure 1 plots pre-crisis average of country-level securitization and

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<sup>13</sup> For example, in Sassi and Gasmi (2014) the correlation between household credit and enterprise credit is around 0.7595.

growth rates for the OECD countries, as a rather homogenous group. We obtain a negative relationship, which is robust to the exclusion of outliers in the securitization variable.

#### **4. Empirical results**

Table 3 presents our baseline results. In column 1, we use GDP per capita growth as our dependent variable and securitization over GDP as our variable of interest. The estimated coefficient for securitization over GDP is negative and significant at the 10% significance level. The economic effect of the negative association is considerable. More specifically, a one standard deviation increase in securitization over GDP (1.357) is associated with 0.18% decrease in GDP per capita growth, which is 7% of the mean ( $1.357 \times 0.136 / 2.671$ ) and 4.5% of the standard deviation. While not a very large effect, the power of compounding implies an important impact on output in the medium-long run.

Most of the significant control variables have the expected sign. Higher trade and urbanization increase economic growth, whereas higher inflation and government expenditure and banking crisis are negatively correlated with GDP per capita growth. Interestingly, domestic credit is negatively correlated with economic growth. This may be the consequence of the dark side of financial development, which has recently been documented (Arcand et al., 2012; Cecchetti and Kharroubi, 2014).

Columns 2 and 3 turn to the relationship between securitization and the supply side of the economy, measured by the growth rates of gross capital formation and new firm density. In each case we find a strong negative relationship. Specifically, a one standard deviation increase in securitization reduces the growth rates of gross capital formation and new firm formation by 0.74%

and 2.23%. The effects are now significant at the 5% and 1% levels, respectively. This relatively stronger impact on the supply side may indicate that our composition channel is at work.

In columns 4 to 6, we turn to the separate analysis of household and business securitization. We find that household securitization is consistently negatively related to all measures of economic growth. The coefficients for household securitization are in all cases more negative than the one of total securitization. For GDP per capita growth, for example, the coefficient (significant at the 1% level) implies that a one standard deviation increase in household securitization over GDP is associated with 0.46% decrease in GDP per capita growth, which is 17% of the mean. The coefficients for business securitization are all positive except in regression 5. The significance is only marginal in regression 4, whereas there is no significance in the regressions for gross capital formation growth and new firm density growth. This evidence thus suggests that household and business loan securitizations have different implications for the macroeconomy.

Table 4 contains various robustness tests for our GDP per capita growth. In columns 1 and 2 we add extra regulatory variables to control for cross-country differences in bank regulation and supervision, which may affect securitization as well as economic growth. The motivation is that the negative association between securitization and economic growth may be driven by a general trend towards deregulation and lax supervision. Specifically, we include variables for Activity restrictions, Initial capital stringency, Supervisory powers and Private Monitoring from the bank regulation and supervision database compiled by Barth et al. (2013). The database is based on World Bank surveys on bank regulation and supervision over the period 1999–2012. The results are qualitatively unchanged. In particular, we find aggregate securitization to be negatively related to economic growth. Moreover, household securitization is negatively and significantly

related to GDP per capita growth, whereas business securitization is positively related to economic growth though the effect is not statistically significant. As for the regulatory variables, only activity restrictions have significant and positive impacts on economic growth. The other regulatory variables are not significant. For brevity, we omit the estimates for the standard set of controls.

To mitigate endogeneity concerns arising in our baseline regressions, we employ dynamic panel regressions in columns 3 and 4. Specifically, we use a two-step system GMM estimator which instruments all independent variables as discussed in the previous subsection. These regressions also control for business cycle effects, as 5-year non-overlapping averages of all variables are used. The system GMM shows that aggregate securitization has no significant effect on economic growth. However, the effect of two types of securitization individually is stronger than that in the baseline regression. The coefficient for household securitization is now -0.608, about twice (in absolute terms) the value of the baseline regression. The coefficient for corporate securitization is 1.882, more than twice its previous size, and now significant at the 1% level. These findings confirm our hypotheses that household securitization lowers economic growth but business securitization spurs real economy.

About half of countries in our sample do not securitize over the sample period. Pooling securitizing and non-securitizing countries together may hence bias the estimation of the growth effect of securitization. In columns 5 and 6, we re-estimate our baseline model, including only countries with at least one securitization deal in the sample period. We find that securitization is negatively correlated with GDP per capita growth, though the effect is not statistically significant. When decomposing the two types of securitization, we find economic growth is negatively related to household securitization and positively related to business securitization.

