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The Finance-Growth Nexus Revisited: From Origins to a Modern Theoretical Landscape

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Abstract The paper is a survey of theoretical and empirical approaches applied to analyze the impact of financial system on economic growth. The key issues of the modern theories of the finance-growth nexus are discussed and the theories are classified on the basis of the methodology they rely on. The paper extends earlier overviews of the topic, tracking and seeking to explain an inherent logic of this research program, its evolution, and some issues not covered in other surveys such as the finance-growth nexus in resource rich economies. The challenges this research program is facing are also identified.

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1. Introduction

Debates concerning the role of financial system in modern macroeconomics have intensified again. Scientific community and policymakers argue mostly about the role of finance in the Great Recession of 2008–2009. Meanwhile, the post-crisis recovery, though not robust enough and probably reversible, is under way. In this respect, the question of unleashing the potential of financial system to reach sustainable and high rates of economic growth inevitably comes to the fore. So, it seems timely to make a survey of the most important theories which shed light on the role of financial system in economic growth.

This analysis is also to mark the forthcoming 20th anniversary of King and Levine (1993) paper which laid the foundations of empirical assessment of the finance-growth nexus. Many new stylized facts have been discovered since its publication. However, quite many issues still remain unsettled. Consequently, the survey also seeks to depict the current landscape of this research program.

It extends earlier overviews of the topic, e.g. Levine (2005) and Ang (2008), tracking an endogenous logic of this research program, and some issues not covered in other surveys, such as finance-growth nexus in resource rich economies, and the challenges this research program is facing.

The remainder of the paper is organized as follows: Section 2 describes the origins of finance-growth nexus theory up to the early 1900s; Section 3 is dedicated to its development in the first half of the XX century; in Section 4 the determinants of the rising importance of this research program in the 1950-1980s are discussed; Section 5 presents the current state of affairs, while Section 6 identifies a number of the challenges this research program is to cope with. Section 7 concludes.

2. Origins of the theory

Walter Bagehot, a classical British economist and famous epigone of Adam Smith, was a founder of the theory under which the financial system is of great importance for economic growth. To a great extent, the appearance of Bagehot's work

in the early 1870s in Great Britain appears logical. At that time she was a great world power with the most developed financial system.

Certainly, economists of earlier times also emphasized the significance of some components of a financial system in a modern sense of this word for the stable functioning of the economy. First of all, they implied money circulation. In this context it's worth mentioning, for instance, the contribution of Richard Cantillon, David Hume, Henry Thornton. In addition, a heated discussion between adherents of the so-called Currency School (Lord Overstone, Richard Torrens) and Banking School (Thomas Tooke, John Stuart Mill) concerning the aspects of money circulation was under way in the 1830-1840s in Great Britain.

However, it was W. Bagehot who first gave a detailed and modern-like description of how processes in the financial sphere were linked with the situation in the real economy in his work "Lombard Street: A Description of the Money Market" (1873). In this book a lot of examples demonstrate how the events on the British money market affect capital spillovers within the country in search of most profitable ways of its application. W. Bagehot (1873, p. 11–12) writes:

"*Political economists say that capital sets towards the most profitable trades, and that it rapidly leaves the less profitable and non-paying trades. But in ordinary countries this is a slow process, and some persons who want to have ocular demonstration of abstract truths have been inclined to doubt it because they could not see it. In England, however, the process would be visible enough if you could only see the books of the bill brokers and the bankers. Their bill cases as a rule are full of the bills drawn in the most profitable trades, and cæteris paribus and in comparison empty of those drawn in the less profitable. If the iron trade ceases to be as profitable as usual, less iron is sold; the fewer the sales the fewer the bills; and in consequence the number of iron bills in Lombard street is diminished. On the other hand, if in consequence of a bad harvest the corn trade becomes on a sudden profitable, immediately 'corn bills' are created in great numbers, and if good are discounted in Lombard Street. Thus English capital runs as surely and instantly where it is most wanted, and where there is most to be made of it, as water runs to find its level…*"

Then, Bagehot passes to reasoning how loanable funds encourage economic activity. They are held in banks unclaimed until some sector suddenly becomes very profitable. Then, the loanable funds are allocated to its development, but other sectors associated with it technologically also start booming. As a result, they receive a vast volume of funding. Gradually, this process spills over the whole economy. Virtually, in this reasoning we can well see a verbal model of multiplicative processes in the economy.

