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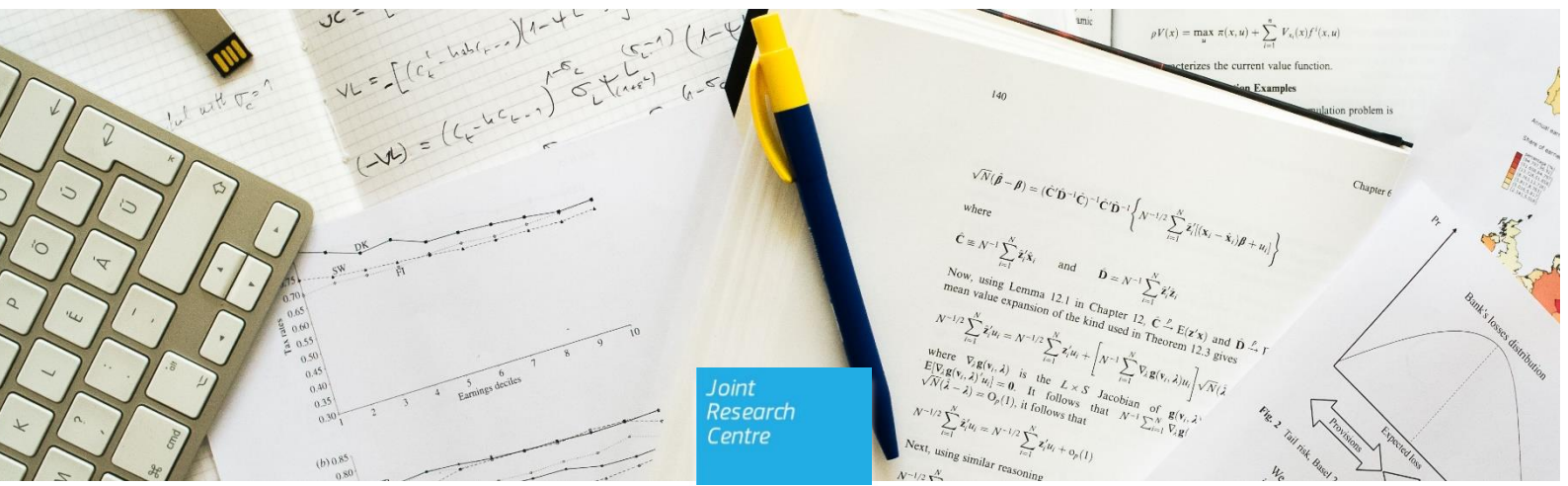

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Finance and economic growth: financing structure and non-linear impact*

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Abstract

There is growing evidence that the impact of financial development on economic growth might be non-linear and hump-shaped, exhibiting a turning point. However, such findings are typically established using total finances (mostly: credit), and the apparent non-linear impact of totals can stem from a substantial structural change in the composition of finances, that has been taking place during the recent decades. Though there are some studies going beyond total finances, they usually look at the impact of certain financing components separately or using ratios, which may bias the estimation and lead to incorrect conclusions. Finally, the findings are typically based on a global pool of countries, and may be driven by a developing versus developed country differential.

Focusing on groups of high-income countries (from the OECD, EU, and EMU), this study shows that the finding of a non-linear, hump-shaped impact of financing on economic growth is robust to controlling for financing composition in terms of the sources (bank credit, debt securities, stock market) and the recipients of finances (households, non-financial and financial corporations), or both. In particular, we obtain the following results. (1) The non-linear impact of total bank credit is more pronounced than that of either household credit alone, or the sum of bank credit, debt securities, and stock market financing. (2) Credit to non-financial corporations tends to have a positive, while credit to households a negative impact on growth, even after allowing for non-linearities. (3) Debt-securities and stock market-based financing have a different impact on growth. (4) The estimated turning point of the non-linear relationship is close to that found by Cournède and Denk (2015) for the OECD countries, and lower than that established by Arcand et al. (2015) for a broad set of countries.

Keywords: financial development; economic growth; finance-growth nexus; non-linearity; bank credit; debt securities; stock markets.

JEL numbers: E44, G2, O4

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1. Introduction

The relation between financial development and economic growth is much debated. As was hypothesized by Schumpeter (1934) and supported by King and Levine (1993) with numerous papers thereafter, differences in the level of the development of financial systems affect economic growth differentials among countries. The impact channels vary from additional financial funds, available to finance investment projects due to larger volumes of savings, to more efficient reallocation of funds, thus reaching the right entrepreneurs and leading to higher productivity (see e.g. Beck et al., 2000; Levine, 2005).

The early empirical literature (see overviews ibidem or Panizza, 2014) suggested a positive association between financial development and economic growth, the former measured by e.g. the amount of domestic private credit or stock market capitalization relative to gross domestic product (GDP). The dominant positive attitude towards financial expansion encouraged a sharp increase in financial penetration, and the median level of private bank credit (in higher income countries with data reported by the Bank for International Settlements, BIS hereafter) constituted around 90 percent of GDP in 2014. In a number of countries, it has reached levels much greater than their GDP. Such high levels of financial penetration, together with recent and contemporary financial crises started casting doubt on the benefits of such a degree of financial deepening (see e.g. Beck, 2012).

The corresponding more recent empirical work provides evidence of either a vanishing positive impact (as e.g. in Rousseau and Wachtel, 2011), or a potentially non-linear (often an inverse U-shaped) relationship as documented in numerous contemporary studies.[1] Although this relationship can be complex and may vary, among others, with a country's level of economic development and quality of financial institutions (Cecchetti and Kharroubi, 2012; Demirgüç-Kunt et al., 2013; Masten et al., 2008; Rioja and Valev, 2015), the particular functions performed by the financial sector (Beck et al., 2014), the speed of expansion of financial sector (Cecchetti and Kharroubi, 2012; Ductor and Grechyna, 2015), the 'normality' of the period under investigation (Balta and Nikolov, 2013; Breitenlechner et al., 2015; Gambacorta et al., 2014), the high current levels of financial penetration and the recent findings of a non-linear impact of financial development on economic growth point to a potential of 'too much finance' in many countries, thus questioning the desirability of large financial sectors.

[1] Examples include Arcand et al. 2015; Cournède and Denk, 2015; Cecchetti and Kharroubi, 2012; Law and Singh, 2014; and Sahay et al., 2015.

These findings have been mainly obtained using aggregate credit data of financial institutions, leaving it open whether and how much the structure of financial systems affects such results. First, different sources of finance (bank-based versus market-based financing) can have an uneven impact (see e.g. Beck and Levine, 2004; Cournède and Denk, 2015; Demirgüç-Kunt et al., 2013; Gambacorta et al., 2014; Langfield and Pagano, 2016; Mishra and Narayan, 2015). Next, fund recipients (users of finance) might matter nontrivially for the outcome. For instance, Beck et al. (2012) stress that a substantial household credit expansion might be hurting economic growth. In parallel, Bezemer et al. (2014) point out that the share of credit to nonfinancial business decreased sharply, while it had a significantly positive effect on growth. Among these lines, although warning for a small sample size, Arcand et al. (2015) indeed find that the non-linearity of household credit is more significant than that of firm credit.

Nevertheless, the analysis of the importance of financial structure is currently quite limited. First, the impact of different components of financing are mostly analyzed individually or looking only at a few of them (see e.g. Cournède and Denk, 2015), thus creating potentially an omitted variable bias. Second, even when the analysis is performed including several subcomponents together (see e.g. Gambacorta et al., 2014), the difference between their individual and joint impact (e.g. that of total financing) is not investigated. Third, though the dependence of economic growth rates on bank credit financing and stock market financing is often analyzed, the influence of debt securities is rarely considered. Moreover, when it is, like in Langfield and Pagano (2016), the stock market and debt securities financing is often merged, which might impose an incorrect restriction and lead to biased inference. Fourth, to our knowledge there is no study that jointly and not individually investigates the impact of both the sources (bank financing, debt securities financing, and stock market financing) and the recipients of finance (households, non-financial corporations, and financial corporations), not to mention also the non-linearity. Last, but not the least, the changing structure of financing can lie behind the vanishing or non-linear impact of finance on economic growth;[2] therefore, it is crucial to investigate if the impact remains non-linear after controlling for the detailed structure of finance that accounts for potential changes.[3] As far as data limitations allow us, we aim at considering all these aspects in our investigation.

[2] For instance, if large finansing of households has a negative impact on growth while that of firms has a positive one, either the vanishing or the non-linear impact on growth of total financing can be created as the share of credit for households increases.

[3] And the other way round, it is of interest to establish if the impact of structural components remains robust after taking into account the nonlinear influence of financing.

Next, given the previously mentioned evidence that countries of different development benefit from different types of financing and financial penetration in a different way, it is also unclear whether the empirically identified non-linearity is not an artefact of mixing different groups of countries. For instance, Karagiannis and Kvedaras (2016) show,[4] using the original Arcand et al. (2015) data set, that their non-linearity finding vanishes when considering more homogeneous sets of countries (such as that of the Organization for the Economic Co-operation and Development, OECD, or the European Union, EU members).[5] Nevertheless, some other recent research (see e.g. Cournède and Denk, 2015; Cournède et al., 2015; and Samargandi et al., 2015) has also concentrated on smaller sets of more homogeneous countries like the OECD members or middle-income developing countries, and found significant non-linearity. It is of further interest therefore to investigate whether similar results hold for the EU countries and/or the founding member states of the European Monetary Union (EMU1999). These groups are interesting also because they are quite homogeneous in general as well as in terms of financing structure in particular, namely, they have strongly bank-biased financing (Langfield and Pagano, 2016).

The usage of a smaller number of more homogeneous countries and the need of detailed financial series limit the number of observations, and influence the choice of the econometric methodology that can be properly employed in our case. However, in order to be more confident in the obtained empirical results, we do not restrict ourselves only to the EU and EMU1999 samples, but also provide the results for a broader set of countries; namely, the OECD countries where the required data are available. This not only enables us to compare our findings obtained using a different methodology with the already available ones (namely, Cournède and Denk, 2015, and Cournède et al., 2015), but also allows us to be more confident in the results obtained for the EU and EMU member states, given that the established patterns are fairly robust across all investigated groups of countries.

Focusing on groups of high-income countries (from the OECD, EU, and EMU1999), we show that the finding of a non-linear, hump-shaped impact of financing on economic growth is robust to controlling for financing composition in terms of the sources (bank credit, debt securities, stock market) and the users of finances (households, non-financial and financial corporations), or both. In particular, we obtain the following results, which prove to be quite stable in our extensive robustness analysis. (1) The non-linear impact of total bank credit is more

[4] Karagiannis and Kvedaras (2016) contains preliminary research connected with this paper.
[5] And this cannot be explained solely by larger penetration of finance in more developed countries, because in the beginning of their sample the credit-to-GDP ratio was below even 20% in a number of such countries.

pronounced than that of either household credit alone, or the sum of bank credit, debt securities, and stock market financing. (2) Credit to non-financial corporations tends to have a positive, while credit to households a negative impact on growth, even after allowing for non-linearities. (3) Debt-securities and stock market-based financing have a different impact on growth. (4) The estimated turning point of the non-linear relationship is close to that found by Cournède and Denk (2015) for the OECD countries, and lower than that established by Arcand et al. (2015) for a broad set of countries.

The paper is structured as follows. Section 2 states the specific research questions. Section 3 discusses data sources and variables. Section 4 presents the econometric modelling approach. Section 5 presents and discusses the main empirical findings and Section 6 concludes. Finally, some further details and robustness checks are delegated to the Appendix.

2. Specific research questions

The joint consideration of financial structure with a potential non-linear impact of finance on economic growth allows answering a number of questions. Some of them have already been analyzed previously in the literature, but some emerge due to the richer analysis framework employed here. The sequencing of the nine specific questions under investigation that will be listed shortly is determined by the gradual increase of the number of determinants included in the econometric specifications. Whereas from a conceptual point of view, they can be structured as follows.

Apart from the central general question if there is too much finance leading to, potentially, relatively slower economic growth (question Q1), we separate three broad sets of other questions. The first one comprises questions of the robustness of non-linearity to taking the financial structure into account, or, in parallel, the robustness of the impact of financing components when non-linearity is included (questions Q3 and Q6).

The second group of questions analyses the significance of non-linearity at different aggregation levels: going from the total sum of financing components to separate ones (questions Q7–Q9). This also covers the question whether the non-linear impact of bank credit emerges due to the specificity of bank credit to households (see e.g. Beck et al., 2012), as investigated in the heterogeneity analysis by Arcand et al. (2015).

The third set of questions investigates the homogeneity of the impact of different components of financing or the homogeneity of the absolute impact (questions Q2, Q4 and Q5). This allows evaluating if various subcomponents of financing (credit to household and firms, debt securities issued by financial and non-financial corporations, etc.) have a different impact. Moreover, it also evaluates whether it is sufficient to use various ratios (like bank credit to stock market, or bank credit to the sum of stock market and debt securities, as e.g. in Demirgüç-Kunt et al., 2013, or Langfield and Pagano, 2016), or additional disaggregation is required due to the non-homogeneity of the impact (for such evidence see e.g. Kaserer and Rapp, 2014). Looking from the policy perspective, the (non-) homogeneity of impacts reveals if all components of market-based and/or bank credit-based financing should be treated equally, e.g., if it is beneficial to promote all types of market-based financing in the same way.

Consequently, we will investigate the following specific questions:

Q1: During the analyzed period, are there signs of too much of finance overall: i.e., did all the different types of sources (bank credit, debt securities, and stock market financing) affect growth negatively?

Q2: Is the impact of bank-based financing and market-based financing (stock market and debt securities) homogeneous (at least in absolute terms)? Furthermore, is the impact of market-based financing components also homogeneous?

Q3: Does the impact of bank credit remain non-linear even after the financing structure is taken into account in terms of different types of sources (bank credit, debt securities, and stock market financing)?

Q4: Does economic growth benefit more from an increase of credit to firms than from that of credit to households?

Q5: Does economic growth benefit more from non-financial firms issuing more debt securities than from financial corporations doing so?

Q6: Does the impact of bank credit remain non-linear even after taking into account the recipients of bank credit (households or non-financial corporations) and that of debt securities (financial or non-financial corporations)?

Q7: Does the impact of bank credit remain non-linear even after taking the non-linear impact of total financing (i.e. sum of bank, debt securities, and stock market financing) into account?

I.e., is the non-linearity of bank influence not dominated by the non-linear impact of total financing?