The U.S. has been by far the largest user of securitization in the world. To see whether this drives our results, we estimate the baseline model excluding the U.S. We find similar results.<sup>14</sup> In columns 9 and 10, we use log of the number of securitization deals as alternative measures of securitization intensity. The results are similar, although business securitization loses its statistical significance.

The analysis so far indicates a negative relationship between securitization and economic growth. Moreover, the relationship varies depending on the type of securitization. The fact that household securitization is negatively related to growth but business related securitization is positively or not correlated with economic growth suggests differences in the macroeconomic response to securitizations. Previous research suggests that corporate credit is more productive compared to household credit, which is mostly used for consumption purposes (Beck et al., 2012). Moreover, Maddaloni and Peydro (2011) show securitization affects banks' lending behavior differentially, so that they favor consumption-related credit provision (mortgages or consumer credit), which does not directly turn into investment.

In Table 5, we investigate through which channel(s) securitization may affect economic growth. The *credit composition channel* predicts that the growth effect of securitization comes through changing the relative importance of consumption to investment in the economy. In column 1 and 2 we use as a dependent variable the share of consumption over the sum of consumption and investment in national accounting. We find the coefficient of securitization is positive though only marginally significant at 10%. The effect is stronger for household securitization, which has a positive and significant correlation with the consumption share, suggesting household securitization increases the share of consumption. The effect for business

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<sup>14</sup> The results are also similar when we exclude top five securitizing countries (U.S., Netherlands, UK, Australia and Spain).



securitization is negative but insignificant. Together with the negative relationship between consumption and growth, this provides further evidence in favor of the *credit composition channel*.

Securitization may affect economic growth through the *credit quality channel*, for example because adverse selection and moral hazard results in financing of undesirable high-risk projects. This may lower productivity, and lead to more defaults and less growth. We proxy the *credit quality channel* through the ratio of nonperforming loans to total loans at the country level, as a measure of increased bank risk and misallocation of capital, possibly due to informational problems. Columns 3 and 4 show a negative relationship of loan performance and growth. The results regarding securitization remain similar, suggesting that the composition channel operates in addition to any *credit quality channel*.

In our baseline regression, we include domestic credit as a control variable. Thus, our results are net of any effects that may come through a change in the total amount of credit in response to securitization. Consistent with this we find that in columns 5 and 6 that when domestic credit is excluded from the set of controls, the impact of securitization on growth becomes larger (in absolute terms). The securitization variable now obtains a more negative coefficient of -0.215 and is significant at the 1% level. The split-up shows that this is through a more negative impact of household securitization, the impact of business securitization weakens and is insignificant.

Countries with highly developed securitization markets, such as U.S. and UK, fell into recessions when the securitization market collapsed in 2008. It is thus interesting to examine whether the negative effects of securitization are due to the crisis period or whether they were already present before. In Table 6, we split the sample into two subsamples, the period before the crisis (1995-2006) and the crisis period (2007-2012). Column 1 shows that securitization had a

negative impact on economic growth in the pre-crisis period; the effect is even stronger. The split up, in column 2, shows that the impact of household securitization is again more pronounced, and business securitization is insignificant. The results for the crisis period in column 3 and 4 show a weak impact of securitization during the crisis. While the coefficients are not very different from the baseline analysis, the significance drops. Only household securitization is negatively correlated to GDP per capita growth in statistically significant terms. An explanation for the weaker results may be that the amount of securitization was much smaller in almost all of the countries, as well that we now look at a much shorter sample period.

To conclude this section, it is important to acknowledge some limitations of our analysis. Our baseline methodology is panel fixed effects regressions, which relies on strong exogeneity assumptions. Without an explicit identification strategy, the results should be interpreted as correlations rather than causal relationships. Moreover, as our data covers the period of 1995-2012, our panel regressions capture more medium-term correlations between macro variables.<sup>15</sup> Yet, relying only on within country variation, we avoid cross-country comparisons, which should reduce issues arising from unobserved heterogeneity. Moreover, the use of lagged securitization variables should alleviate the concern of reverse causality. The similarity of the results obtained in the dynamic panel regressions, where securitization is internally instrumented and 5-year averaged variables are used, should provide additional assurance regarding endogeneity of the securitization variables and long-term relevance of our findings.

## 5. Conclusion

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<sup>15</sup> The use of securitization technology intensified from late 90s onwards, not leaving us a long time horizon to analyze the long-run effects.

