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**Article**

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# Finance and growth— shortly reconsidered

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**Summary:** In the 1980s and 90s of the last century, one economic paradigm gained power: financial development was considered as a major determinant of economic growth and productivity (Levine, Loayza and Beck 2000). Typically, paradigms are based on assumptions. Reality made a reconsideration of the former results necessary. With the international crisis 2007 it became clear that financial development and credit booms might not only support growth but jeopardize the whole economic system. While there exists a huge literature on the finance growth nexus before the international financial crisis analyses on post-crisis developments are rare. In this empirical paper, we focus on these post-crisis developments and find that the finance-growth nexus has widely disappeared after crisis. This might go back to a deeper understanding of systemic and financial risk.

**Zusammenfassung:** In den 1980ern und 90ern entwickelte sich ein neues ökonomisches Paradigma: Finanzmärkte – so wurde angenommen – haben einen erheblichen Einfluss auf das Wirtschaftswachstum und die Produktivitätsentwicklung (Levine, Loayza und Beck 2000). Paradigmen kommen in der Regel auf Annahmen zurück. Solche Annahmen bieten eine gute Voraussetzung für Zirkelschlüsse. Mit der internationalen Finanzkrise 2007 wurde klar, dass der Finanzsektor nicht nur einen Einfluss auf das Wirtschaftswachstum hat, sondern im schlimmsten Fall das gesamte System gefährden kann. Während es eine umfangreiche Literatur zum Zusammenhang zwischen Finanzsystem und Wachstum vor der internationalen Finanzkrise gibt, ist dieser Untersuchungszeit nach der Krise verkümmert. In diesem Paper steht die Nachkrisenzeit im Mittelpunkt. Dabei wird klar, dass sich der vormalig vorhandene Zusammenhang inzwischen kaum noch finden lässt. Dies mag auch darauf zurückgehen, dass es inzwischen ein besseres Wissen um den Zusammenhang zwischen Größe des Finanzsystems und Risiken gibt.

→ JEL classification: O16, O40

→ Keywords: Growth, financial development, credit booms

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## I Introduction

The interdependence between economic growth and finance is an interesting field of research—and far from being clear. The famous female economist Joan Robinson argued that finance follows the real sector development (Robinson 1952: 56). Other economists considered the development of and in the financial sector to be crucial for the economic outcome. This point of view emerged first in the context of development economics (McKinnon 1973). However, in the 80ies and 90ies a strand of literature arose considering the finance and growth nexus as extremely relevant not only for developing countries but also for the developed world (King and Levine 1993a, 1993b). Thus, finance and money were considered as to be rare. It was assumed that financial sector decides about the allocation of financial resources and is very productive. Nevertheless, this specific “financial productivity” could not be measured directly. However, it was argued that indirect effects of the performance of the financial sector on growth result at least partly from its selection of real sector innovations.

Most of the studies in the 80ies and 90ies offered a lot of empirics. Many of these empirical studies showed the predicted results. In simple words, the differences in performance of the domestic financial sector can be made responsible for differences in growth rates even among industrialized countries (Levine, Loayza and Beck 2000). In addition, a simple rule was developed: the larger the financial system, the better the growth perspectives are—this was a widely accepted view. Rajan and Zingales explained: “A number of studies have identified a positive correlation between the level of development of a country’s financial sector and the rate of growth of its per capita income. As has been noted elsewhere, the observed correlation does not necessarily imply a causal relationship. This paper examines whether financial development facilitates economic growth by scrutinizing one rationale for such a relationship; that financial development reduces the costs of external finance to firms” (Rajan and Zingales 1998). Other authors argued that lower financial transaction costs in the financial sector lead to higher growth rates (Pagano 1993). These academic findings had a far reaching impact on existing financial systems. Many countries—among them Germany—started to liberalize their financial system. Newly developed, sophisticated and complex financial products entered the international markets. The world was in a financial rush.

With the international financial crash 2007/2008 this view changed (Beck 2012). Today, the finance-growth nexus is seen much more critically. Obviously real world developments questioned the above mentioned academic findings. With the international financial crisis, the society as well as policy advisers claimed for stronger regulations—the time for financial liberalization is over. Why did the studies not focus on the potential harm of financial sector development? This is an open question for those who focus on history of academic thoughts.