Q8: Does the impact of bank credit remain non-linear even after taking into account the non-linear impact of total financing as in Q7, as well as the financing structure in terms of recipients of financing? I.e., does the non-linear impact of total financing on growth not dominate the non-linearity of bank influence, even after a detailed conditioning on the composition of finance?

Q9: Is credit to households mostly responsible for the hump-shaped, non-linear impact of bank credit on growth?

3. Data and variables

In order to evaluate the effects of the composition of domestic private finance on economic growth and their potential role in the non-linear impact of finance on growth, we need disaggregated data on the split of financing by the source (bank, debt securities, and stock market financing) as well as the recipient (households, non-financial firms, and financial corporations). For this, our most important source is the Bank for International Settlements (BIS) database of private non-financial sector credit and debt securities, as it provides a fairly detailed split of these series by the sources and users of finance. Appendix A contains a detailed description of the sources of all the variables that we use.

All the employed financial variables are expressed in relative terms to GDP and used after the logarithmic transformation (Table 1 describes the actual transformations of variables). This is first of all prompted by a better fit we obtained, and also suggested by the marginal impact of credit on growth rates estimated and presented by Cournède and Denk (2015) in their Figure 5 – using the logarithmic transformation we obtain the same shape of the marginal impact (see Figure 1 in Section 5.1 below). Whenever the original BIS data is quarterly, we use the last quarter to align the frequency with the annual periodicity of other data. The BIS credit database contains directly the ratio of credit to nominal GDP series (with a split by credit to households and credit to non-financial corporations). For the outstanding debt securities (with a split into issued by non-financial corporations and financial corporations), we calculate these ratios to GDP using the BIS debt securities data and the GDP data from the World Bank's (WB) World Development Indicators (WDI) database. It should be pointed out that private bank credit data at the aggregate level (without splitting into household and firm credit) are also available from

the WB Global Financial Development Database (GFDD). However, the GFDD credit series have a number of structural breaks, whereas the BIS credit data are adjusted for breaks. Figure A1 in Appendix A presents several comparisons between data from the two sources, and those from the GFDD contain obvious structural breaks. This motivated us to use the BIS data in the econometric analysis.

To represent the stock market financing of listed domestic companies, we use the market capitalization (in percentage of GDP) indicator from the WDI database. It should be pointed out that the usage of turnover ratio of domestic shares from the same database yields qualitatively similar results, but loses the significance, which is consistent with the analogous finding by Mishra and Narayan (2015). Another reason for preferring the market capitalization series is that its ratio to GDP is more natural and therefore aligns better with the other employed series that are also ratios to GDP.

All the mentioned databases were downloaded in June 2016, and the respective extract of series is available upon request from the authors. The data period and number of observations to be used in further estimations varies depending on the particular question/specification at hand and the availability of data. The typical estimation period is from 1990 to 2014, whereas the number of actually available countries varies from 9 to 27, depending on the particular group of countries under investigation (OECD, EU, EMU1999) and data availability. The number of countries is always displayed in the tables containing the results.

In addition to the discussed financial series, a set of usual control variables is included, comprising GDP per capita, enrolment in secondary education, government final consumption expenditure to GDP, trade openness to GDP, and inflation of consumer prices. These indicators come from the WB WDI database, and are also annual. The additional transformations of these original data are described in Table 1, and the specific choices ensure comparability with Arcand et al. (2015).

Short notation	Description of the series used for the econometric exercise
INC	logarithm of GDP per capita
INF	the inverse hyperbolic sign transform[6] (IHST) of inflation
EDU	logarithm of gross enrolment ratio in secondary education[7]
GOV	logarithm of government consumption to GDP
OPN	logarithm of trade openness (exports and imports to GDP)
CREDIT	logarithm of private bank credit to GDP
CREDIT2	square of CREDIT
DEBT_SEC	logarithm of outstanding domestic debt securities, issued by financial and non-financial corporations, to GDP
STOCKS	logarithm of domestic stock market capitalization to GDP
CREDIT-HSH	logarithm of credit to households to GDP (from banks and non-banks)
CREDIT-HSH2	square of CREDIT-HSH
CREDIT-NFC	logarithm of credit to non-financial corporations to GDP (from banks and non-banks)
DEBT_SEC-NFC	IHST of outstanding debt securities issued by non-financial corporations to GDP (see also footnote 6)
DEBT_SEC-FCO	IHST of outstanding debt securities issued by financial corporations to GDP (see also footnote 6)
TOTAL	logarithm of the sum of private bank credit to GDP, outstanding domestic debt securities to GDP, and domestic stock market capitalization to GDP
TOTAL2	square of TOTAL

Table 1. Notation and transformations of employed explanatory variables.

4. Econometric modelling approach

4.1. Modelling strategy, employed model, and parameter estimation

Our econometric research strategy is to start from simple log-linear specifications with only few financial variables, and then to introduce richer specifications with more detailed structure and/or non-linearity. Namely, we first consider the impact of bank credit, debt securities and stock market on growth, i.e., the impact of different sources of financing. Afterwards, we further decompose finances not only by sources, but also by fund users. Finally, we merge both specifications discussed above with non-linear components. While presenting the whole

[6] Given a variable x, the following transformation is applied: $\log(x+(1+x^2)^{0.5})$. Throughout our analysis, we use it instead of the natural logarithm in the cases where the values take also zero and/or negative values.

[7] Here we follow Gambacorta et al. (2014), using yearly data on education.

picture, this gradual approach thus reveals also the sensitivity of different specifications, without falling into potential problems connected with relatively low degrees of freedom and possible overfitting if only the richest specification were reported.

Now let us turn to the model. Let $i \in \{1,2,\ldots,N\}$ and $t \in \{1,2,\ldots,T\}$ stand for country and period indices, correspondingly. For a fixed value of future horizon h, we consider the following econometric model with country and period fixed effects ($\lambda_{i,h}$ and $\mu_{t,h}$, respectively):

$$\tilde{y}_{i,t+1}^{(h)} = \lambda_{i,h} + \mu_{t,h} + \alpha_h y_{i,t} + \boldsymbol{\theta_h}' \boldsymbol{x_{i,t}} + \varepsilon_{i,t+1}^{(h)}, \qquad (1)$$

where $\tilde{y}_{i,t+1}^{h}$ stands for the average GDP per capita growth rate over the $h \geq 1$ periods ahead,[8] $y_{i,t}$ denotes the logarithm of income per capita, $\boldsymbol{x_{i,t}}$ includes explanatory variables to be discussed shortly, α_h and $\boldsymbol{\theta_h}$ are the corresponding real-valued parameter and the vector of parameters, whereas $\varepsilon_{i,t+1}^{(h)}$ stands for the usual zero mean error term. It should be pointed out that the model is dynamic because future values $y_{i,t+j}, j > 0$, enter $\tilde{y}_{i,t+1}^{(h)}$. Furthermore, since $\tilde{y}_{i,t+1}^{(h)}$ contains only future values, both, $y_{i,t}$ and $\boldsymbol{x_{i,t}}$ are predetermined, thus avoiding at least contemporaneous endogeneity in equation (1).

The vector of explanatory variables $\boldsymbol{x_{i,t}}$ can contain various linear and non-linear terms (logarithms, their squares, interactions, etc.) of economic series. The two main groups comprise the control variables and financial series that were summarized in Table 1.

Let us turn to the parameter estimation. When the number of periods T grows to infinity, $\boldsymbol{\theta}_h$ in equation (1) can be consistently estimated by e.g. the fixed effects estimator. However, when T is fixed, due to the problem of incidental parameters, consistent estimation of $\boldsymbol{\theta}_h$ cannot be directly obtained from equation (1) and the instrumental variable-based estimators of Anderson and Hsiao (1982, AH hereafter) or generalized method of moments (GMM) of Arelano and Bond (1991) or Arellano and Bover (1995) and Blundell and Bond (1998) are usually applied. In larger samples, the GMM estimator is known to be more efficient when T is small and N is large, but it has large biases when T is relatively large. On the other hand, the AH estimator is consistent under both N and T asymptotics (see e.g. Phillips and Han, 2014). This last property is very convenient in our case, because we want to estimate the impact of financial deepening on economic growth in the sample of EMU countries, which has a very limited number of

[8] Namely, $\tilde{y}_{i,t+1}^{(h)} = 100 \cdot \frac{1}{h} \sum_{j=1}^{h} \Delta y_{i,t+j}$, where for all i and t, the first difference is $\Delta y_{i,t} = y_{i,t} - y_{i,t-1}$. It should be pointed out that very similar results appear when the geometric mean of gross growth rates is used instead (the gross rates are here needed as straightforward growth rates may also be negative).

countries, thus forcing us to rely more on the increase in *T* rather than *N*. Because of this, and in order to increase the number of observations, we do not aggregate the initial data into e.g. 5 or 10 years periods (as in the baseline estimations of Arcand et al., 2015). That would not only substantially reduce the number of effective periods to a few, but also might induce pre-aggregation bias; while the removal of business cycle effects by such a simple aggregation is also questionable, because the length of business cycles might vary both in time and among different countries.

Consequently, the AH instrumental variable estimator will be used hereafter. In all the cases, the robust inference is based on standard errors adjusted for clustering by countries.

4.2. Caveats

The presented results should be considered with some caution due to several reasons.

First, given our focus on a homogenous set of developed countries (most importantly: the EU and EMU1999), the sample size is quite limited, whereas the number of parameters is large due to the consideration of a detailed structure of financing. To tackle this, we use yearly data and not multi-year averages, as that would further shrink the number of observations. In addition, to increase the number of observations we consider also a larger group of countries (the OECD countries) and, given consistent results among various country groups, we are more confident in the findings established for the EU and the EMU1999. Note that a larger group can also cover potentially less homogenous countries where the impact of financial deepening and/or its structure therefore might also differ.

Second, estimations that rely on the employed period (typically 1990-2014 or part of it) are informative about processes that took place during these years, but might be less indicative for other periods (either past or future). It is particularly true if there were substantial changes in the conditions, for example if there were important alterations of the financial structure or the inter-dependence between the structural components. In order to account for this, we try to control as much as possible for all relevant aspects and include all components of interest, which however limits the degrees of freedom. Consequently, there is a tradeoff between weak inferences versus potential biases due to omitted variables.

Third, in order to avoid endogeneity stemming from simultaneous relationships, we use lagged explanatory variables in equation (1), i.e., it is always the future growth rates that are under prediction. However, this does not completely eliminate endogeneity, as expectations about future growth conditions can affect the choice of current levels of financial penetration, which

may lead to a correlation between the financial series and the error term. It is however difficult to find the necessary (large number of) proper instruments needed in our case, due to the detailed analysis of the structure. Therefore, we present our results without taking into account this aspect.

Fourth, the consideration of totals together with various levels of subcomponents (even though in a non-linear model) might lead to multicollinearity and thus weaken the statistical inference. Therefore, it is possible that some estimates would turn significant when adding more data, once they become available in the future.

Fifth, the complete disaggregation of finances is not available: for example, credit to households or financial corporations are reported from all sectors and not only from banks, data coverage on private domestic or total outstanding debt securities varies across countries.

5. Empirical results

This section presents and discusses the main empirical findings, relying on equation (1) with $h = 5$, i.e., we assess the impact of financial deepening and financing structure on the average five year future growth rate of GDP per capita. The results are presented in the following arrangement. First, we consider interactions between the composition of finance and bank credit (Subsection 5.1). Then we investigate whether the non-linearity of the effect of finance on growth is sufficiently captured by the non-linear term of bank credit alone (Subsection 5.2). Further robustness checks are summarized in Subsection 5.3, with the associated empirical results presented in Appendix B.

The results correspond to the questions stated in Section 2. The second line in all of the tables identifies the relevant question connected with that particular estimation (column). The dependent variable is always the average five-year future growth rate of GDP per capita.

5.1. Financing composition and non-linearity in bank credit

Table 2 presents estimation results for the impact of composition with and without the non-linear term for bank credit (questions Q1–Q6). In general, there are always consecutive triplets of columns, using the same specification but for the different country groups (OECD, EU and EMU1999). In particular, columns (1)–(3) present a basic specification with financing split only by its source (bank credit, debt securities, and stock market). These results answer the question whether all the different types of sources affected growth negatively (question Q1),

and whether these impacts are homogenous (question Q2). Columns (4)–(6) check how much these results change if one adds the non-linear component of bank credit (question Q3). Columns (7)–(9) refine the analysis of columns (1)-(3) by further splitting bank and security based financing by its user and thus refer to the question whether the different types of users affected growth negatively (question Q4 for bank credit and question Q5 for debt securities). Finally, columns (10)–(12) augment further this financing split with the non-linear component of bank credit (question Q6).

As can be seen from columns (1)–(3) of Table 2, the answers to questions Q1 and Q2 are (strongly) negative. Even using the log-linear approximation of the impact of finance on growth, the impact varies substantially (even in terms of its sign) for different types of financing: bank credit and debt security have a significantly negative impact on growth, whereas stock market financing tends to have a significantly positive influence. In terms of bank and stock market financing, we find that the latter is more beneficial for growth, at least in high-income economies. This is consistent with the evidence found in many previous papers (see e.g. overviews by Valickova et al., 2015). In short, it is not all types of financing that affect growth negatively (question Q1).