This paper has analyzed the relationship between countries' use of securitization technologies and their economic outcomes. We show that securitization is associated with lower economic activity, as proxied by growth rates of GDP per capita, capital formation and new firm density. Our results indicate that this effect is not driven by the breakdown of securitization markets during the crisis, as it is also present in the pre-crisis period.

Importantly, different types of securitizations have different effects. Whereas securitization of loans to households is negatively related to economic activity, securitization of business loans has a weak positive effect on the economy. The findings are consistent with the *credit composition channel*, by which securitization of non-business loans leads to an increase in the share of credits flowing to households, as the cost of firm financing. While this may spur demand in the short run, it will hamper investment and lead to lower growth.

Our empirical analysis informs the recent policy discussion on reviving securitization in Europe. Policy makers clearly recognize the importance of fostering “high-quality” securitization, that is, securitizations that are transparent and include collateral of low risk borrowers. Our analysis suggests that the authorities should not only care about the securitization quality, but also whether the collateral is in the form of household or business loans. If the objective is to stimulate growth and investment, the focus should be on the latter.

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**Table 1. Cross-country summary statistics**

*GDP per capita growth* is the rate of real per capita GDP growth. *New firm density growth* is the growth rate of new business entry density, which is the number of newly registered limited liability corporations per calendar year, normalized by working age population. *Gross capital formation* consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP. *Ln(Securitization deals)* is log of number of securitization issuances plus one. *Ln(Household [Business] Securitization deals)* is log of number of household [business] related securitization issuances plus one. *Domestic credit to private sector* refers to financial resources provided to the private sector by financial corporations. *Stocks traded over GDP* refers to the total value of shares traded during the period over GDP. *Trade over GDP* is total trade over GDP. *Inflation* is the rate of change in consumer price indices. *Government expenditure* is the general government final consumption expenditure (% of GDP). *Urbanization* is the urban population (% of total population). *Education* is the gross secondary education enrollment ratio. *Banking crisis* is a dummy variable that equals 1 if the country is in a banking crisis. *Activity restriction* captures overall restrictions on banking activities and *Initial capital stringency* shows how stringent capital rules are when a bank is initially capitalized. *Supervisory powers* indicates how strong the supervisory authorities are and *Private monitoring* captures the effectiveness of private monitoring of firms. *NPL to gross loans* is aggregate bank non-performing loans to gross loans in percentages.

	# of Obs.	Mean	Std. Dev.	Min	Max
GDP per capita growth	1238	2.671	4.080	-17.545	38.057
Gross Capital Formation Growth	1126	5.218	15.144	-57.713	106.350
New Firm Density Growth	440	6.266	19.303	-45.455	133.333
Consumption share	1218	77.338	9.007	27.262	97.672
Securitization over GDP	1238	0.378	1.357	0.000	14.381
Household securitization over GDP	1238	0.242	0.992	0.000	9.956
Business securitization over GDP	1238	0.136	0.467	0.000	5.173
Ln(Securitization deals)	1238	0.654	1.312	0	8.005
Ln(Household securitization deals)	1238	0.460	1.128	0	7.394
Ln(Business securitization deals)	1238	0.476	1.067	0	7.231
Domestic credit to private sector	1238	70.362	53.804	3.829	319.461
Stocks traded over GDP	1238	36.043	68.969	0.000	741.584
Trade over GDP	1238	90.427	52.235	18.756	448.306
Inflation	1238	7.519	33.838	-4.863	1058.374
Government expenditure	1238	16.650	5.001	4.506	30.504
Urbanization	1238	64.340	20.010	10.072	100
Education	1238	87.191	23.702	16.477	160.619
Banking Crisis	1238	0.124	0.330	0	1
Activity restrictions	1043	7.136	2.052	3	12
Initial capital stringency	1060	2.136	0.794	0	3
Supervisory powers	870	11.040	2.408	4	16
Private Monitoring	993	8.182	1.393	4	11

**Table 2. Pairwise correlations**

*GDP per capita growth* is the rate of real per capita GDP growth. *New firm density growth* is the growth rate of new business entry density, which is the number of newly registered limited liability corporations per calendar year, normalized by working age population. *Gross capital formation* consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP. *Consumption share* is total consumption over the sum of investment and consumption. *Securitization over GDP* is total securitization amount over GDP. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