Here, we are in the empirics. Reality made a reconsideration of the former results necessary. Using a panel of 50 countries over 30 years Cecchetti and Kharroubi (2012) showed in their paper that “*as is the case with many things in life, with finance you can have too much of a good thing*” (Cecchetti and Kharroubi 2012: 1). According to them, in a developed country more credit and banking result in lower real sector growth rates. Later, using a smaller country set these authors showed that financial development crowd out real sector growth (Cecchetti and Kharroubi 2015). According to these authors unlimited financial sector growth is harmful especially for RandD intensive economies—in times of crisis as well as in tranquil times.

Here, we take a different approach. We focus on the linkages between finance and growth *after* the harsh international crisis 2007. The basic idea behind this is that the finance and growth linkages changed after the destabilization of the international financial system. The post-crisis changes in financial regulation lead to higher transaction costs for financial intermediaries. Does the formerly reported finance-growth nexus still exist? In other words, we want to analyze whether the formerly reported finance and growth linkages were distorted by the endogenous shock. The data are taken from The Worldbank (The Worldbank 2019). The paper is organized as follows: In the next section, we deliver some descriptive statistics and compare them to the results of former studies. In section three, we explain the general results of the simple cross-section regressions. Section four concludes.

## 2 Data description

The Worldbank offers data for a broad set of countries. Economic growth rates as well as many other indicators are included. For this paper we take data from 151 countries (Table 1) and consider the years 2008–2017. All data are taken as averages, thus we argue on the base of a cross-country approach.

The countries under consideration differ widely in terms of economic growth. The lowest average annual economic growth rate for the years 2008–2017 was reported for Ukraine followed by Central Africa. The highest average annual growth rate was found in Qatar followed by China. The numbers clearly show that the economic slowdown after the international financial crisis hit developed countries more than emerging economies. The average annual growth rate in the country set under consideration for the years 2008–2017 was 3 percent (Table 2). This is a remarkable result. In other words, the world recovered soon from the international financial crisis. Many countries enjoyed an average growth rate above 5 percent, most of them are so-called emerging economies. The reported standard deviation is comparably high. Thus this rich cross-country variation gives a good base for analyzing the link between finance and growth.

Turning now to the financial sector development it becomes clear that the countries under consideration differ widely. Claims on central governments in percent of GDP (GOVERN)<sup>1</sup> are on average very low or even negative. This result might be surprising. Nevertheless, the highest figure is reported for Japan where this ratio reaches more 120 percent. Domestic credit to the private sector in percent of GDP (PRIVATE) shows a high degree of variation too. The highest value is found for Japan, followed by Cyprus and the US. Foreign direct investment (FDI) as percent of GDP differs widely among the countries. The country with the highest rate of FDI is Lithuania with an average of about 52 percent of GDP. Another indicator for economic growth is Gross capital formation in percent of GDP (CAPITAL) which reflexes investment activities. Here we find emerging economies at the top—some of them reached more than 40 percent. Taking the effects of the overall monetary policy into account the indicator MONEY (broad money in percent of GDP) provides us some insights to the general financial conditions of a given economy. However, the number of observation here is lower due to the fact that The Worldbank does not report single figures for the

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1 Claims on central government take loans to central government institutions net of deposits (The Worldbank 2019).

Table 1

**Country set**

Afghanistan	Bolivia	Costa Rica	Georgia	Jamaica	Mongolia	Poland	Sudan
Albania	Bosnia and Herzegovina	Cote d'Ivoire	Germany	Japan	Montenegro	Portugal	Suriname
Algeria	Botswana	Croatia	Ghana	Jordan	Mozambique	Qatar	Sweden
Antigua and Barbuda	Brazil	Cyprus	Guatemala	Kazakhstan	Myanmar	Romania	Switzerland
Argentina	Brunei Darussalam	Czech Republic	Guinea	Kenya	Namibia	Russian Federation	Tajikistan
Armenia	Bulgaria	Denmark	Guinea-Bissau	Korea, Republic	Nepal	Samoa	Tanzania
Aruba	Burkina Faso	Dominica	Guyana	Kuwait	Netherlands	Saudi Arabia	Thailand
Australia	Burundi	Dominican Republic	Haiti	Kyrgyz Republic	New Zealand	Senegal	Togo
Austria	Cabo Verde	Ecuador	Honduras	Latvia	Nicaragua	Serbia	Trinidad and Tobago
Azerbaijan	Cambodia	Egypt, Arab Republic	Hong Kong SAR, China	Lebanon	Niger	Seychelles	Turkey
Bahamas, The	Cameroon	El Salvador	Hungary	Liberia	Nigeria	Sierra Leone	Uganda
Bahrain	Central African Republic	Equatorial Guinea	Iceland	Lithuania	North Macedonia	Singapore	Ukraine
Bangladesh	Chad	Estonia	India	Luxembourg	Norway	Slovak Republic	United Arab Emirates
Barbados	Chile	Eswatini	Indonesia	Malawi	Oman	Solomon Islands	United Kingdom
Belarus	China	Fiji	Iran, Islamic Republic	Mali	Pakistan	South Africa	United States
Belgium	Colombia	Finland	Iraq	Malta	Papua New Guinea	Spain	Uruguay
Belize	Comoros	France	Ireland	Mauritania	Paraguay	St. Kitts and Nevis	Vanuatu
Benin	Congo, Dem. Republic	Gabon	Israel	Mauritius	Peru	St. Lucia	Vietnam
Bhutan	Congo, Republic	Gambia, The	Italy	Moldova	Philippines	St. Vincent and the Grenadines	