The results also reveal that the impact of the different types of sources is not homogenous (question Q2). In particular, the *absolute* values of the coefficients of bank credit and stock market capitalization are significantly different; therefore, the data does not support the use of their ratio. Next, the finding that outstanding debt securities have a negative, while stock market capitalization has a positive effect (see e.g. Kaserer and Rapp, 2014, for a similar finding for the EU countries) reveals that merging/pooling all sources of market-based financing (as e.g. in Langfield and Pagano, 2016) is not supported. Consequently, the equal promotion of different types of market-based financing can be suboptimal from an economic policy point of view.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1,Q2	Q1,Q2	Q1,Q2	Q3	Q3	Q3	Q4,Q5	Q4,Q5	Q4,Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.627*** **	**-1.428*** **	**-1.097***	**9.709**	**13.68***	**8.355** **				**13.36*** **	**18.50*** **	**13.60*** **
	(0.578)	**(0.496)**	**(0.577)**	**(5.990)**	**(8.097)**	**(4.224)**				**(5.155)**	**(6.525)**	**(4.894)**
DEBT_SEC	**-0.256***	**-0.474*** **	**-0.386*** **	**-0.212** **	**-0.305*** **	**-0.284*** **						
	(0.131)	**(0.151)**	**(0.0992)**	**(0.0957)**	**(0.105)**	**(0.102)**						
STOCKS	**0.0622***	**0.0447**	**0.0315***	**0.0649***	**0.0467**	**0.0307***	**0.0673***	**0.0573***	**0.0331**	**0.0725** **	**0.0594** **	**0.0348***
	(0.0346)	**(0.0322)**	**(0.0171)**	**(0.0334)**	**(0.0308)**	**(0.0162)**	**(0.0349)**	**(0.0314)**	**(0.0203)**	**(0.0337)**	**(0.0290)**	**(0.0202)**
CREDIT2				**-1.340***	**-1.819***	**-1.097** **				**-1.621*** **	**-2.258*** **	**-1.594*** **
				(0.729)	**(0.995)**	**(0.493)**				**(0.603)**	**(0.790)**	**(0.573)**
CREDIT-HSH							**-2.035*** **	**-1.508** **	**-1.733*** **	**-1.956*** **	**-1.559** **	**-1.838*** **
							(0.662)	**(0.593)**	**(0.627)**	**(0.605)**	**(0.627)**	**(0.674)**
CREDIT-NFC							**0.980***	**0.471**	**0.754***	**0.720**	**0.145**	**0.919*** **
							(0.507)	**(0.481)**	**(0.417)**	**(0.445)**	**(0.592)**	**(0.349)**
DEBT_SEC-FCO							**-0.290**	**-0.304***	**-0.295*** **	**-0.102**	**-0.0465**	**-0.161***
							(0.188)	**(0.157)**	**(0.0950)**	**(0.130)**	**(0.110)**	**(0.0879)**
DEBT_SEC-NFC							**-0.260**	**-0.280**	**-0.136**	**-0.244**	**-0.272**	**-0.161***
							(0.200)	**(0.201)**	**(0.0892)**	**(0.185)**	**(0.184)**	**(0.0976)**
INC	-9.196*	-13.22***	-7.157	-15.29**	-20.25**	-9.414	-8.029*	-12.15***	-7.381*	-14.14***	-19.19***	-10.33**
	(4.967)	(4.026)	(4.815)	(7.169)	(7.949)	(5.880)	(4.309)	(3.363)	(4.149)	(5.457)	(5.972)	(4.977)
EDU	-0.141	-0.144	0.118	-0.178	-0.350	0.0381	-0.290	-0.132	-1.44e-05	-0.275	-0.282	-0.113
	(0.432)	(0.495)	(0.680)	(0.455)	(0.541)	(0.668)	(0.370)	(0.477)	(0.583)	(0.393)	(0.519)	(0.567)
GOV	1.299	-0.124	4.317**	-0.0744	-1.700	3.690**	1.513	0.382	4.312***	0.414	-0.666	3.534***
	(1.563)	(2.529)	(1.887)	(2.044)	(3.192)	(1.812)	(1.324)	(2.129)	(1.527)	(1.495)	(2.234)	(1.371)
OPN	-0.189	0.675	2.972***	-0.283	0.182	2.707***	-0.159	0.957	2.767***	-0.307	0.339	2.298***
	(0.817)	(1.140)	(0.861)	(0.658)	(1.055)	(0.844)	(0.741)	(1.084)	(0.596)	(0.587)	(0.932)	(0.604)
INF	-3.305*	-1.162	-6.441*	-2.964	-0.703	-5.525*	-2.854	-0.447	-5.189*	-2.557	0.262	-4.144
	(1.813)	(1.880)	(3.300)	(1.915)	(2.884)	(3.347)	(1.818)	(2.144)	(2.824)	(2.262)	(3.572)	(2.923)
Constant	0.489***	0.694***	0.705**	0.366**	0.479*	0.652**	0.645***	0.798***	0.751***	0.474***	0.540**	0.664***
	(0.158)	(0.190)	(0.285)	(0.155)	(0.256)	(0.287)	(0.174)	(0.200)	(0.265)	(0.131)	(0.231)	(0.256)
Observations	267	195	150	267	195	150	260	188	143	260	188	143
R-squared	0.779	0.811	0.883	0.813	0.831	0.894	0.783	0.808	0.888	0.819	0.836	0.903
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Notes:
Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over five years ahead (h = 5). The abbreviations of variables are explained in Table 1.

Table 2. Financing structure and non-linearity of bank credit.

As columns (4)–(6) show, the same conclusions are robust to the introduction of the non-linear impact of bank credit (CREDIT2). The only difference is that the linear term is positive for bank credit, while the quadratic term is negative. Thus, consistent with question Q3, the non-linear impact of bank credit remains significant (at least at the 10% level) after taking into account the split by the source of financing. The finding that the linear term is positive while the quadratic term is negative implies that there is a turning point in the impact of bank credit on growth (see the end of this subsection for a detailed analysis of this). It should be pointed out that CREDIT and CREDIT2 are highly correlated by construction, which is partly responsible for the moderate significance of CREDIT and CREDIT2 observed in the OECD and the EU.

Turning to the impact of an even more refined financing structure (both by sources and users of finance) presented in columns (7)–(9), we confirm earlier findings that bank credit to households is a drag on economic growth, whereas bank credit to firms tends to promote economic growth rates significantly (question Q4).

A similar though somewhat weaker conclusion can be drawn about the importance of the structure of outstanding debt securities (question Q5). Namely, the coefficient of debt securities issued by financial corporations tends to be significantly negative, whereas that of debt securities issued by non-financial corporations is insignificant. Hence, the positive answer to question Q5 is softly supported: during the analyzed period, economic growth would have been higher if outstanding debt securities were issued more by non-financial corporations than by financial corporations. Nevertheless, the coefficient of debt securities of non-financial corporations is still negative. Although it is insignificant, this negative sign contrasts sharply with the positive coefficient of stock market capitalization, which also tends to be significant.

The further inclusion of the non-linear bank credit term in columns (10)–(12) reveals again that the non-linear relationship of bank credit remains robust to taking into account a finer decomposition of financing structure. Consequently, the positive answer to Q6 is supported. We again find a positive linear and a negative quadratic term, indicating a turning point (to be further discussed shortly).

Looking the other way round, i.e. at the stability of results about the role of financial structure to the inclusion of the non-linear term, a few changes emerge. First, the findings about the relative benefits of promoting stock markets become even stronger as the coefficients of stock market capitalization become larger and more significant. Next, the differentiation

between the influence of different types of debt securities becomes more blurred. Similarly, the positive impact of bank credit to non-financial corporations becomes significant only in the EMU1999 case (although there it becomes more significant than without the non-linear term). Nevertheless, the relative inferiority of credit to households remains strongly valid.

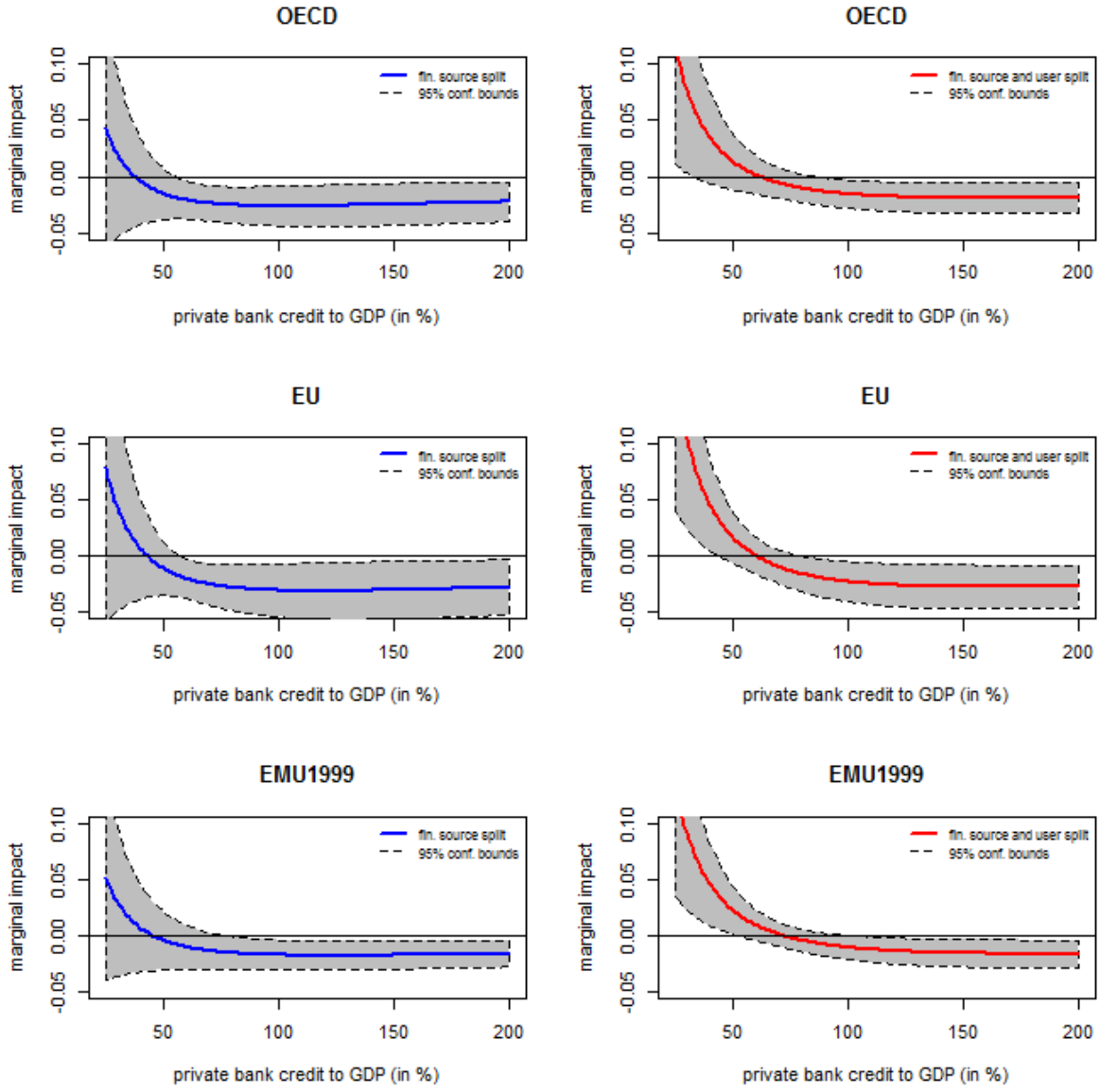
The main findings of Table 2 can be summarized as follows.

- The impact of finance on economic growth differs substantially among the different types, and these findings are robust to presence or absence of the non-linear bank credit term.
- During the analyzed period, bank credit was on average a drag on economic growth rates, but the bulk of this stems from the negative impact of household credit.
- Nevertheless, the non-linear impact of bank credit is robust to controlling for the main structural composition of financing, both in terms of its source and its user. Therefore, a part of reduced growth can also come from the non-linear impact of 'too much credit', given that most countries in our sample have already reached credit levels higher than the turning point (peak of maximum contribution of credit to growth, to be characterized shortly).
- Higher stock market capitalization seems to be robustly connected with higher economic growth, whereas larger outstanding debt securities to GDP have a negative impact (and significantly so for financial corporations, when the non-linear credit term is absent).

Although these conclusions might be specific to the period under investigation, they are quite robust despite substantial changes in model specifications.

Finally, let us discuss the estimated turning points of the non-linear impact of bank credit on growth rates. Figure 1 plots the marginal impact of bank credit on growth, with the turning point estimate identified where the marginal impact equals zero.

Figure 1. The marginal impact of private bank credit to GDP on economic growth



Notes: The figures use the estimated marginal impact of private bank credit to GDP (in %) on economic growth rates in the OECD, EU, and EMU1999 groups. The figures on the left (blue lines) correspond to estimates provided in columns (4)–(6) of Table 2, using only the sources of finance. The figures on the right (red lines) use columns (10)–(12), where both the source and user of finance are incorporated. The dashed lines indicate the 95% confidence bounds. To ensure visibility of the turning points, all lines start from a level of 25% of private bank credit.

First, it can be seen that the estimated turning point is smaller when finance is split only in terms of sources. In this case, it is below 50% of GDP and varies from 37% to 46% depending on a group of countries. Furthermore, considering the 95% confidence bounds, the marginal

impact of financing here is never found to be significantly positive. On the other hand, the positive contribution becomes significant when a more detailed split of financing is employed (also by the user of finance). In this case, the turning point also increases and ranges from 61% to 72% in the different country groups. It is interesting to note that these point estimates (in particular, 62% of GDP for the OECD) compare well with that obtained by Cournède and Denk (2015) for the OECD countries, using a longer intermediate credit series (their estimated turning point is about 60% of GDP). However, these point estimates are in general lower than those established by Arcand et al. (2015), using their global sample of countries. Nevertheless, the mentioned difference is less evident once looking at the confidence bands: for some specifications provided in Arcand et al. (2015), the difference is statistically significant, whereas for others it is not.

5.2. Financing structure and other non-linearity questions

In this subsection, we explore whether the non-linearity of the effect of finance on growth is sufficiently captured by the non-linear term of bank credit alone. Maybe the total amount of financing from all the different sources is more relevant than bank credit alone in generating the non-linearity, conditionally either only on the sources of financing (question Q7) or the sources and users of financing (question Q8)? Alternatively, maybe household credit is solely responsible for the non-linear impact of bank credit,[9] thus, after taking it into account, the non-linearity of total bank credit vanishes (question Q9)?

In order to answer these questions, we investigate the statistical significance of the respective non-linear terms. Table 3 presents the corresponding empirical findings. Columns (1)–(3) include both the non-linear term of bank credit and that of the total financing, conditioning on the sources of financing. Columns (4)–(6) also condition on the users of finance. Finally, columns (7)–(9) compare the relative significance of the non-linear terms of total bank credit and of household credit only.