	GDP per capita growth	Gross Capital Formation Growth	New Firm Density Growth	Securitization over GDP	Household securitization over GDP	Business securitization over GDP	Consumption share
GDP per capita growth	1						
Gross Capital Formation Growth	0.598***	1					
New Firm Density Growth	0.368***	0.365***	1				
Securitization over GDP	-0.048*	-0.025	-0.028	1			
Household securitization over GDP	-0.046	-0.026	-0.015	0.967***	1		
Business securitization over GDP	-0.041	-0.019	-0.047	0.843***	0.677***	1	
Consumption share	-0.078***	-0.109***	-0.047	-0.030	-0.022	-0.042	1

**Table 3. Securitization and the real economy**

*GDP per capita growth* is the rate of real per capita GDP growth. *New firm density growth* is the growth rate of new business entry density, which is the number of newly registered limited liability corporations per calendar year, normalized by working age population. *Gross capital formation* consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP. *Domestic credit to private sector* refers to financial resources provided to the private sector by financial corporations. *Stocks traded over GDP* refers to the total value of shares traded during the period over GDP. *Trade over GDP* is total trade over GDP. *Inflation* is the rate of change in consumer price indices. *Government expenditure* is the general government final consumption expenditure (% of GDP). *Urbanization* is the urban population (% of total population). *Education* is the gross secondary education enrollment ratio. *Banking crisis* is a dummy variable that equals 1 if the country is in a banking crisis. All securitization related variables are lagged one period. Country and year fixed effects are included in each specification. Standard errors are clustered at the country-level. Robust P-values are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

	(1) GDP per capita growth	(2) Gross Capital Formation Growth	(3) New Firm Density Growth	(4) GDP per capita growth	(5) Gross Capital Formation Growth	(6) New Firm Density Growth
Securitization over GDP	-0.136*	-0.542**	-1.642***			
	(0.062)	(0.045)	(0.006)			
Household securitization over GDP				-0.344***	-0.653**	-2.410***
				(0.000)	(0.039)	(0.000)
Business securitization over GDP				0.371*	-0.250	0.165
				(0.086)	(0.815)	(0.911)
Domestic credit to private sector	-0.027***	-0.083**	0.002	-0.027***	-0.083**	-0.001
	(0.003)	(0.026)	(0.964)	(0.002)	(0.026)	(0.986)
Stocks traded over GDP	0.002	0.010	0.039*	0.001	0.010	0.038*
	(0.661)	(0.325)	(0.060)	(0.705)	(0.341)	(0.063)
Trade over GDP	0.032***	0.130**	0.090	0.031***	0.130**	0.091
	(0.006)	(0.015)	(0.424)	(0.006)	(0.015)	(0.412)
Inflation	-0.013*	-0.004	-0.728*	-0.013*	-0.004	-0.728*
	(0.073)	(0.572)	(0.067)	(0.074)	(0.574)	(0.067)



Government expenditure	-0.257*** (0.000)	-0.155 (0.778)	-2.600*** (0.001)	-0.258*** (0.000)	-0.156 (0.777)	-2.587*** (0.001)
Urbanization	0.236*** (0.005)	0.925*** (0.006)	1.453 (0.322)	0.239*** (0.005)	0.926*** (0.006)	1.471 (0.318)
Education	-0.000 (0.980)	-0.108** (0.027)	-0.389 (0.201)	-0.001 (0.928)	-0.108** (0.027)	-0.387 (0.205)
Banking Crisis	-1.610*** (0.002)	-4.116** (0.019)	3.681 (0.200)	-1.635*** (0.002)	-4.130** (0.018)	3.679 (0.206)
Number of observations	1238	1131	442	1238	1131	442
R-sq	0.333	0.228	0.274	0.335	0.228	0.275
Number of countries	104	96	78	104	96	78

**Table 4. Robustness**

*GDP per capita growth* is the rate of real per capita GDP growth. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP.  $\ln(\text{Securitization deals})$  is log of number of securitization issuances plus one.  $\ln(\text{Household [Business] Securitization deals})$  is log of number of household [business] related securitization issuances plus one. *Activity restriction* captures overall restrictions on banking activities and *Initial capital stringency* shows how stringent capital rules are when a bank is initially capitalized. *Supervisory powers* indicates how strong the supervisory authorities are and *Private monitoring* captures the effectiveness of private monitoring of firms. We also include the following control variables: *Domestic credit to private sector* refers to financial resources provided to the private sector by financial corporations. *Stocks traded over GDP* refers to the total value of shares traded during the period over GDP. *Trade over GDP* is total trade over GDP. *Inflation* is the rate of change in consumer price indices. *Government expenditure* is the general government final consumption expenditure (% of GDP). *Urbanization* is the urban population (% of total population). *Education* is the gross secondary education enrollment ratio. *Banking crisis* is a dummy variable that equals 1 if the country is in a banking crisis. Described control variables are included in the regressions but not reported in the table. In dynamic panel regressions 3 and 4 -two-step system GMM estimation- 5-year non-overlapping averages for all variables are used, together with period fixed effects. In rest of the regressions, country and year fixed effects are included in each specification, all securitization related variables are lagged one period and standard errors are clustered at the country-level. P-values are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