The end of the XIX–the beginning of the XX centuries were marked by substantial structural shifts in the world economy, such as an intensive development of textile industry and railway construction. At that time the USA also began outperforming Great Britain in the global economic race and the industrial revolution in Russia, Germany, France was almost finalized.

Particularly in that period K. Marx and his followers were making a valuable analysis of interrelation of industrial growth, processes of monopolization in the real economy and development of financial intermediation. In this connection R. Hilferding deserves a special mention as well as the Marxists' analytical contribution to the debates on finance–real economy interaction as a whole. He showed that at the turn of XIX–XX centuries mutual interweaving of industrial and loanable (banking) capital had reached such depth that instead of two separate categories of capital it was reasonable to introduce the notion "finance capital" (Hilferding, 1981).

Thereby, finance capital was considered as a basis for establishing cartels and trusts with dominating role of banks or financial-industrial groups, as we would today call such conglomerates. Since many big infrastructure projects of that time were carried out by cartels and trusts, one can argue that finance capital formation really contributed to economic growth. Nevertheless, it is also necessary to take into account negative effects which are immanent to the appearance of financial-industrial groups as such, i.e., losses in public welfare connected with market monopolization.

3. First half of XX century: Joseph Schumpeter and Keynesians

Hilferding's analysis influenced other researchers. One of them was J. Schumpeter. That influence must have been a product of Schumpeter's interest in Marxist economics and personal friendship with Hilferding (Michaelides, Milios, 2005). Anyway, Schumpeter's monograph "The Theory of Economic Development" published in 1912 was recognized as the next stage of finance-growth nexus analysis. In the book he, as it is well known, proposed "new combinations" that drive economic development. J. Schumpeter identified five forms of these combinations: 1) production of new goods; 2) applying new ways of production and commercial utilizing of the existent goods; 3) new commodity market development; 4) new sources of raw material development and 5) sector structure alteration (Schumpeter, 1982).

There are two ways to make the new combinations work – by administrative power and by means of banking loans in case of a market economy. According to Schumpeter, the banker is an intermediary between those who strive for the realization of new combinations and owners of capital which is necessary to accomplish this aim. Thus, when a bank issues a loan, it authorizes the implementation of "the new combinations" in the name of the whole society. Banking activity is aimed at stimulating economic development. However, it implies the absence of centralized power that would exert exclusive control over social and economic processes.

At the same time it should be considered that according to Schumpeter bank loans are of a great importance just at the moment of creating "the new combinations", whereas in a steady state of the economy when firms have already had necessary means of production or are able to fill them up constantly due to the revenues from previous production, finance just plays an auxiliary role. In fact, the latter boils down to financial institutions' participation in monetary mediation of immutable, regularly repeated routines.

Later Schumpeter must have adhered more firmly to the view that financial intermediaries facilitate economic development. Analyzing the nature of cyclical processes in "Business Cycles: A Theoretical, Historical, and Statistical Analysis of Capitalist Process" (1939) he underlined that the interrelation between the supply of

bank loans and innovations had a fundamental meaning for the comprehension of "capitalist engine" running.

Nevertheless, Schumpeter's idea of the positive role of banking institutions in promoting economic growth hadn't become widespread because "The Theory of Economic Development" was published on the eve of the First World War and was translated from German into English and French in 1934 when the USA and leading European countries were undergoing a severe recession. In such conditions the financial determinant of economic growth could scarcely receive comprehensive and unbiased attention. The Great Depression began from the massive stock market collapse and paralysis of banking sector. Hopes for a prompt rebound of the financial system either in the USA or in the Western Europe countries didn't come true.

Processes in the real economy were considered to be first-priority and the development of financial sector was their consequence. Such idea found capacious expression in the words of J. Robinson who stated that "enterprise leads finance" (Robinson, 1952). These scientific views largely explain the absence of outstanding works dedicated to the finance-growth nexus in the 1930–1940s.