[9] Since Arcand et al. (2015) find that the non-linearity of household credit is more prevalent than that of firm credit, we present here only the results for household credit.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Related questions	Q7	Q7	Q7	Q8	Q8	Q8	Q9	Q9	Q9
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**9.013**	**12.91**	**7.473**	**13.50****	**17.71*****	**13.09*****	**13.06****	**14.18****	**20.67*****
	(6.329)	**(8.151)**	**(4.699)**	**(5.913)**	**(6.838)**	**(4.980)**	**(6.070)**	**(5.546)**	**(4.921)**
DEBT_SEC	**-0.217***	**-0.328*****	**-0.314*****						
	(0.120)	**(0.127)**	**(0.106)**						
STOCKS	**0.0818***	**0.0360**	**-0.0126**	**0.0902*****	**0.0424**	**0.000559**	**0.0722****	**0.0534***	**0.0395****
	(0.0425)	**(0.0386)**	**(0.0390)**	**(0.0320)**	**(0.0463)**	**(0.0417)**	**(0.0320)**	**(0.0276)**	**(0.0194)**
CREDIT-HSH				**-1.967*****	**-1.517****	**-1.815*****	**-1.751**	**1.705**	**-11.70*****
				(0.650)	**(0.659)**	**(0.641)**	**(3.454)**	**(4.813)**	**(3.708)**
CREDIT-NFC				**0.713***	**0.140**	**0.881****	**0.716**	**0.132**	**0.933*****
				(0.409)	**(0.617)**	**(0.383)**	**(0.482)**	**(0.584)**	**(0.260)**
DEBT_SEC-FCO				**-0.0863**	**-0.0829**	**-0.176****	**-0.103**	**-0.0530**	**-0.174****
				(0.133)	**(0.131)**	**(0.0829)**	**(0.127)**	**(0.116)**	**(0.0716)**
DEBT_SEC-NFC				**-0.242**	**-0.273**	**-0.154**	**-0.243**	**-0.259**	**-0.175***
				(0.188)	**(0.188)**	**(0.103)**	**(0.185)**	**(0.175)**	**(0.0984)**
CREDIT2	**-1.251**	**-1.716***	**-1.005***	**-1.635****	**-2.160*****	**-1.543*****	**-1.584****	**-1.722*****	**-2.442*****
	(0.769)	**(0.999)**	**(0.538)**	**(0.683)**	**(0.825)**	**(0.584)**	**(0.693)**	**(0.657)**	**(0.574)**
TOTAL	**0.569**	**2.761**	**1.818**	**-0.367**	**2.278**	**1.048**			
	(2.087)	**(3.787)**	**(2.342)**	**(2.147)**	**(3.762)**	**(1.563)**			
TOTAL2	**-0.0662**	**-0.268**	**-0.152**	**0.0269**	**-0.216**	**-0.0823**			
	(0.187)	**(0.344)**	**(0.209)**	**(0.199)**	**(0.345)**	**(0.137)**			
CREDIT-HSQ2							**-0.0294**	**-0.494**	**1.327*****
							(0.473)	(0.703)	(0.498)
INC	-14.98**	-21.23***	-9.907	-13.97***	-20.02***	-10.70**	-14.15***	-18.93***	-12.05***
	(6.988)	(7.254)	(6.181)	(5.272)	(5.539)	(5.222)	(5.446)	(5.702)	(3.233)
EDU	-0.182	-0.363	0.0498	-0.290	-0.295	-0.102	-0.276	-0.317	-0.120
	(0.456)	(0.548)	(0.664)	(0.394)	(0.517)	(0.558)	(0.393)	(0.524)	(0.598)
GOV	-0.0535	-1.888	3.729*	0.464	-0.811	3.573**	0.427	-0.347	2.789**
	(2.007)	(3.130)	(1.979)	(1.415)	(2.183)	(1.516)	(1.505)	(1.986)	(1.090)
OPN	-0.268	-0.0111	2.715***	-0.295	0.186	2.321***	-0.306	0.319	2.192***
	(0.655)	(1.027)	(0.926)	(0.595)	(0.902)	(0.678)	(0.587)	(0.922)	(0.500)
INF	-3.047	-0.956	-5.081	-2.604	0.0418	-3.836	-2.541	0.376	-4.327
	(1.908)	(3.008)	(3.310)	(2.257)	(3.549)	(2.970)	(2.473)	(3.591)	(2.972)
Constant	0.388***	0.433**	0.644**	0.483***	0.500***	0.653**	0.475***	0.551**	0.601***
	(0.148)	(0.193)	(0.306)	(0.131)	(0.185)	(0.270)	(0.136)	(0.227)	(0.231)
Observations	267	195	150	260	188	143	260	188	143
R-squared	0.812	0.832	0.897	0.819	0.838	0.904	0.819	0.837	0.910
Number of countries	21	15	9	21	15	9	21	15	9

Notes:
Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over five years ahead (h = 5). The abbreviations of variables are explained in Table 1.

Table 3. Financing structure and non-linearity of financing.

Comparing the significance of the linear and non-linear terms of bank credit (CREDIT, CREDIT2) and total financing (TOTAL, TOTAL2) in columns (1)–(6) of Table 3, one can see that the impact of bank credit is consistently more significant than that of the total financing. Although the difference is moderate in columns (1)–(3), where we control only for the sources of finance (in connection with question Q7), there is little doubt about the substantial difference in significance when a detailed financing structure is taken into account (columns (4)–(6), in relation to question Q8). Therefore, we can infer that bank credit seems to dominate in the hump-shaped finance-growth relationship.

One can draw similar conclusions from columns (7)–(9), regarding the relative significance of the non-linearity of household credit and (total) bank credit (question Q9). Bank credit retains

uniformly not only the sign of both its linear and non-linear terms, but also the significance, whereas the non-linearity connected with household credit does not only change signs irregularly, but also becomes insignificant in the OECD and EU samples. In the EMU1999 case, the terms of household credit are significant, but it is more likely to occur due to the small number of observations, potentially coupled with multicollinearity of bank credit and household credit terms (and their squares).

We therefore can infer that, even after controlling for a quite detailed structure of financing, the hump-shaped, non-linear impact of finance on growth seems to be most strongly connected with (total) bank credit.

5.3. Robustness checks

In this subsection, we summarize the implications of some robustness checks. We look at the impact of varying the length of future horizons (*h)*, excluding outlier observations, including dummy-interaction variables for the latest after-crisis period, reducing the number of variables (dropping period effects, dropping controls, leaving only the most significant principal component of controls), using ratios to represent the composition of financing instead of an unconstrained estimation, additional modeling of dynamics (by including the changes of explanatory variables or including autoregressive terms of the dependent variable), and including an additional indicator for accelerating real housing prices. Appendix B describes the implementation details.

In order to save space, we mostly concentrate on the sensitivity analysis of the main results provided in Table 2: either the whole table whenever possible, or a part of it, namely, the specification connected with question Q6 (which has the most detailed split of financing composition). Due to the same reason, all tables associated with the empirical estimation results are delegated to Appendix B.

The results of the performed robustness analysis can be summarized as follows. In general, the previously discussed main findings are quite robust to the considered deviations from the baseline specifications considered in Table 2. The least robust one is about the impact of the composition of outstanding debt securities: although the negative sign of debt securities issued by both the financial and non-financial corporations is dominant, the ranking of its subcomponents becomes less obvious in many of the performed investigations.

Some additional interesting aspects are worth singling out. First, the negative impact of household financing seems to emerge more over longer periods, and is much smaller in shorter horizons, as revealed both by tables B1 and B8. Next, the positive impact of stock market financing seems to be mostly observed during periods of accelerating real housing prices as illustrated in table B10, after which economic growth is significantly lower, but less so in countries that relied more on capital markets during the associated housing market spur. The analogous impact of debt securities was not observed and even had a negative sign, which can be connected also with the bank strategies to finance housing loans by issuing debt securities.

6. Conclusions

This paper contributed to the analysis of the impact of finances on economic growth by incorporating the structure of financing and allowing for the non-linearity of the impact of finances, in homogeneous groups of high-income countries. Our results reveal that the significance of the non-linear impact of bank credit is robust to controlling for a fairly detailed composition of private finances. Furthermore, results are very similar in all the three high-income groups of countries considered (member states from the OECD, EU, and EMU1999).

Besides its robustness, we find the following additional features of this non-linearity. The non-linear impact of total bank credit is more pronounced than that of either only household credit or the joint sum of bank credit, debt securities, and stock market financing. The estimated turning point/threshold of the identified non-linear relationship is smaller than that established e.g. in Arcand et al. (2015) using a global panel, while it is in line with that estimated for the OECD countries by Cournède and Denk (2015). Therefore, a large bank credit penetration relative to GDP (especially with heavy financing of households) might be more harmful to economic growth in high-income countries than thought previously. At the same time, due to the dominance of bank-biased financing in the EU, even a simple reduction of bank credit relative to GDP could result in improved economic growth rates in a number of EU countries.

We also find and/or confirm many important aspects of the role of financing composition, even after controlling for the non-linearity discussed above. First, the impact of bank credit to households and non-financial corporations qualitatively differ: in our sample, the former had a strongly negative, whereas the latter tended to have a positive impact on economic growth. Consequently, if a reduction of bank credit were beneficial for a particular economy in general, the strongest promotion to growth could be achieved by shrinking household credit.

This established empirical finding seems to support the hypothesis that, in the long run, household credit diverts funds of limited supply from firms that could generate longer-lasting positive development. This can become especially acute during housing market booms, periods that facilitate expansion of credit to households by creating larger values of collateral acceptable to banks and larger returns in this market. We indeed find that, during periods of significantly positive real housing inflation, growth was further reduced besides what has already been captured by the amounts of credit to households directly. Thus, either housing credit has a further negative impact on long-term growth relative to total household credit (e.g., it may create a drag on households' willingness to work productively), or the actually realized amounts of household credit do not reveal its whole negative influence (e.g., banks shrank firm financing more by foreseeing the need of additional household borrowing in the future).

Next, the growth impact of stock market and debt security financing are qualitatively different: stock market financing has a positive, whereas debt securities tend to have a negative influence on growth. Looking from both the methodological and policy perspectives, this would suggest that the use of financing aggregates and the equal promotion of all types of market-based modes of financing might be just as misleading as cutting all types of bank credit.

Although statistically less clear-cut, we have found some evidence that shifting currently outstanding debt securities from financial corporations towards the non-financial ones could be beneficial for growth. This can be due to several factors at play. First, a substantial part of debt securities issued by financial institutions is connected to the financing of housing, which we find to have a negative impact on growth. Furthermore, international financial markets are highly integrated, and financial institutions issuing debt securities can outsource domestic savings from high-income economies to other countries easily, thus reducing the local funding of investments. On the other hand, given the increased total globalization of corporate activities, it can be a potential explanation also for the negative sign (though smaller absolute value) of the impact of non-financial corporations.

Finally, from the policy perspective, our results point to several alternatives connected with the financial deepness and its structure that would promote economic growth. Regarding the banking sector, growth would be increased both by directing more credit towards non-financial corporations and by reducing the bank credit to GDP levels in a number of European countries (especially, from the EMU). The reduction of household credit, which simultaneously diminishes the total amount of credit and favorably changes its composition, can have the largest economic impact. However, the effect of a reduction of the total amount of bank credit

also depends nontrivially on the initial conditions of a particular economy (namely, the actual distance from the peak impact of credit, the level of penetration of all modes of finance, etc.). Therefore, for economies that are close to the turning point of the non-linear impact, a balanced compositional shift towards firm financing without affecting the total amount of credit might be best suited. The further development of market-based financing seems to be mostly beneficial through the fostering of stock markets.

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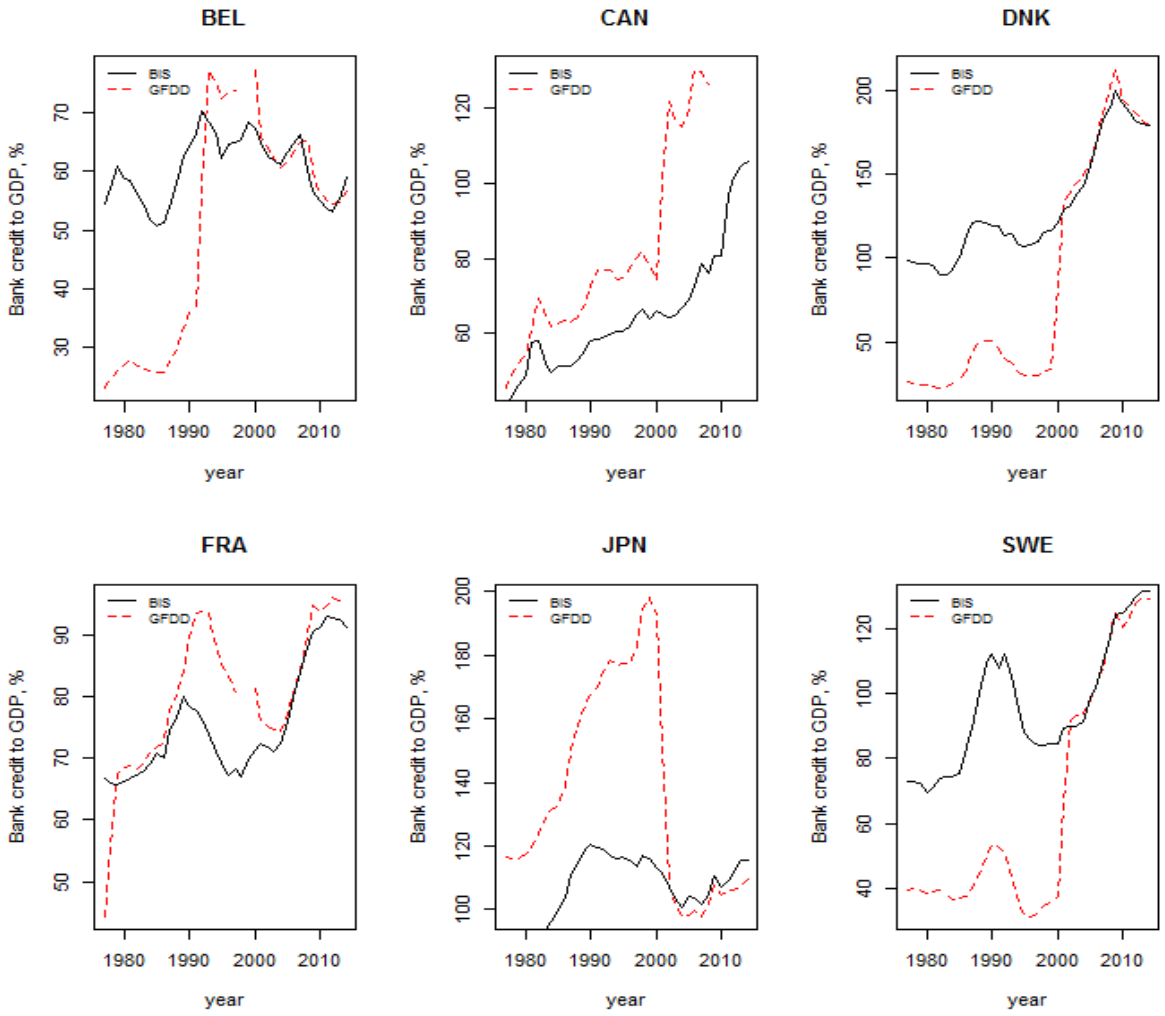
APPENDIX A: Data

Table A1: Sources of Original Data

Variable (notation of related series after transformations defined in Table 1 of main text)	Source (all downloaded in June 2016)
Total credit by banks to the private non-financial sector, adjusted for structural breaks (CREDIT).	Bank for International Settlements (BIS), Credit to the Non-financial Sector.
Outstanding debt securities (DEBT_SEC).	Bank for International Settlements (BIS), Debt Securities Statistics.
Market capitalization of listed domestic companies as a percentage of GDP (STOCKS).	World Bank, World Development Indicators (WDI).
Private credit received by households (CREDIT-HSH).	Bank for International Settlements (BIS), Credit to the Non-financial Sector.
Private credit received by non-financial corporations (CREDIT-NFC).	Bank for International Settlements (BIS), Credit to the Non-financial Sector.
Outstanding debt securities issued by financial corporations (DEBT_SEC-FCO).	Bank for International Settlements (BIS), Debt Securities Statistics.
Outstanding debt securities issued by non-financial corporations (DEBT_SEC-NFC).	Bank for International Settlements (BIS), Debt Securities Statistics.
GDP per capita, constant LCU (INC).	World Bank, World Development Indicators (WDI).
Inflation of consumer prices, annual % (INF).	World Bank, World Development Indicators (WDI).
Gross enrolment ratio, secondary, both sexes, in % of the corresponding age group (EDU)	World Bank, World Development Indicators (WDI).
General government final consumption expenditure as a percentage of GDP (GOV).	World Bank, World Development Indicators (WDI).
Trade openness, calculated as exports plus imports divided by GDP (OPN).	World Bank, World Development Indicators (WDI).