	Regulation		System GMM		Only securitizing countries		Excluding the U.S.		Number of issuances	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth									
Securitization	-0.156*		0.026		-0.051		-0.130		-0.315	
	(0.054)		(0.862)		(0.412)		(0.146)		(0.100)	
Household securitization		-0.358***		-0.608**		-0.235***		-0.360***		-0.655***
		(0.003)		(0.011)		(0.002)		(0.001)		(0.002)
Business securitization		0.285		1.882***		0.406**		0.417*		0.164
		(0.232)		(0.007)		(0.048)		(0.068)		(0.377)
Activity restrictions	0.225*	0.219*								
	(0.074)	(0.082)								
Initial capital stringency	0.415	0.388								
	(0.101)	(0.124)								
Supervisory powers	0.099	0.102								
	(0.132)	(0.122)								
Private Monitoring	0.101	0.102								
	(0.478)	(0.467)								
Lagged GDP per capita growth			0.147	0.173*						
			(0.159)	(0.062)						
Initial GDP per capita			-0.152	-0.288						
			(0.585)	(0.190)						
Number of observations	828	828	118	118	690	690	1223	1223	1238	1238
R-sq	0.340	0.341			0.469	0.472	0.332	0.334	0.334	0.337
Number of countries	90	90	77	77	54	54	103	103	104	104
Number of Instruments			54	58						
Hansen J-test (p-value)			0.379	0.493						

**Table 5. Securitization channels**

*Consumption share* is total consumption over the sum of investment and consumption. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP. *NPL to gross loans* is aggregate bank non-performing loans to gross loans in percentages. *Domestic credit to private sector* refers to financial resources provided to the private sector by financial corporations. *Stocks traded over GDP* refers to the total value of shares traded during the period over GDP. *Trade over GDP* is total trade over GDP. *Inflation* is the rate of change in consumer price indices. *Government expenditure* is the general government final consumption expenditure (% of GDP). *Urbanization* is the urban population (% of total population). *Education* is the gross secondary education enrollment ratio. *Banking crisis* is a dummy variable that equals 1 if the country is in a banking crisis. Described control variables are included in the regressions but not reported in the table. Government expenditure is not included in regressions 1 and 2. All securitization related variables are lagged one period. Country and year fixed effects are included in each specification. Standard errors are clustered at the country-level and P-values are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

	Credit composition channel		Credit quality channel		Credit volume channel	
	(1)	(2)	(3)	(4)	(5)	(6)
	Consumption share	Consumption share	GDP per capita growth	GDP per capita growth	GDP per capita growth	GDP per capita growth
Securitization over GDP	0.204*		-0.118		-0.215***	
	(0.062)		(0.125)		(0.002)	
Household securitization over GDP		0.336**		-0.328***		-0.408***
		(0.027)		(0.001)		(0.000)
Business securitization over GDP		-0.120		0.428**		0.253
		(0.714)		(0.030)		(0.202)
NPL to Gross Loans			-0.121***	-0.120***		
			(0.002)	(0.002)		
Domestic credit to private sector	-0.025**	-0.025**	-0.030***	-0.030***		
	(0.038)	(0.041)	(0.003)	(0.003)		
Number of observations	1231	1231	870	870	1261	1261
R-sq	0.293	0.293	0.429	0.431	0.319	0.321
Number of countries	103	103	85	85	104	104