members of the Eurozone. However, even taking the shortcomings of the data set into account the huge variations in these indications call for a deeper analysis.

Table 2

**Summary statistics**

	GDP Growth	Claims on central government	Domestic credit to private sector	FDI	Gross capital formation	Domestic credit to private sector by banks	Broad Money
	In %	In % of GDP					
Mean	3,1	7,2	73,6	5,4	25,0	68,8	62,5
Median	3,2	4,8	55,1	3,2	23,8	54,2	53,2
Maximum	8,3	121,1	327,3	58,0	54,4	327,3	340,6
Minimum	-1,4	-39,2	0,3	-0,9	9,6	-0,4	11,2
Standarddeviation	2,1	16,5	61,0	7,8	7,0	58,0	45,4

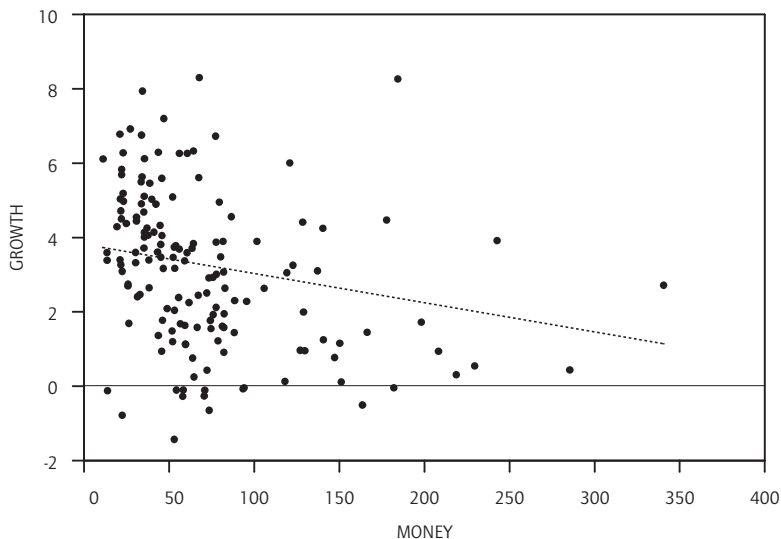
N = 151.

Source: Own calculations; Database The Worldbank.

In a first step, we take the general linkage between GROWTH and MONEY. Using a descriptive approach, we clearly see that for our data set the economic growth nowadays is negatively linked to monetary development. Thus, the simple assumption that higher real sector growth rates go in line with a larger money supply cannot be found (Figure 1). Furthermore, here we get a negative