Figure A1. Bank credit to GDP (in %), from the Bank for International Settlements (BIS) credit database and the Global Financial Development Database (GFDD) of the World Bank. Selected sample of countries having structural breaks: Belgium (BEL), Canada (CAN), Denmark (DNK), France (FRA), Japan (JPN), Sweden (SWE).



APPENDIX B: Robustness checks

We perform the following robustness checks.

Varying the future horizon h (Table B1). In addition to the main five-year horizon considered in the previous tables, we present the estimation results for a broader range of future horizon values, namely, $h \in \{3,4,5,6,7\}$ for the specification connected with question Q6. However, it should be kept in mind that higher horizons used for calculation of average yearly economic growth rates reduce further the degrees of freedom.

Excluding outlier observations (Table B2). This table presents the results of the re-estimation of the specifications of Table 2, after removing observations (separately in each specification) that result in residuals being greater than three standard errors. On average, such an operation reduces the number of observations by 30% as compared to those in Table 2.

Including dummy-interaction variables of the latest after-crisis period (Table B3). To investigate the stability of parameter estimates, we include the interaction terms of financing sources (of bank, debt securities, and stock market financing) with the crisis period dummies in the specification connected with question Q6. Because in the main estimations we considered five-year ahead periods of growth rates as defined in equation (1), the included interaction terms start from 2003. Hence, starting from 2003, the five-year average growth rate includes only the 2008 crisis period, starting from 2004, it includes 2008 and 2009, and so on. In such a way, it is possible to allow for a time varying impact of the crisis. It should be also pointed out that there is no need to include additional dummies without interaction, since our specifications already have period fixed effects. It should be again kept in mind that this increases further the number of estimated parameters.

Reducing the number of variables – dropping period effects (Table B4), dropping potentially insignificant controls[10] (Table B5), or leaving only the most significant principal component of controls (Table B6). The main concern regarding the basic estimation is the low degree of freedom. Therefore, we present several sensitivity evaluations of Table 2 by reducing the number of parameters under estimation. First, we drop period dummies as in Table B4. Next, we keep only the initial income variable that is always significant, and drop the remaining ones that in many specifications were insignificant (Table B5). Finally, since omitted variables can

[10] See the last paragraph of Section 3 for the set of control variables.

create estimation bias, we also use the most significant principal component from previously omitted variables to reduce it (Table B6).

Using ratios to represent the composition of financing (Table B7). The main findings reveal that the estimates using ratios are likely to be biased. Nevertheless, the use of ratios allows reducing the number of estimated parameters and the variability of the estimates. Hence, we also study if the results are similar to those presented in Table 2, whenever ratios of proper variables are employed instead of the unconstrained estimation. Namely, we use: a) the logarithm of the ratio of outstanding debt securities to bank credit (DEBT_SEC / CREDIT) and the logarithm of the ratio of stock market capitalization to bank credit (STOCKS / CREDIT) to represent the composition of financing by type of instrument; b) the logarithm of the ratio of credit to household and non-financial corporations (CREDIT-HSH / CREDIT-NFC) to represent the credit structure; and c) the logarithm of the ratio of outstanding debt securities issued by financial and non-financial corporations (DEBT_SEC-FCO / DEBT_SEC-NFC) to represent the composition of debt securities.

Additional modelling of dynamics – included first differences of explanatory variables (Table B8) or included lagged left hand side variable (Table B9). Despite that further terms in the equations increase the number of parameters, we also investigate the sensitivity of the results of Table 2 to the inclusion of additional dynamic terms: the first difference of explanatory variables as in Table B8, and the lagged left hand side variable as in Table B9.

Including a dummy variable for accelerating real housing prices (Table B10). The expansion of household credit was influenced by an increasing credit for housing needs, which in turn interacts strongly with housing price developments. The recent crisis and housing price bubbles suggest that this aspect could have been behind the negative impact of bank credit to households. Although we do not have the respective split of household credit, we investigate the significance of a dummy variable (and its interactions) of an accelerated increase in housing prices (as motivated by the studies of Langfield and Pagano, 2016, and Karagiannis and Kvedaras, 2016). In particular, the dummy takes a value of one if the real growth rate of housing prices exceeds one percentage point and zero otherwise.

The respective tables are presented below, preceded by a list of tables, provided for convenience.

List of tables:

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Related questions	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6
Future horizon:	**(h=3)**	**(h=3)**	**(h=3)**	**(h=4)**	**(h=4)**	**(h=4)**	**(h=5)**	**(h=5)**	**(h=5)**	**(h=6)**	**(h=6)**	**(h=6)**	**(h=7)**	**(h=7)**	**(h=7)**
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**19.55*** **	**20.87*** **	**25.64*** **	**19.28*** **	**24.03*** **	**25.37*** **	**13.36*** **	**18.50*** **	**13.60*** **	**12.50** **	**19.52*** **	**10.41*** **	**3.506**	**7.592***	**-1.168**
	(5.101)	**(6.506)**	**(4.864)**	**(4.705)**	**(7.176)**	**(3.970)**	**(5.155)**	**(6.525)**	**(4.894)**	**(5.937)**	**(6.213)**	**(3.153)**	**(4.472)**	**(4.248)**	**(3.430)**
CREDIT2	**-2.377*** **	**-2.458*** **	**-2.970*** **	**-2.376*** **	**-2.814*** **	**-2.942*** **	**-1.621*** **	**-2.258*** **	**-1.594*** **	**-1.449** **	**-2.263*** **	**-1.230*** **	**-0.374**	**-0.793**	**0.120**
	(0.531)	**(0.719)**	**(0.529)**	**(0.550)**	**(0.827)**	**(0.451)**	**(0.603)**	**(0.790)**	**(0.573)**	**(0.671)**	**(0.737)**	**(0.378)**	**(0.504)**	**(0.492)**	**(0.422)**
STOCKS	**0.0315**	**0.0304**	**0.0824**	**0.0438**	**-0.00599**	**-0.00765**	**0.0725** **	**0.0594** **	**0.0348***	**0.00881**	**-0.00314**	**0.00252**	**0.0498**	**0.0227**	**0.0129**
	(0.0564)	**(0.0658)**	**(0.0590)**	**(0.0427)**	**(0.0292)**	**(0.0167)**	**(0.0337)**	**(0.0290)**	**(0.0202)**	**(0.0478)**	**(0.0458)**	**(0.0308)**	**(0.0314)**	**(0.0334)**	**(0.0176)**
CREDIT-HSH	**-0.645**	**-1.326**	**-1.338**	**-1.914** **	**-2.625*** **	**-1.949** **	**-1.956*** **	**-1.559** **	**-1.838*** **	**-2.371*** **	**-2.702*** **	**-2.355*** **	**-2.063*** **	**-2.900*** **	**-1.490***
	(1.178)	**(1.347)**	**(1.379)**	**(0.872)**	**(0.957)**	**(0.862)**	**(0.605)**	**(0.627)**	**(0.674)**	**(0.486)**	**(0.352)**	**(0.732)**	**(0.744)**	**(0.852)**	**(0.780)**
CREDIT-NFC	**-0.178**	**-0.254**	**1.172**	**0.185**	**-0.306**	**0.828**	**0.720**	**0.145**	**0.919*** **	**0.361**	**0.324**	**0.794***	**0.514**	**0.405**	**0.561**
	(0.912)	**(0.776)**	**(0.753)**	**(0.629)**	**(0.692)**	**(0.720)**	**(0.445)**	**(0.592)**	**(0.349)**	**(0.411)**	**(0.510)**	**(0.422)**	**(0.330)**	**(0.434)**	**(0.369)**
DEBT_SEC-FCO	**-0.317**	**0.0349**	**-0.127**	**-0.0771**	**0.188**	**-0.125**	**-0.102**	**-0.0465**	**-0.161***	**0.0549**	**0.176***	**0.205**	**-0.191**	**-0.102**	**-0.00232**
	(0.273)	**(0.238)**	**(0.183)**	**(0.246)**	**(0.218)**	**(0.160)**	**(0.130)**	**(0.110)**	**(0.0879)**	**(0.119)**	**(0.0997)**	**(0.211)**	**(0.209)**	**(0.263)**	**(0.240)**
DEBT_SEC-NFC	**0.118**	**0.120**	**-0.328***	**-0.0964**	**-0.102**	**-0.156***	**-0.244**	**-0.272**	**-0.161***	**-0.253**	**-0.276**	**-0.151**	**-0.171**	**-0.176**	**0.00349**
	(0.149)	(0.149)	(0.186)	(0.134)	(0.115)	(0.0924)	(0.185)	(0.184)	(0.0976)	(0.197)	(0.193)	(0.0989)	(0.119)	(0.130)	(0.102)
INC	-18.02	-21.77***	-16.57	-14.26*	-18.48***	-12.78*	-14.14***	-19.19***	-10.33**	-10.82	-15.89**	-5.819	-6.199	-6.411	-0.0721
	(13.00)	(8.127)	(10.75)	(8.529)	(5.163)	(7.448)	(5.457)	(5.972)	(4.977)	(7.033)	(8.051)	(5.900)	(6.660)	(6.677)	(10.31)
EDU	-1.449	-0.325	-0.0877	0.155	0.690*	0.730**	-0.275	-0.282	-0.113	-0.531	-0.664	0.201	-0.198	-0.0582	0.600
	(1.109)	(0.606)	(0.753)	(0.442)	(0.376)	(0.298)	(0.393)	(0.519)	(0.567)	(0.476)	(0.605)	(0.318)	(0.438)	(0.498)	(0.474)
GOV	1.761	-1.150	1.961	1.321	-0.549	2.241*	0.414	-0.666	3.534***	0.857	-0.754	3.667***	1.307	2.622**	4.116**
	(2.798)	(2.696)	(2.764)	(2.309)	(1.917)	(1.348)	(1.495)	(2.234)	(1.371)	(1.878)	(2.569)	(1.163)	(1.059)	(1.163)	(1.699)
OPN	-1.215	-0.0818	2.551*	-0.846	-0.162	2.922***	-0.307	0.339	2.298***	-0.173	-0.474	1.489**	0.207	0.768	2.320*
	(0.836)	(1.286)	(1.389)	(0.968)	(1.342)	(0.635)	(0.587)	(0.932)	(0.604)	(0.414)	(0.614)	(0.741)	(0.394)	(0.670)	(1.271)
INF	-1.972	-4.311	3.521	4.123	4.612*	0.804	-2.557	0.262	-4.144	-1.332	-0.801	-6.896**	4.362**	7.010***	-2.932
	(3.199)	(3.258)	(8.374)	(2.920)	(2.401)	(3.364)	(2.262)	(3.572)	(2.923)	(1.521)	(2.311)	(2.828)	(1.855)	(2.363)	(3.620)
Constant	0.487***	0.464**	0.000352	0.101	0.189	-0.291	0.474***	0.540**	0.664***	0.247**	0.331**	0.0723	0.131	0.150	-0.224
	(0.149)	(0.185)	(0.249)	(0.162)	(0.186)	(0.218)	(0.131)	(0.231)	(0.256)	(0.0980)	(0.160)	(0.0880)	(0.194)	(0.242)	(0.288)
Observations	296	212	162	277	199	152	260	188	143	244	178	135	226	166	127
R-squared	0.780	0.811	0.861	0.763	0.794	0.890	0.819	0.836	0.903	0.776	0.830	0.842	0.726	0.753	0.765
Number of countries	23	17	11	22	16	10	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B1. Robustness checks: future horizon in years for calculating the average yearly growth rate ($h \in \{3,4,5,6,7\}$).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.877*** **	**-1.462** **	**-1.446** **	**5.064**	**12.34***	**8.556**				**20.92** **	**27.95*** **	**11.12**
	(0.554)	**(0.649)**	**(0.617)**	**(7.824)**	**(6.993)**	**(7.181)**				**(8.574)**	**(8.278)**	**(9.104)**
DEBT_SEC	**-0.746***	**-0.969** **	**-0.549*** **	**-0.650**	**-0.725**	**-0.347** **						
	(0.424)	**(0.429)**	**(0.117)**	**(0.474)**	**(0.491)**	**(0.176)**						
STOCKS	**0.0438**	**0.0256**	**0.0427*** **	**0.0484***	**0.0315**	**0.0438*** **	**0.0912**	**0.0872***	**0.0435**	**0.123** **	**0.120** **	**0.0553***
	(0.0299)	**(0.0218)**	**(0.0157)**	**(0.0274)**	**(0.0207)**	**(0.0166)**	**(0.0589)**	**(0.0525)**	**(0.0277)**	**(0.0590)**	**(0.0527)**	**(0.0288)**
CREDIT2				**-0.805**	**-1.634***	**-1.142**				**-2.482** **	**-3.357*** **	**-1.379**
				(0.883)	**(0.839)**	**(0.801)**				**(0.977)**	**(0.954)**	**(1.025)**
CREDIT-HSH							**-3.131*** **	**-2.260** **	**-1.782***	**-2.961*** **	**-2.523** **	**-1.324**
							(1.011)	**(0.891)**	**(1.042)**	**(1.011)**	**(1.032)**	**(0.971)**
CREDIT-NFC							**1.941** **	**1.530** **	**-0.0174**	**1.616*** **	**1.497** **	**0.461**
							(0.777)	**(0.773)**	**(0.756)**	**(0.517)**	**(0.593)**	**(0.661)**
DEBT_SEC-FCO							**-0.396***	**-0.636*** **	**-0.403** **	**0.00945**	**0.0233**	**-0.229**
							(0.230)	**(0.231)**	**(0.164)**	**(0.227)**	**(0.219)**	**(0.203)**
DEBT_SEC-NFC							**-0.641** **	**-0.702*** **	**-0.160**	**-0.655** **	**-0.720*** **	**-0.167**
							(0.255)	(0.254)	(0.113)	(0.261)	(0.274)	(0.102)
INC	-7.263	-13.25***	-7.902***	-10.30	-18.34***	-10.01***	-3.512	-10.35***	-9.102***	-11.71*	-18.31***	-10.09***
	(5.391)	(4.397)	(2.364)	(6.952)	(5.728)	(3.655)	(5.290)	(2.693)	(2.127)	(6.622)	(5.618)	(3.101)
EDU	0.199	0.0589	0.243	0.121	-0.122	0.156	0.286	0.286	0.157	0.107	0.0255	0.186
	(0.547)	(0.583)	(0.707)	(0.564)	(0.626)	(0.740)	(0.532)	(0.617)	(0.659)	(0.596)	(0.724)	(0.740)
GOV	-0.303	-2.505	2.434***	-0.587	-3.027	2.299***	1.240	-1.392	2.853**	0.740	-1.357	2.708***
	(1.644)	(2.468)	(0.845)	(1.785)	(2.597)	(0.885)	(1.511)	(1.797)	(1.147)	(1.412)	(1.584)	(1.047)
OPN	-0.985	-0.445	1.478*	-0.893	-0.505	1.566**	-0.821	-0.171	1.912**	-0.772	-0.523	1.677**
	(0.785)	(1.409)	(0.824)	(0.797)	(1.191)	(0.772)	(0.679)	(1.412)	(0.769)	(0.525)	(0.980)	(0.679)
INF	-3.369*	-1.296	-3.347	-4.161**	-2.672	-3.154	-3.955**	-3.135	-2.517	-6.425***	-6.010*	-3.242
	(1.963)	(1.426)	(3.063)	(1.702)	(2.240)	(3.236)	(1.791)	(2.341)	(3.325)	(1.902)	(3.136)	(3.443)
Constant	0.642***	0.804***	0.711***	0.541***	0.580***	0.638**	0.798***	0.877***	0.787***	0.448***	0.367	0.671**
	(0.212)	(0.276)	(0.262)	(0.123)	(0.203)	(0.268)	(0.246)	(0.279)	(0.290)	(0.158)	(0.225)	(0.279)
Observations	188	143	115	188	143	115	181	136	108	181	136	108
R-squared	0.772	0.821	0.901	0.789	0.837	0.905	0.771	0.820	0.900	0.821	0.858	0.906
Number of countries	19	14	9	19	14	9	19	14	9	19	14	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B2. Robustness checks: exclusion of outlying observations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Related questions	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6
Interaction term:	**CREDIT**	**CREDIT**	**CREDIT**	**DEBT_SEC**	**DEBT_SEC**	**DEBT_SEC**	**STOCKS**	**STOCKS**	**STOCKS**
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**9.892***	**15.76***	**11.88****	**16.38****	**21.90*****	**16.11*****	**15.50*****	**18.92*****	**12.60*****
	(5.987)	**(8.521)**	**(5.388)**	**(6.971)**	**(7.915)**	**(4.229)**	**(5.557)**	**(6.503)**	**(4.521)**
CREDIT2	**-1.093**	**-1.777***	**-1.387****	**-1.943****	**-2.566*****	**-1.875*****	**-1.879*****	**-2.277*****	**-1.450*****
	(0.704)	**(0.984)**	**(0.666)**	**(0.804)**	**(0.905)**	**(0.477)**	**(0.642)**	**(0.788)**	**(0.537)**
STOCKS	**0.0674*****	**0.0549****	**0.0355***	**0.0746****	**0.0515***	**0.0360***	**0.0627****	**0.0671*****	**0.0442****
	(0.0261)	**(0.0241)**	**(0.0188)**	**(0.0365)**	**(0.0304)**	**(0.0215)**	**(0.0293)**	**(0.0260)**	**(0.0176)**
CREDIT-HSH	**-2.373*****	**-2.216*****	**-1.971*****	**-2.040*****	**-2.027*****	**-1.963*****	**-1.751*****	**-1.799****	**-2.083*****
	(0.521)	**(0.423)**	**(0.675)**	**(0.515)**	**(0.507)**	**(0.746)**	**(0.675)**	**(0.730)**	**(0.800)**
CREDIT-NFC	**0.521**	**0.0745**	**0.911*****	**0.634***	**0.254**	**1.030*****	**0.747***	**0.306**	**1.087*****
	(0.414)	**(0.593)**	**(0.344)**	**(0.363)**	**(0.553)**	**(0.359)**	**(0.445)**	**(0.577)**	**(0.367)**
DEBT_SEC-FCO	**-0.0839**	**-0.0950**	**-0.182****	**-0.0999**	**-0.0922**	**-0.191****	**-0.0867**	**-0.0253**	**-0.114***
	(0.122)	**(0.102)**	**(0.0839)**	**(0.194)**	**(0.172)**	**(0.0952)**	**(0.115)**	**(0.0884)**	**(0.0678)**
DEBT_SEC-NFC	**-0.241**	**-0.282**	**-0.109**	**-0.204**	**-0.230**	**-0.174**	**-0.246**	**-0.294**	**-0.221****
	(0.183)	**(0.181)**	**(0.114)**	**(0.149)**	**(0.152)**	**(0.110)**	**(0.188)**	**(0.186)**	**(0.101)**
INC	-16.91***	-22.38***	-9.545**	-14.13***	-19.49***	-10.05**	-15.13***	-19.14***	-8.816*
	(5.195)	(6.592)	(3.919)	(4.177)	(5.265)	(4.910)	(5.273)	(6.203)	(4.746)
EDU	-0.0623	0.0156	-0.452	0.0932	-0.0117	-0.286	-0.251	-0.302	-0.159
	(0.455)	(0.593)	(0.501)	(0.434)	(0.558)	(0.506)	(0.391)	(0.491)	(0.502)
GOV	0.249	-0.921	3.976***	0.474	-0.364	3.722**	-0.0892	-0.548	3.674**
	(1.483)	(2.318)	(1.421)	(1.215)	(1.654)	(1.632)	(1.555)	(2.263)	(1.525)
OPN	-0.265	0.173	2.348***	-0.228	0.605	2.239***	-0.377	0.403	2.377***
	(0.525)	(0.901)	(0.437)	(0.609)	(0.802)	(0.544)	(0.638)	(0.842)	(0.554)
INF	-3.608*	-1.876	-3.093	-3.466**	-1.026	-3.364	-2.051	0.486	-5.241**
	(1.897)	(3.325)	(3.144)	(1.533)	(2.176)	(3.701)	(2.098)	(2.905)	(2.435)
Interact.term * I(year>=2003)	**-0.0908**	**-0.228**	**0.381****	**-0.00178**	**-0.0311**	**0.181*****	**0.0851**	**0.0793**	**0.0432**
	(0.226)	**(0.239)**	**(0.174)**	**(0.0422)**	**(0.0575)**	**(0.0687)**	**(0.125)**	**(0.146)**	**(0.0936)**
Interact.term * I(year>=2004)	**-0.460**	**-0.555**	**0.688**	**-0.162**	**-0.230***	**0.0923**	**-0.0795**	**-0.253**	**-0.257**
	(0.366)	**(0.416)**	**(0.509)**	**(0.111)**	**(0.138)**	**(0.191)**	**(0.256)**	**(0.278)**	**(0.303)**
Interact.term * I(year>=2005)	**-0.0730**	**-0.126**	**-0.148**	**0.0925**	**0.0620**	**-0.0969**	**-0.0927**	**-0.210****	**-0.264*****
	(0.144)	**(0.130)**	**(0.215)**	**(0.0811)**	**(0.103)**	**(0.0700)**	**(0.117)**	**(0.0932)**	**(0.0917)**
Interact.term * I(year>=2006)	**-0.365****	**-0.366****	**-0.512*****	**0.237**	**0.244**	**-0.0546**	**-0.0357**	**-0.0948**	**-0.0663**
	(0.148)	**(0.184)**	**(0.198)**	**(0.215)**	**(0.231)**	**(0.146)**	**(0.108)**	**(0.108)**	**(0.152)**
Interact.term * I(year>=2007)	**-0.262****	**-0.306***	**-0.544*****	**0.121**	**0.155**	**0.00550**	**0.295*****	**0.129**	**0.00201**
	(0.127)	**(0.176)**	**(0.163)**	**(0.142)**	**(0.153)**	**(0.118)**	**(0.0982)**	**(0.120)**	**(0.251)**
Interact.term * I(year>=2008)	**-0.385*****	**-0.372**	**0.0823**	**-0.0938***	**-0.0893**	**-0.107**	**0.0192**	**-0.0211**	**0.221**
	(0.137)	**(0.280)**	**(0.205)**	**(0.0490)**	**(0.0976)**	**(0.0705)**	**(0.141)**	**(0.214)**	**(0.173)**
Interact.term * I(year>=2009)	**-0.121**	**-0.183**	**0.145**	**-0.0103**	**-0.136**	**-0.0929**	**-0.0348**	**-0.0754**	**-0.0153**
	(0.104)	**(0.197)**	**(0.135)**	**(0.0246)**	**(0.0956)**	**(0.154)**	**(0.141)**	**(0.219)**	**(0.190)**
Constant	0.394***	0.433*	0.692***	0.423***	0.560***	0.662***	0.377*	0.717***	0.829**
	(0.115)	(0.230)	(0.221)	(0.118)	(0.188)	(0.242)	(0.222)	(0.259)	(0.326)
Observations	260	188	143	260	188	143	260	188	143
R-squared	0.833	0.845	0.911	0.834	0.856	0.905	0.825	0.842	0.903
Number of countries	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B3. Robustness checks: crisis period dummy interaction terms (an interaction term used in each case is specified in the third line, which is bolded).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-3.359*** **	**-3.595*** **	**-2.722*** **	**4.357**	**3.034**	**7.066**				**15.41** **	**19.90*** **	**12.92*** **
	(0.895)	**(0.799)**	**(0.585)**	**(7.252)**	**(7.805)**	**(4.637)**				**(6.033)**	**(7.039)**	**(4.188)**
DEBT_SEC	**-0.539*** **	**-0.688*** **	**-0.715*** **	**-0.518*** **	**-0.649*** **	**-0.666*** **						
	(0.171)	**(0.216)**	**(0.115)**	**(0.156)**	**(0.205)**	**(0.123)**						
STOCKS	**0.0345**	**0.0201**	**0.0161**	**0.0396**	**0.0250**	**0.0198**	**0.0620** **	**0.0511***	**0.0590*** **	**0.0727** **	**0.0692** **	**0.0666*** **
	(0.0281)	**(0.0315)**	**(0.0274)**	**(0.0277)**	**(0.0310)**	**(0.0282)**	**(0.0299)**	**(0.0286)**	**(0.0173)**	**(0.0304)**	**(0.0320)**	**(0.0201)**
CREDIT2				**-0.911**	**-0.792**	**-1.118** **				**-1.858*** **	**-2.393*** **	**-1.616*** **
				(0.859)	**(0.921)**	**(0.511)**				**(0.700)**	**(0.821)**	**(0.521)**
CREDIT-HSH							**-4.120*** **	**-4.168*** **	**-3.591*** **	**-4.270*** **	**-4.557*** **	**-2.755*** **
							(1.017)	**(0.942)**	**(0.527)**	**(0.874)**	**(0.929)**	**(0.948)**
CREDIT-NFC							**0.910**	**1.051**	**0.300**	**0.880**	**1.014**	**0.583***
							(0.778)	**(0.847)**	**(0.347)**	**(0.686)**	**(0.716)**	**(0.322)**
DEBT_SEC-FCO							**-0.417***	**-0.338**	**-0.357** **	**-0.297**	**-0.201**	**-0.293***
							(0.233)	**(0.221)**	**(0.169)**	**(0.200)**	**(0.203)**	**(0.166)**
DEBT_SEC-NFC							**-0.183**	**-0.214**	**-0.354*** **	**-0.168**	**-0.209**	**-0.407*** **
							(0.267)	**(0.282)**	**(0.118)**	**(0.244)**	**(0.257)**	**(0.127)**
INC	-1.133	-3.579	-4.378	-4.054	-5.663	-5.957	-1.558	-2.870	-4.891	-5.979	-7.477	-6.516
	(8.882)	(7.645)	(7.264)	(9.561)	(9.295)	(7.864)	(8.253)	(7.628)	(6.326)	(8.105)	(7.514)	(6.719)
EDU	3.277***	3.601***	3.603***	3.183***	3.499***	3.555***	2.842***	3.313***	3.353***	2.714***	3.054***	3.314***
	(0.942)	(1.180)	(1.284)	(0.942)	(1.149)	(1.270)	(0.829)	(1.076)	(1.219)	(0.821)	(1.028)	(1.190)
GOV	6.157**	5.411**	6.313***	5.060	4.729	5.767***	6.972***	6.553***	7.045***	5.407**	5.330**	6.109***
	(2.896)	(2.523)	(1.398)	(3.139)	(3.112)	(1.904)	(2.545)	(2.418)	(0.916)	(2.495)	(2.582)	(1.451)
OPN	-1.836	-2.038	-0.702	-1.665	-1.840	-0.554	-2.046	-2.121	-0.748	-1.764	-1.671	-0.636
	(1.460)	(1.763)	(1.935)	(1.386)	(1.758)	(1.859)	(1.485)	(1.832)	(1.885)	(1.299)	(1.556)	(1.726)
INF	-7.024***	-8.057***	-13.88***	-6.587***	-7.620***	-13.12***	-6.831***	-7.960***	-13.67***	-6.108***	-6.611**	-13.08***
	(2.200)	(2.643)	(3.612)	(1.947)	(2.496)	(3.493)	(2.025)	(2.630)	(3.589)	(1.873)	(2.713)	(3.119)
Constant	0.0438	0.0811	0.0547	0.0938	0.119	0.0839	0.0993	0.0888	0.0903	0.180	0.191	0.120
	(0.131)	(0.121)	(0.0968)	(0.149)	(0.157)	(0.119)	(0.109)	(0.114)	(0.0701)	(0.122)	(0.128)	(0.0945)
Observations	267	195	150	267	195	150	260	188	143	260	188	143
R-squared	0.438	0.505	0.564	0.487	0.533	0.580	0.469	0.512	0.579	0.544	0.582	0.601
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B4. Robustness checks: reducing the number of variables (exclusion of period dummies).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.472****	**-1.533*****	**-1.515*****	**11.09***	**16.20**	**8.781*****				**13.93****	**19.33*****	**14.79*****
	(0.594)	**(0.573)**	**(0.542)**	**(6.396)**	**(9.930)**	**(3.326)**				**(5.722)**	**(7.458)**	**(3.786)**
DEBT_SEC	**-0.227***	**-0.482*****	**-0.412*****	**-0.181****	**-0.259***	**-0.310*****						
	(0.133)	**(0.133)**	**(0.0956)**	**(0.0857)**	**(0.141)**	**(0.111)**						
STOCKS	**0.0405**	**0.0352**	**0.0156**	**0.0422**	**0.0454**	**0.0164**	**0.0571***	**0.0565****	**0.0263****	**0.0567***	**0.0583****	**0.0295***
	(0.0337)	**(0.0228)**	**(0.0152)**	**(0.0298)**	**(0.0303)**	**(0.0180)**	**(0.0346)**	**(0.0255)**	**(0.0130)**	**(0.0305)**	**(0.0257)**	**(0.0163)**
CREDIT2				**-1.491***	**-2.135***	**-1.195*****				**-1.706*****	**-2.381*****	**-1.801*****
				(0.777)	**(1.205)**	**(0.390)**				**(0.654)**	**(0.852)**	**(0.469)**
CREDIT-HSH							**-1.662*****	**-1.480****	**-1.923*****	**-1.666****	**-1.544****	**-1.588****
							(0.626)	**(0.664)**	**(0.602)**	**(0.647)**	**(0.737)**	**(0.689)**
CREDIT-NFC							**0.865***	**0.608**	**1.012***	**0.604**	**0.252**	**1.095***
							(0.462)	**(0.431)**	**(0.611)**	**(0.432)**	**(0.609)**	**(0.598)**
DEBT_SEC-FCO							**-0.250**	**-0.309*****	**-0.285*****	**-0.0435**	**-0.00705**	**-0.109**
							(0.156)	**(0.116)**	**(0.108)**	**(0.114)**	**(0.117)**	**(0.0847)**
DEBT_SEC-NFC							**-0.219**	**-0.255**	**-0.116**	**-0.210**	**-0.250**	**-0.154**
							(0.192)	**(0.201)**	**(0.116)**	**(0.179)**	**(0.188)**	**(0.116)**
INC	-10.20*	-14.04**	-14.37	-17.42*	-22.30**	-17.49	-10.05**	-13.14***	-13.05**	-15.65***	-19.25***	-15.22**
	(6.026)	(5.607)	(10.45)	(9.106)	(10.84)	(10.90)	(4.643)	(4.462)	(6.192)	(5.923)	(6.475)	(6.860)
Constant	0.700***	0.628***	0.521	0.419	0.278	0.384	0.791***	0.702***	0.618**	0.568***	0.457**	0.523**
	(0.232)	(0.227)	(0.473)	(0.341)	(0.453)	(0.471)	(0.214)	(0.188)	(0.269)	(0.210)	(0.232)	(0.266)
Observations	294	205	158	294	205	158	287	198	151	287	198	151
R-squared	0.782	0.818	0.889	0.824	0.834	0.901	0.787	0.811	0.885	0.826	0.842	0.901
Number of countries	22	16	10	22	16	10	22	16	10	22	16	10