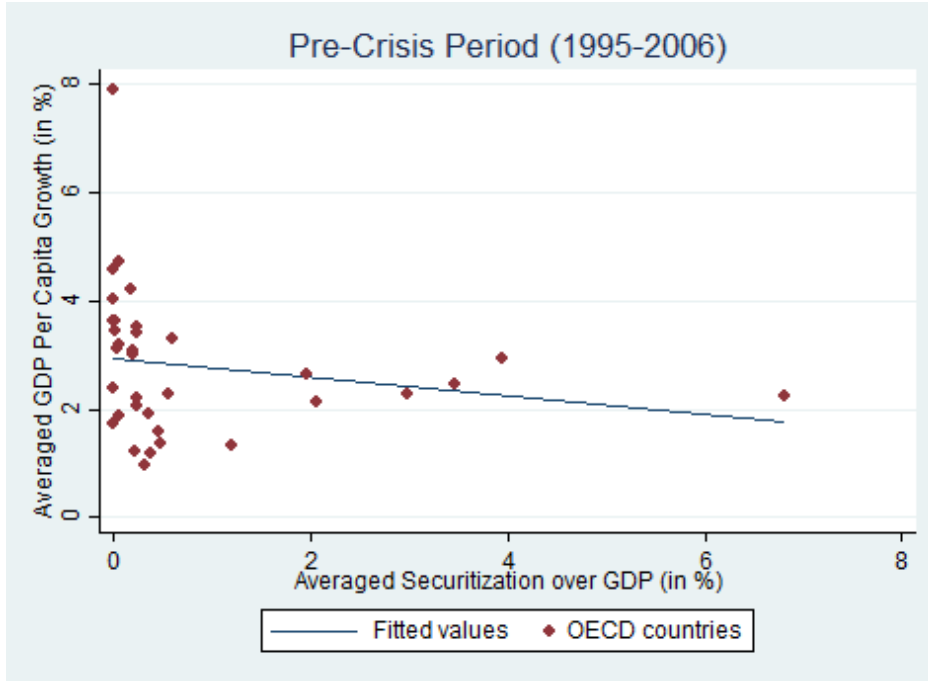
**Table 6. Securitization before and after the Global Financial Crisis**

*GDP per capita growth* is the rate of real per capita GDP growth. *Securitization over GDP* is total securitization amount over GDP. *Household securitization over GDP* is the total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP. *Business securitization over GDP* is the total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP. *Domestic credit to private sector* refers to financial resources provided to the private sector by financial corporations. *Stocks traded over GDP* refers to the total value of shares traded during the period over GDP. *Trade over GDP* is total trade over GDP. *Inflation* is the rate of change in consumer price indices. *Government expenditure* is the general government final consumption expenditure (% of GDP). *Urbanization* is the urban population (% of total population). *Education* is the gross secondary education enrollment ratio. *Banking crisis* is a dummy variable that equals 1 if the country is in a banking crisis. In regressions 1 and 2, observations from years before 2007 and in regressions 3 and 4 from year after 2006 are used. All securitization related variables are lagged one period. Country and year fixed effects are included in each specification. Standard errors are clustered at the country-level and P-values are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

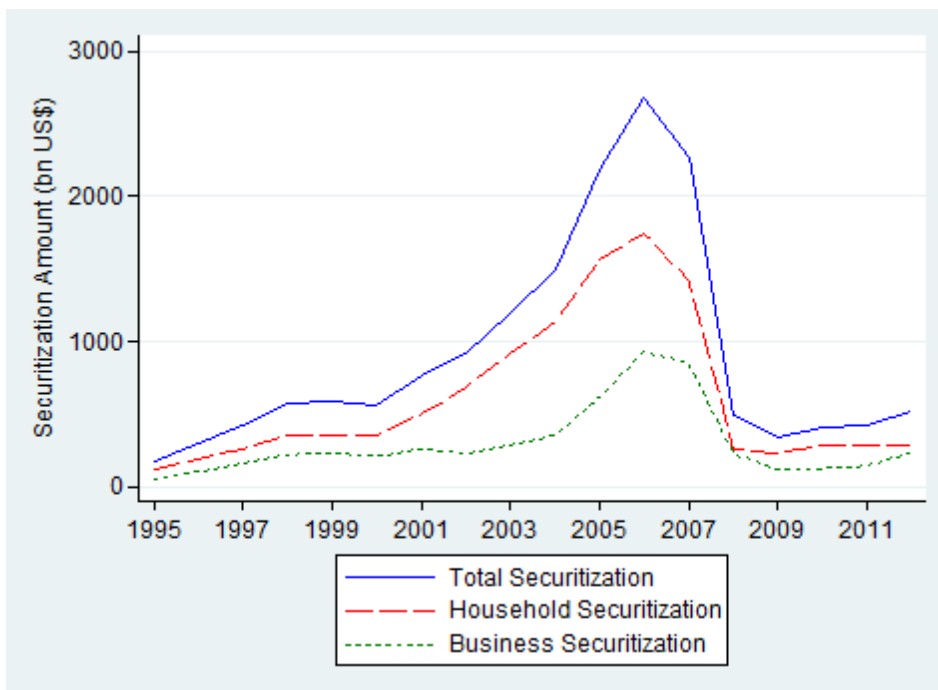
	1995-2006		2007-2012	
	(1)	(2)	(3)	(4)
	GDP per capita growth			
Securitization over GDP	-0.312** (0.012)		-0.126 (0.170)	
Household securitization over GDP		-0.411** (0.017)		-0.328** (0.024)
Business securitization over GDP		-0.049 (0.893)		0.387 (0.154)
Domestic credit to private sector	-0.023*** (0.008)	-0.023*** (0.008)	-0.022 (0.351)	-0.026 (0.257)
Stocks traded over GDP	0.015** (0.020)	0.015** (0.022)	0.003 (0.521)	0.002 (0.680)
Trade over GDP	0.032** (0.036)	0.031** (0.039)	0.079** (0.043)	0.080** (0.040)
Inflation	-0.014* (0.081)	-0.014* (0.081)	0.034 (0.679)	0.034 (0.678)
Government expenditure	-0.283*** (0.001)	-0.284*** (0.001)	-0.679** (0.013)	-0.676** (0.014)
Urbanization	0.086 (0.441)	0.088 (0.432)	0.825** (0.049)	0.842** (0.044)
Education	0.011 (0.519)	0.011 (0.549)	-0.043 (0.499)	-0.320 (0.281)
Banking Crisis	-2.034*** (0.009)	-2.033*** (0.009)	-8.282** (0.010)	-0.915 (0.776)
Number of observations	837	837	361	361
R-sq	0.245	0.245	0.110	0.466
Number of countries	98	98	89	87