It is noteworthy that those years were characterized by an accelerated appearance of the neoclassical synthesis on the leading positions in economics and economic policy. In the theories of the first followers of J. Keynes the financial system plays an important but not the primary role. Therefore, it is quite clear that the common wisdom was that financial development was a by-product of economic growth rather than a force spurring it.

4. Re-emergence of the finance-growth nexus as a research program: the 1950-1980s

However, since 1955 when the article "Financial aspects of economic development" (Gurley, Shaw, 1955) was published in the *AER*, an interest of the scientific community in studying the influence of financial system on economic growth began re-emerging.

In this context it is worth mentioning A. Gerschenkron (1962), who in his seminal work “Economic Backwardness in Historical Perspective” focused attention (quite in line with the research programs of his predecessors) on the role of banking sector. According to his hypothesis, the level of economic development before the beginning of industrialization determines how significant the role of banking sector in this process should be. Thus, Great Britain, initially the most developed country, did not have to employ the full capacity of the banking system because of a comparatively low scale of required investments.

The situation was quite different in Germany and Russia where industrialization in the second half of the XIX century demanded huge capital investments that predetermined the key role of banking sector in economic development of these countries.

H. Patrick (1966) highlighted two ways of interweaving of financial development and economic growth, having named them “demand-following” and “supply-leading”. “Demand-following” is a situation when finance is required to attract external financing in terms of supporting economic growth. “Supply-leading” takes place when financial institutions accumulate savings and transform them into investments, which are necessary for the development of modern sectors of the economy. To the best of our knowledge, that was the first attempt to discuss the problem of causality in the finance–growth nexus literature.

R. Cameron (1967), a prominent economic historian, used the same approach to study the interaction between financial markets and economic growth. In addition he made a special emphasis on the quality and effectiveness of financial services. During his analysis Cameron pointed to key features of financial systems which have very much in common with modern classifications of its functions: 1) financial system redistributes monetary resources from risk-averse economic agents to entrepreneurs; 2) financial intermediaries spur investments reducing borrowing costs, which leads to decreasing interest rate spreads across geographical and sectoral dimensions as well as to a diminishing role of seasonality in investment fluctuations; 3) financial institutions

facilitate an effective allocation of the initial stock of capital in the period of industrialization and contribute to technological advances.

Besides, Cameron carried out a comparative analysis of the interaction between financial markets and economic development of England, Scotland, France, Belgium, Germany, Japan and Russia in the XIX century. He showed that in Scotland, Belgium, Japan and Russia the financial system played a crucial role in the rapid industrial growth but in Germany and France this link was less pronounced mainly due to incoherencies in the economic policy.

R. Goldsmith (1969) asserted that finance influences economic growth through an increase of effectiveness and build-up of the aggregate volume of investments. For the first time he calculated correlation coefficients between the ratio of financial assets to GNP and GNP per capita for 35 countries, revealing its positive sign and statistical significance.

In “The Theory of Economic History” J. Hicks (1973) noted that the industrial revolution in Great Britain at the end of the XVIII century had become the result not so much of technological innovations as of the consolidation of the financial system which helped disseminate innovations across many sectors.

After the above-mentioned works of the 1960s, which mainly dealt with economic history and almost didn’t rely on rigorous methodology, more fundamental papers by R. McKinnon (1973) and E. Shaw (1973) appeared. These authors exposed to severe criticism the so–called financial repression, a kind of macroeconomic policy then largely pursued by many developing countries. In short, this policy implies interest rate caps, higher banking reserve rates and cross-border capital controls. So, it could be considered as an implicit tax imposed on financial institutions. Such policy is instrumental in terms of growing budget deficits and national debt. Without doubt, however, financial repression impedes the development of private financial institutions. Discussing its overall benefits and weaknesses is beyond the aims of the paper. C. Reinhart (2012) provides a thorough survey of this policy and its applicability in modern conditions. Here, we just emphasize that McKinnon and Shaw

made a strong case for the plausibility of financial liberalization as a growth-enhancing policy and refuted the financial repression policy.