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B5. Robustness checks: reducing the number of variables (exclusion of potentially insignificant controls).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.414*** **	**-1.407** **	**-1.328** **	**10.29***	**15.42***	**8.394** **				**13.19** **	**19.63*** **	**13.85*** **
	(0.544)	**(0.563)**	**(0.549)**	**(5.786)**	**(8.931)**	**(3.649)**				**(5.663)**	**(7.408)**	**(3.661)**
DEBT_SEC	**-0.234***	**-0.477*** **	**-0.429*** **	**-0.199** **	**-0.271** **	**-0.324** **						
	(0.140)	**(0.136)**	**(0.121)**	**(0.0946)**	**(0.129)**	**(0.129)**						
STOCKS	**0.0480***	**0.0531** **	**0.0296** **	**0.0593** **	**0.0656** **	**0.0311***	**0.0542***	**0.0648** **	**0.0227**	**0.0627** **	**0.0688** **	**0.0270**
	(0.0267)	**(0.0237)**	**(0.0147)**	**(0.0257)**	**(0.0295)**	**(0.0168)**	**(0.0304)**	**(0.0303)**	**(0.0203)**	**(0.0292)**	**(0.0308)**	**(0.0213)**
CREDIT2				**-1.397***	**-2.039***	**-1.129*** **				**-1.597** **	**-2.386*** **	**-1.632*** **
				(0.719)	**(1.107)**	**(0.433)**				**(0.652)**	**(0.869)**	**(0.444)**
CREDIT-HSH							**-1.711*** **	**-1.430** **	**-1.970*** **	**-1.803*** **	**-1.672** **	**-1.975*** **
							(0.615)	**(0.657)**	**(0.619)**	**(0.655)**	**(0.693)**	**(0.626)**
CREDIT-NFC							**0.921** **	**0.404**	**0.684**	**0.639**	**0.0646**	**0.864** **
							(0.457)	**(0.433)**	**(0.472)**	**(0.413)**	**(0.588)**	**(0.388)**
DEBT_SEC-FCO							**-0.306***	**-0.311** **	**-0.293** **	**-0.106**	**-0.0206**	**-0.153**
							(0.176)	**(0.140)**	**(0.116)**	**(0.136)**	**(0.135)**	**(0.106)**
DEBT_SEC-NFC							**-0.263**	**-0.285**	**-0.121**	**-0.246**	**-0.277**	**-0.151**
							(0.192)	**(0.204)**	**(0.0961)**	**(0.182)**	**(0.193)**	**(0.111)**
INC	-10.60**	-14.50***	-15.23***	-16.65**	-21.60**	-17.13***	-9.686**	-13.49***	-13.61***	-15.02***	-19.56***	-15.38***
	(4.924)	(4.915)	(4.697)	(7.493)	(9.196)	(6.055)	(4.158)	(3.914)	(3.296)	(5.494)	(6.274)	(4.390)
PC	**0.169**	**0.228**	**0.612*** **	**-0.00659**	**0.122**	**0.577** **	**0.241**	**0.324**	**0.666*** **	**0.0835**	**0.203**	**0.621** **
	(0.315)	**(0.331)**	**(0.223)**	**(0.362)**	**(0.445)**	**(0.276)**	**(0.278)**	**(0.289)**	**(0.209)**	**(0.304)**	**(0.369)**	**(0.250)**
Constant	0.654***	0.580***	0.466**	0.428	0.304	0.391	0.795***	0.663***	0.590***	0.585***	0.438*	0.528***
	(0.183)	(0.197)	(0.207)	(0.271)	(0.366)	(0.249)	(0.197)	(0.158)	(0.166)	(0.196)	(0.230)	(0.189)
Observations	267	195	150	267	195	150	260	188	143	260	188	143
R-squared	0.783	0.814	0.896	0.814	0.827	0.902	0.789	0.811	0.896	0.819	0.836	0.906
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B6. Robustness checks: reducing the number of variables (keeping the most significant principal component (PC) of potentially insignificant controls).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
DEBT_SEC / CREDIT	**-0.204***	**-0.436*****	**-0.390*****	**-0.212****	**-0.305*****	**-0.284*****						
	(0.110)	**(0.131)**	**(0.133)**	**(0.0957)**	**(0.105)**	**(0.102)**						
STOCKS / CREDIT	**0.0874****	**0.0810****	**0.0529****	**0.0649***	**0.0467**	**0.0307***	**0.0796****	**0.0775*****	**0.0296**	**0.0708****	**0.0611****	**0.0274**
	(0.0402)	**(0.0344)**	**(0.0208)**	**(0.0334)**	**(0.0308)**	**(0.0162)**	**(0.0345)**	**(0.0295)**	**(0.0235)**	**(0.0316)**	**(0.0285)**	**(0.0212)**
CREDIT				**9.562**	**13.42***	**8.101***				**13.90****	**18.65*****	**14.59*****
				(5.979)	**(8.098)**	**(4.259)**				**(5.568)**	**(7.237)**	**(4.981)**
CREDIT2				**-1.340***	**-1.819***	**-1.097****				**-1.792*****	**-2.416*****	**-1.786*****
				(0.729)	**(0.995)**	**(0.493)**				**(0.695)**	**(0.921)**	**(0.576)**
CREDIT-HSH / CREDIT-NFC							**-0.930****	**-0.568**	**-1.055****	**-0.802***	**-0.300**	**-1.076****
							(0.444)	**(0.537)**	**(0.524)**	**(0.457)**	**(0.630)**	**(0.419)**
DEBT_SEC-FCO / DEBT_SEC-NFC							**0.123**	**0.129**	**-0.116**	**0.159**	**0.189**	**0.00620**
							(0.150)	(0.144)	(0.0923)	(0.143)	(0.142)	(0.0579)
INC	-15.83***	-18.64***	-10.11*	-15.29**	-20.25**	-9.414	-14.68***	-17.33***	-8.640	-18.10***	-22.27***	-10.65*
	(5.022)	(5.316)	(5.967)	(7.169)	(7.949)	(5.880)	(4.927)	(5.526)	(5.256)	(6.604)	(7.466)	(5.440)
EDU	-0.212	-0.316	0.00444	-0.178	-0.350	0.0381	-0.331	-0.289	-0.0887	-0.309	-0.387	-0.137
	(0.464)	(0.524)	(0.644)	(0.455)	(0.541)	(0.668)	(0.429)	(0.540)	(0.540)	(0.434)	(0.547)	(0.579)
GOV	-0.368	-1.813	3.514*	-0.0744	-1.700	3.690**	-0.0708	-1.218	3.515**	-0.652	-1.796	3.083**
	(1.686)	(2.965)	(1.946)	(2.044)	(3.192)	(1.812)	(1.557)	(2.652)	(1.386)	(1.846)	(2.593)	(1.226)
OPN	0.0984	0.747	3.146***	-0.283	0.182	2.707***	0.121	0.936	2.997***	-0.209	0.186	2.367***
	(0.689)	(1.012)	(0.917)	(0.658)	(1.055)	(0.844)	(0.612)	(0.940)	(0.622)	(0.491)	(0.868)	(0.610)
INF	-2.909*	-0.614	-4.416	-2.964	-0.703	-5.525*	-2.907	-0.178	-4.318	-2.749	-0.0219	-4.273
	(1.718)	(2.352)	(2.989)	(1.915)	(2.884)	(3.347)	(2.083)	(2.907)	(3.191)	(2.542)	(4.010)	(3.092)
Constant	0.354**	0.566***	0.692**	0.366**	0.479*	0.652**	0.383**	0.524**	0.696**	0.304*	0.355	0.609**
	(0.156)	(0.217)	(0.314)	(0.155)	(0.256)	(0.287)	(0.161)	(0.216)	(0.319)	(0.170)	(0.267)	(0.284)
Observations	267	195	150	267	195	150	260	188	143	260	188	143
R-squared	0.797	0.809	0.886	0.813	0.831	0.894	0.796	0.802	0.885	0.819	0.830	0.900
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B7. Robustness checks: the usage of ratios to reduce the number of parameters under estimation. The respective ratios are represented using the notation A / B.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.509****	**-1.453****	**-1.387****	**9.168***	**16.95****	**8.108***				**18.22*****	**25.77*****	**13.77****
	(0.635)	**(0.656)**	**(0.609)**	**(4.975)**	**(7.313)**	**(4.366)**				**(4.924)**	**(5.822)**	**(5.684)**
DEBT_SEC	**-0.621*****	**-0.630*****	**-0.377*****	**-0.490****	**-0.425*****	**-0.219****						
	(0.224)	**(0.183)**	**(0.117)**	**(0.211)**	**(0.132)**	**(0.103)**						
STOCKS	**-0.0343**	**-0.0159**	**0.0731**	**-0.0213**	**-0.00968**	**0.0716**	**-0.00574**	**-0.00385**	**0.0365**	**0.0133**	**-0.00176**	**0.0421**
	(0.117)	**(0.105)**	**(0.0806)**	**(0.0942)**	**(0.0819)**	**(0.0748)**	**(0.103)**	**(0.0941)**	**(0.0961)**	**(0.0781)**	**(0.0748)**	**(0.0833)**
CREDIT2				**-1.256****	**-2.176****	**-1.098****				**-2.132*****	**-3.019*****	**-1.611****
				(0.603)	**(0.901)**	**(0.490)**				**(0.574)**	**(0.675)**	**(0.667)**
CREDIT-HSH							**-2.506*****	**-2.180*****	**-2.189*****	**-2.712*****	**-2.785*****	**-2.350*****
							(0.770)	**(0.637)**	**(0.704)**	**(0.723)**	**(0.652)**	**(0.816)**
CREDIT-NFC							**1.877****	**1.520**	**0.858**	**1.453****	**0.914**	**0.911**
							(0.850)	**(0.930)**	**(1.063)**	**(0.668)**	**(0.593)**	**(0.803)**
DEBT_SEC-FCO							**-0.284**	**-0.205**	**-0.228**	**0.0125**	**0.268**	**0.0321**
							(0.258)	**(0.251)**	**(0.190)**	**(0.192)**	**(0.195)**	**(0.193)**
DEBT_SEC-NFC							**-0.661****	**-0.680****	**-0.126**	**-0.660****	**-0.714****	**-0.211**
							(0.328)	**(0.329)**	**(0.193)**	**(0.300)**	**(0.288)**	**(0.191)**
INC	-10.14**	-13.91***	-10.16**	-14.92**	-21.61***	-11.83***	-7.656*	-10.90***	-11.94***	-14.67***	-19.73***	-13.99***
	(4.705)	(3.743)	(4.074)	(6.224)	(5.798)	(4.561)	(4.211)	(2.898)	(4.382)	(4.667)	(4.773)	(4.765)
EDU	-0.0444	0.0185	0.0684	-0.0428	-0.222	-0.0328	-0.139	0.0506	0.0676	-0.133	-0.298	-0.141
	(0.437)	(0.552)	(0.661)	(0.472)	(0.596)	(0.667)	(0.426)	(0.541)	(0.671)	(0.463)	(0.635)	(0.673)
GOV	0.177	-0.777	3.555*	-0.686	-2.285	3.048*	0.601	-0.514	3.224**	-0.343	-1.090	2.865**
	(1.556)	(2.409)	(1.824)	(1.849)	(2.701)	(1.722)	(1.290)	(1.959)	(1.479)	(1.326)	(1.855)	(1.455)
OPN	-0.176	0.950	2.846***	-0.219	0.367	2.601***	-0.270	1.089	2.669***	-0.364	0.350	2.194***
	(0.913)	(1.258)	(0.914)	(0.763)	(0.968)	(0.855)	(0.840)	(1.295)	(0.761)	(0.660)	(0.993)	(0.791)
INF	-4.779**	-3.607**	-5.695*	-4.939***	-4.259**	-4.845	-5.493***	-2.479	-5.995**	-5.438***	-2.163	-4.330
	(1.869)	(1.647)	(3.382)	(1.536)	(1.752)	(3.466)	(1.847)	(1.727)	(2.896)	(1.662)	(2.238)	(3.253)
ΔCREDIT	**0.786**	**1.239***	**0.857****	**0.670**	**0.590**	**0.673**						
	(0.606)	**(0.677)**	**(0.415)**	**(0.540)**	**(0.514)**	**(0.410)**						
ΔDEBT_SEC	**0.0858**	**0.274**	**0.118**	**0.0830**	**0.200**	**0.00191**						
	(0.138)	**(0.178)**	**(0.162)**	**(0.131)**	**(0.134)**	**(0.162)**						
ΔSTOCKS	**0.0409**	**0.0149**	**-0.0393**	**0.0347**	**0.0175**	**-0.0348**	**0.0325**	**0.0258**	**-0.0229**	**0.0265**	**0.0294**	**-0.0235**
	(0.0698)	**(0.0540)**	**(0.0544)**	**(0.0569)**	**(0.0421)**	**(0.0511)**	**(0.0602)**	**(0.0512)**	**(0.0607)**	**(0.0439)**	**(0.0374)**	**(0.0523)**
ΔCREDIT-HSH							**1.399**	**2.276*****	**2.418****	**1.278***	**1.468****	**2.122***
							(0.883)	**(0.847)**	**(1.084)**	**(0.730)**	**(0.641)**	**(1.164)**
ΔCREDIT-NFC							**-0.366**	**-0.492**	**-0.299**	**-0.304**	**-0.391**	**-0.242**
							(0.574)	**(0.605)**	**(0.695)**	**(0.400)**	**(0.348)**	**(0.576)**
ΔDEBT_SEC-FCO							**0.0915**	**-0.0203**	**-0.00479**	**-0.000550**	**-0.224***	**-0.173**
							(0.185)	**(0.205)**	**(0.201)**	**(0.142)**	**(0.123)**	**(0.171)**
ΔDEBT_SEC-NFC							**0.215**	**0.220**	**-0.0377**	**0.237**	**0.258**	**0.0353**
							(0.212)	**(0.221)**	**(0.124)**	**(0.196)**	**(0.195)**	**(0.125)**
Constant	0.544***	0.723***	0.659***	0.411***	0.418**	0.617**	0.614***	0.879***	0.562***	0.412***	0.495**	0.499**
	(0.182)	(0.256)	(0.247)	(0.133)	(0.200)	(0.246)	(0.195)	(0.261)	(0.210)	(0.105)	(0.227)	(0.211)
Observations	251	182	143	251	182	143	244	175	136	244	175	136
R-squared	0.808	0.837	0.897	0.833	0.859	0.904	0.813	0.847	0.908	0.857	0.887	0.916
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Financial series are bold faced;. Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1