**Figure 1. Economic Growth and Securitization intensity before the global financial crisis**

The data is averaged over the period of 1995-2006 for the OECD countries. Graphs without outliers and including the full period of 1995-2012 look very similar.



**Figure 2. Composition of securitization: Household related and business related securitization**



**Appendix.**

**Table A1. Sample countries and securitization activities**

The distribution of total amount of securitization issuances in millions of U.S. dollars across countries

Country	1995-2000	2001-2006	2007-2012	Country	1995-2000	2001-2006	2007-2012	Country	1995-2000	2001-2006	2007-2012
ARE	0	350	1599	ESP	20506	210705	178215	NOR	0	0	4370
ARG	2788	334	150	FIN	2540	997	637	NZL	1042	942	941
AUS	39912	181385	138601	FRA	44881	43744	21854	OMN	0	925	0
AUT	650	5785	4292	GBR	126893	827100	563392	PAK	250	0	0
BEL	5497	7596	12924	GRC	1100	13609	7198	PAN	186	150	1240
BHR	0	334	0	GTM	0	0	480	PER	550	1903	4094
BIH	0	0	110	HKG	2606	2122	2207	PHL	75	0	0
BLZ	0	45	0	IDN	886	0	9	POL	809	625	342
BRA	4093	6624	7977	IRL	0	711	29449	PRT	2400	38414	23143
CAN	17168	41527	43800	ISL	0	384	0	RUS	53	5219	6318
CHE	5943	7160	1515	ISR	0	37	0	SGP	225	4319	2345
CHL	150	40	0	ITA	20506	193268	88050	SLV	110	0	0
CHN	2117	403	0	JAM	125	100	50	SWE	2040	4346	4973
COL	887	206	0	JPN	44515	119289	160690	THA	753	664	421
CRI	0	63	0	KAZ	0	700	1400	TTO	0	150	0
CZE	0	218	0	KOR	3540	10697	6469	TUR	2489	9346	6463
DEU	25541	124317	162988	LUX	137	0	661	UKR	0	0	281
DNK	223	1132	21797	MEX	11780	1516	8105	USA	2189615	7181403	2773118
DOM	22	0	0	MYS	81	1344	315	VEN	4120	0	0
EGY	0	1554	0	NLD	21391	177768	159369	ZAF	361	7634	7355