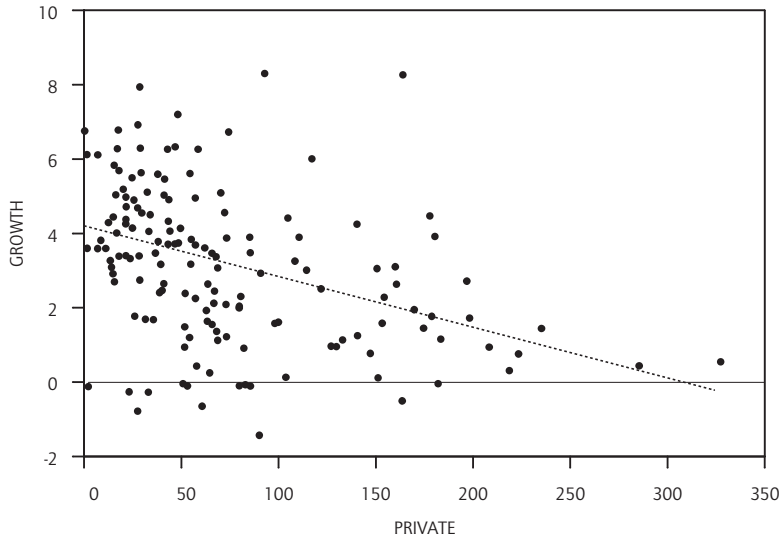
Figure 1

**Monetization and growth—a negative linkage, 2008–2017**



Source: Own calculations; Database The Worldbank.

Figure 2

**Credit and growth—a negative linkage, 2008–2017**

Source: Own calculations; Database The Worldbank.

slope which could be interpreted as a hint for changes in the finance-money-growth nexus after the international financial crisis.

Now we turn to influence of selected financial indicators. In the next we focus on the nexus between claims on private sector in percent of GDP (PRIVATE) and GROWTH. At a glance we see that the positive finance-growth nexus which was reported for many years and different country sets seems to be distorted. After the international financial crisis this nexus seems to get a NEGATIVE sign. The slope of the trend curve in Figure 2 is clearly negative.

### 3 First results

To analyze the given data set we take a simple cross-country regression approach. In doing so, can address the question whether long-term economic GROWTH is linked to financial development. In a first step we check for the influence of the variables GOVERN and PRIVATE on GROWTH. Table 3 gives the results of the cross-section regression.

The simple regression shows that the variable PRIVATE is negatively linked to long-run economic growth. The variable GOVERN has no statistical influence. In a second step, to check for the robustness of the results we add the variables FDI and check for the influence of capital formation on growth. Both variables turn out to be insignificant (Table 4).

Table 3

**Cross-section results I**

	Coefficients	Standard Deviation	t-Statistic	P-Value
C	4,124170093	0,246260023	16,747217210	5,54482E-36
Claims on Government	0,016067736	0,010891501	1,475254526	0,142268347
PRIVATE	-0,015362142	0,002939741	-5,2256786	5,80005E-07

N = 151.

Source: Own calculations; Database The Worldbank.

Table 4

**Cross-section results II**

	Coefficients	Standard Deviation	t-Statistic	P-Value
C	4,562280726	0,630376026	7,237395681	2,40317E-11
Claims on Government	0,016224427	0,010947697	1,481994551	0,140496895
PRIVATE	-0,015495568	0,002960266	-5,234519100	5,6541E-07
FDI	-0,011153675	0,020257771	-0,550587479	0,582757955
Gross capital formation	-0,014748242	0,022507863	-0,655248456	0,513338899

N = 151.

Source: Own calculations; Database The Worldbank.

The main message of the analysis, that after the international financial crisis credits to the private sector and economic growth still seem to be linked—however in a negative way. Higher credits to the private sector go in line with slightly lower growth rates. Why? This we cannot infer from the data. However, it can be assumed that the zero- and low-interest rate policy of many central banks has led to higher liquidity in the enterprise sector. Many enterprises which are realizing profits take them to finance investment. The extreme low interest rates itself did not necessarily lead to investment booms. The future is uncertain especially for investment. Thus, the times seem to be over during which it could be assumed that finance triggers growth easily.

## 4 Conclusion

In our very simple paper we could show that the finance-growth nexus changed after the international financial crisis. Nevertheless, there still seems to be finance-nexus. From descriptive statistics we get the impression that countries differ widely in terms of economic growth rates and the provision of credit to the private sector. From our results we got the impression that the nexus between finance and growth turned into negative. In more detail: The higher the ratio of credits to



the private sector over GDP is the lower is the growth rate or, in other words, the lower the growth rate the higher is the ratio of credits to the private sector.

This finding—even since it results from a very simple analysis—is very interesting. It gives first hints that the time of financial development is over. Development today might go back more to technological changes.

However, this paper gives us only a first and very roughly speaking results. Further research is necessary to address the open questions. Where does growth come from? Therefore, a broader set of data and indicators could be employed. In addition, more sophisticated regression techniques might lead to more sophisticated results.

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