Table B8. Robustness checks: additional modelling of dynamics with changes of explanatory variables (Δ).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-0.987***	**-0.553**	**-0.646**	**-2.287**	**1.916**	**6.538****				**3.328**	**7.063**	**11.16*****
	(0.506)	**(0.389)**	**(0.547)**	**(6.184)**	**(5.707)**	**(3.173)**				**(6.987)**	**(7.907)**	**(3.874)**
DEBT_SEC	**-0.355*****	**-0.384****	**-0.321*****	**-0.362*****	**-0.357****	**-0.244*****						
	(0.133)	**(0.161)**	**(0.0806)**	**(0.138)**	**(0.162)**	**(0.0741)**						
STOCKS	**0.0540**	**0.0608****	**0.0432****	**0.0536**	**0.0610****	**0.0424****	**0.0504**	**0.0729***	**0.0482****	**0.0510**	**0.0728****	**0.0488****
	(0.0407)	**(0.0307)**	**(0.0194)**	**(0.0402)**	**(0.0299)**	**(0.0193)**	**(0.0429)**	**(0.0374)**	**(0.0220)**	**(0.0423)**	**(0.0363)**	**(0.0238)**
CREDIT2				**0.155**	**-0.298**	**-0.834****				**-0.352**	**-0.822**	**-1.304*****
				(0.698)	**(0.671)**	**(0.374)**				**(0.802)**	**(0.891)**	**(0.450)**
CREDIT-HSH							**-2.072*****	**-1.141*****	**-1.051**	**-2.299*****	**-1.383****	**-1.195***
							(0.720)	**(0.333)**	**(0.650)**	**(0.830)**	**(0.662)**	**(0.675)**
CREDIT-NFC							**1.817*****	**1.168****	**0.902****	**1.672*****	**0.992*****	**1.029*****
							(0.563)	**(0.501)**	**(0.401)**	**(0.514)**	**(0.380)**	**(0.359)**
DEBT_SEC-FCO							**-0.167**	**-0.157**	**-0.269*****	**-0.132**	**-0.0720**	**-0.160****
							(0.177)	**(0.131)**	**(0.0937)**	**(0.182)**	**(0.133)**	**(0.0808)**
DEBT_SEC-NFC							**-0.160**	**-0.185**	**-0.106**	**-0.160**	**-0.188**	**-0.128**
							(0.135)	(0.142)	(0.103)	(0.132)	(0.140)	(0.107)
INC	2.535	-2.799	-1.771	3.423	-4.068	-3.548	4.227	-0.807	-1.930	2.410	-3.867	-4.627
	(4.718)	(2.129)	(3.670)	(7.054)	(4.248)	(4.789)	(4.630)	(1.692)	(3.928)	(7.174)	(4.304)	(4.977)
EDU	0.114	0.103	0.237	0.123	0.0669	0.174	-0.127	0.0546	0.112	-0.122	-0.00579	0.0127
	(0.508)	(0.585)	(0.710)	(0.502)	(0.578)	(0.708)	(0.472)	(0.542)	(0.603)	(0.467)	(0.546)	(0.607)
GOV	3.588**	4.136***	5.774***	3.782**	3.831**	5.281***	3.711***	4.671***	5.510***	3.448**	4.165***	4.818***
	(1.457)	(1.534)	(1.702)	(1.899)	(1.823)	(1.682)	(1.378)	(1.369)	(1.377)	(1.695)	(1.522)	(1.348)
OPN	-0.747	-0.0220	1.308	-0.745	-0.0953	1.125	-0.718	0.00329	0.909	-0.710	-0.159	0.613
	(0.809)	(0.845)	(1.245)	(0.826)	(0.710)	(1.152)	(0.711)	(0.984)	(1.243)	(0.680)	(0.836)	(1.145)
INF	-2.028	0.785	-4.560	-2.048	0.838	-3.884	-1.915	1.100	-3.481	-1.776	1.429	-2.668
	(2.254)	(2.111)	(4.366)	(2.300)	(2.145)	(4.379)	(2.027)	(2.290)	(4.042)	(1.993)	(2.404)	(4.178)
Lagged LHS	**0.499*****	**0.600*****	**0.386**	**0.507*****	**0.593*****	**0.382**	**0.565*****	**0.648*****	**0.425**	**0.553*****	**0.624*****	**0.405**
	(0.121)	**(0.108)**	**(0.248)**	**(0.126)**	**(0.115)**	**(0.252)**	**(0.0930)**	**(0.105)**	**(0.277)**	**(0.111)**	**(0.119)**	**(0.279)**
Constant	0.741***	0.854***	0.688**	0.759***	0.817***	0.648**	0.861***	0.895***	0.700***	0.824***	0.806***	0.632***
	(0.227)	(0.236)	(0.272)	(0.225)	(0.193)	(0.269)	(0.220)	(0.220)	(0.263)	(0.216)	(0.186)	(0.245)
Observations	267	195	150	267	195	150	260	188	143	260	188	143
R-squared	0.763	0.836	0.880	0.755	0.843	0.890	0.762	0.827	0.884	0.778	0.844	0.899
Number of countries	21	15	9	21	15	9	21	15	9	21	15	9

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B9. Robustness checks: additional modelling of dynamics with the lagged left hand side (LHS) variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Related questions	Q1-Q2	Q1-Q2	Q1-Q2	Q3	Q3	Q3	Q4-Q5	Q4-Q5	Q4-Q5	Q6	Q6	Q6
VARIABLES \ Group of cntrs.:	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999	OECD	EU	EMU1999
CREDIT	**-1.098***	**-1.210***	**-0.921**	**6.359**	**9.048***	**8.016**				**8.136**	**13.10****	**13.70****
	(0.635)	**(0.678)**	**(0.616)**	**(5.571)**	**(4.875)**	**(5.368)**				**(5.459)**	**(5.135)**	**(6.789)**
DEBT_SEC	**-0.313**	**-0.296****	**-0.448*****	**-0.242**	**-0.191***	**-0.327*****						
	(0.200)	**(0.135)**	**(0.0798)**	**(0.175)**	**(0.114)**	**(0.0992)**						
STOCKS	**0.0330**	**0.0144**	**0.0571****	**0.0385**	**0.0188**	**0.0530****	**0.0293**	**0.00475**	**0.0444**	**0.0378**	**0.0129**	**0.0403**
	(0.0553)	**(0.0518)**	**(0.0290)**	**(0.0502)**	**(0.0454)**	**(0.0249)**	**(0.0486)**	**(0.0568)**	**(0.0346)**	**(0.0415)**	**(0.0450)**	**(0.0253)**
CREDIT2				**-0.865**	**-1.195****	**-1.046**				**-0.972**	**-1.533****	**-1.591****
				(0.671)	**(0.586)**	**(0.640)**				**(0.673)**	**(0.616)**	**(0.809)**
CREDIT-HSH							**-1.922*****	**-2.003****	**-1.743****	**-1.754****	**-2.112****	**-2.088****
							(0.678)	**(0.824)**	**(0.882)**	**(0.841)**	**(0.837)**	**(0.953)**
CREDIT-NFC							**0.620*****	**0.459***	**0.265**	**0.713****	**0.661****	**0.597***
							(0.237)	**(0.268)**	**(0.337)**	**(0.289)**	**(0.287)**	**(0.340)**
DEBT_SEC-FCO							**-0.312**	**-0.256***	**-0.247****	**-0.244**	**-0.126**	**-0.0903**
							(0.201)	**(0.145)**	**(0.0995)**	**(0.154)**	**(0.0948)**	**(0.0661)**
DEBT_SEC-NFC							**0.0540**	**0.0111**	**-0.0550**	**0.0424**	**-0.0209**	**-0.142**
							(0.108)	**(0.115)**	**(0.177)**	**(0.109)**	**(0.108)**	**(0.208)**
INC	-5.714	-10.82**	-8.970*	-7.165	-13.00**	-10.33*	-8.146	-11.82***	-7.965*	-9.440	-14.37***	-9.935**
	(6.780)	(4.479)	(4.863)	(7.095)	(5.489)	(5.568)	(5.032)	(4.079)	(4.253)	(5.790)	(4.879)	(4.670)
EDU	0.0164	-0.0562	0.0373	-0.00823	-0.112	-0.0234	-0.149	-0.220	-0.0101	-0.174	-0.297	-0.119
	(0.397)	(0.528)	(0.569)	(0.405)	(0.543)	(0.572)	(0.340)	(0.507)	(0.535)	(0.348)	(0.514)	(0.538)
GOV	2.257**	2.404**	3.476**	1.937*	1.892	3.126**	2.352**	2.532*	4.127***	1.949*	1.835	3.485**
	(1.011)	(1.148)	(1.379)	(1.058)	(1.451)	(1.491)	(1.009)	(1.467)	(1.565)	(1.061)	(1.611)	(1.441)
OPN	-0.723	0.831	2.409***	-0.720	0.712	2.268***	-0.660	0.609	2.372***	-0.684	0.413	2.004***
	(0.848)	(0.979)	(0.507)	(0.817)	(0.927)	(0.574)	(0.667)	(1.130)	(0.465)	(0.662)	(1.019)	(0.455)
INF	-4.722**	-2.841	-4.904***	-4.851**	-2.296	-4.003*	-4.670**	-2.128	-4.591**	-4.906**	-1.300	-3.269
	(2.351)	(2.709)	(1.875)	(2.236)	(2.625)	(2.254)	(2.133)	(2.263)	(1.850)	(2.032)	(2.009)	(2.088)
D_HOUS	**-1.085*****	**-0.865*****	**-0.517*****	**-1.039*****	**-0.779*****	**-0.490*****	**-0.977*****	**-0.753*****	**-0.527*****	**-0.939*****	**-0.638*****	**-0.471*****
	(0.331)	**(0.289)**	**(0.142)**	**(0.322)**	**(0.288)**	**(0.144)**	**(0.261)**	**(0.209)**	**(0.143)**	**(0.269)**	**(0.206)**	**(0.123)**
STOCKS * D_HOUS	**0.213*****	**0.182****	**0.0769*****	**0.204*****	**0.164****	**0.0744*****	**0.190*****	**0.147*****	**0.0729****	**0.183*****	**0.122****	**0.0649****
	(0.0714)	**(0.0709)**	**(0.0240)**	**(0.0690)**	**(0.0703)**	**(0.0236)**	**(0.0558)**	**(0.0478)**	**(0.0323)**	**(0.0568)**	**(0.0476)**	**(0.0272)**
Constant	0.276	0.393	0.608**	0.251	0.343	0.583**	0.264	0.399	0.657**	0.240*	0.353	0.636***
	(0.199)	(0.256)	(0.280)	(0.175)	(0.226)	(0.266)	(0.169)	(0.279)	(0.273)	(0.140)	(0.236)	(0.232)
Observations	211	142	118	211	142	118	210	141	117	210	141	117
R-squared	0.816	0.871	0.895	0.829	0.883	0.901	0.842	0.882	0.895	0.851	0.895	0.906
Number of countries	15	10	8	15	10	8	15	10	8	15	10	8

Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1;
Financial series are bold faced;
Dependent variable: average GDP per capita growth rate over various periods ahead. The abbreviations of variables are explained in Table 1.

Table B10. Robustness checks: including dummy series for acceleration of housing prices (D_HOUS).

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