**Table A2. Variable definitions and data sources**

Variable	Description	Source
GDP per capita growth	Real GDP per capita growth in percentages	WDI
Gross capital formation	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.	WDI
New firm density growth	The new business entry density, which is the number of newly registered limited liability corporations per calendar year, normalized by working age population.	WDI Penn World Table 8
Consumption share	Total consumption over the sum of investment and consumption	
Securitization over GDP	Total amount of all rated asset-backed issues, mortgage-backed issues, CDO's and securities collateralized by commercial and multi-family properties over GDP. Excludes Fannie Mae and Freddie Mac issues, municipality issues and commercial papers.*	AB and CM Alert
Household securitization over GDP	Total amount of securitization collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.) over GDP*	AB and CM Alert
Business securitization over GDP	Total amount of securitization collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.) over GDP*	AB and CM Alert
Ln(Securitization deals)	Ln(1+ total number of securitization deals)	AB and CM Alert
Ln(Household securitization deals)	Ln(1+ total number of securitization deals collateralized by household related underlying assets (such as consumer loans, credit cards, mortgages etc.))*	AB and CM Alert
Ln(Business securitization deals)	Ln(1+ total number of securitization deals collateralized by business related underlying assets (such as commercial mortgages, small business loans, bank loans etc.))*	AB and CM Alert
Domestic credit to private sector	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI
Stocks traded over GDP	Stocks traded refers to the total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.	WDI
Trade over GDP	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	WDI
Inflation	Inflation, consumer prices (annual %)	WDI
Government expenditure	General government final consumption expenditure (% of GDP)	
Urbanization	Urban population (% of total)	WDI
Education	Gross secondary education enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.	WDI
Banking crisis	Dummy variable equals 1 if the country suffers from systemic banking crisis	Laeven and Valencia (2013)
Activity restriction	Overall Restrictions on Banking Activities regarding insurance, securities and real estate activities of banks. From 3 to 12. Higher values indicate more restrictive.	WB surveys on bank regulation (Barth et al., 2013)
Initial capital stringency	Whether certain funds may be used to initially capitalize a bank and whether they are officially. From 0 to 3. Higher values indicate greater stringency.	WB surveys on bank regulation (Barth et al., 2013)
Supervisory powers	Whether the supervisory authorities have the authority to take specific actions to prevent and correct problems. From 4 to 16.	WB surveys on

Higher values indicate stronger supervision.

bank regulation  
(Barth et al., 2013)

WB surveys on

Private monitoring Whether the supervisory authorities have the authority to take specific actions to prevent and correct problems. From 4 to 11.  
Higher values indicate stronger monitoring.

bank regulation  
(Barth et al., 2013)

NPL to Gross Loans Bank non-performing loans to gross loans at the country-level (%)

WDI

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Notes: \* See the appendix for the details of underlying collaterals. All securitization variables are lagged one period.

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**Table A3. Types of securitization**

Collateral codes from the AB Alert and CM Alert databases and how we classify different types of securitizations.

<b>Household related:</b>	<b>Business related:</b>	
AL Auto Leases	AC Aircraft-lease receivables	MZ Mutual fund (12b-1) fees
AS Auto loans (subprime)	AF Auto-fleet leases	NM Net interest margin
AU Auto loans (prime)	AK Airline-ticket receivables	NR Natural resources
BO Boat loans	BZ Bank loans (CLOs)	PF Project finance
CN Consumer loans, unsecured	CA Catastrophic risk	RN Rent receipts
CR Credit cards	CB Collateralized debt obligation	RO Royalties
HE Home-equity loans	CK Credit risk*	RV Recreational-vehicle loans
HI Home-improvement loans	CM Commercial MBS	RY Remittances (by immigrants)
HL Home-equity lines of credit	CM Commercial MBS (non-performing)	SA Servicer advance receivables
MH Manufactured housing loans	DR Delinquent receivables*	SB Small-business loans
MI Non-U.S. residential loans	EL Equipment loans	SC Small-business loans (Non-U.S.)
MO Motorcycle loans	EQ Equipment leases	SE Legal settlements
MR Reverse mortgages	EX Export receivables. (Ex-Im Guarantee)	TL Tax liens
NE High-LTV ("no-equity") loans	EZ Export receivables (Other)	TM Timeshare loans
NP Non-performing mortgages	FE Miscellaneous*	TO Toll-road receivables
RM Residential mortgages (includes Alt-A)	FF Franchise fees	TP Transportation
SM Subprime mortgages	FL Franchise loans	TR Trade receivables
ST Student loans	FP Floorplan loans	TU Truck loans
	GC Guaranteed investment contract	UT Utility receivables
	HC Healthcare receivables*	VI Viatical settlements
	IN Insurance-premium loans	WB Whole-business
	MU Municipal leases	WE Weather

Notes: Collateral codes are taken from the AB Alert and CM Alert databases. \* indicates rather ambiguous types of collateral, their exclusion does not affect the results.