The wave of financial liberalization beginning in the vicinity of 1980 additionally encouraged theoretical and empirical research of the finance-growth nexus. According to the *JEL*, in 1969-1980 just 5 papers on this topic were published in the leading peer-reviewed journals in economics, whereas this number totaled 144 for 1981-1990 (Sinha, 2001). Besides the financial liberalization, remarkable shifts within economics in the late 1970s and early 1980s led to a rising interest in this research program. The contributions to the theory of information were the most important. Thanks to Stiglitz, Greenwald, Weiss and others, new approaches to modeling a macroeconomic role of banking began to penetrate and by the end of the 1980s reached their climax. They managed to express the peculiarities of financial activities in a formal language and thus operationalized such notions as principal-agent problem, moral hazard, adverse selection, screening, etc.

5. Finance and growth: a modern theoretical landscape

With the new analytical apparatus adopted, economists' attention to the finance-growth nexus kept on rising in the 1990s. It happened then and happens nowadays due to the substantial increase of financial markets depth and variety of assets available for investments. Besides, the last decade of the XX century was a period of accelerated world economic growth (at least in comparison with the 1980s). At the intuitive level all that pointed to the presence of a positive link between financial development and economic growth.

Evidence did not make wait long, but it is indispensable to offer some outline for its further analysis. It seems appropriate to divide the papers studying this issue from the early 1990s till nowadays into 3 groups depending on a paradigm which authors follow.

The first of them unites the works that assume imperfectly competitive financial markets exerting influence on economic growth. The second group of studies explores the finance-growth nexus in the setting of endogenous economic growth

models. Finally, the third group comprises purely empirical papers relying on constantly growing data availability and econometric techniques. Besides, one may conjecture that a fourth, neo-institutional paradigm has started crystallizing.

Now let's turn to the conceptual basis of the first group of the research papers. Proceeding from the premise that all markets in the economy are perfectly competitive and that agents have at their disposal all the information available and interact with zero transaction costs, one is sure to conclude that financial markets do not have any influence on resource allocation. These premises play a key role in general economic equilibrium models and are described in detail by K. Arrow and G. Debreu. However, they are far from reality. That is why researchers renounced considering perfect competition, allowing for such frictions as information asymmetry, presence of transaction costs, etc. Incorporating these frictions enables to analyze such issues as adverse selection or moral hazard, mitigate their manifestation and thus, create optimal financial contracts, which is positively linked with capital accumulation and economic growth.

In the real life information asymmetry between creditors (primarily, banks) and borrowers is always present. Obviously, nobody besides borrowers themselves could better know the characteristics of their own projects (profitability, risks, etc.). It is often too difficult to assess their creditworthiness ex ante, so the borrowers may be tempted to conceal the real state of affairs to ensure obtaining a loan. Creditors could resort to monitoring borrowers' activity. However, monitoring itself is costly, which curbs the supply of loans. The phenomenon of credit rationing arises and it leads to a lower share of savings transformation into investments. As a result, capital accumulation and economic growth will decrease. Thereby, the first group of the finance-growth nexus models has microeconomic foundations and builds on the advances in the theory of information described above.

The variables describing the functioning of financial markets are incorporated in endogenous growth models which constitute the second group. Thus, a financial market could be considered in two ways: 1) as a factor contributing to technological

progress and indirectly promoting economic growth, and 2) as a self-sufficient determinant directly spurring economic growth through capital accumulation.

Among the models of endogenous growth the model of capital accumulation (AK-model) proposed by R. Lucas and P. Romer is considered to be the most "convenient" for including variables characterizing financial market performance. The equilibrium rate of economic growth in this model is set by the formula $g(Y) = A * \delta * s - d$ where A - is the level of technology that according to the baseline model is above 1 (i.e. it exhibits a non-decreasing returns to scale), δ - is a transformation ratio of savings into investments ($0 < \delta < 1$), s - savings rate, d - rate of depreciation. Thus, A, δ, s "capture" the influence of financial market on economic growth (Thiel, 2001).

Researchers identify 3 functions of the financial system which contribute to technological level improvement: 1) selection of the most profitable investment projects; 2) liquidity provision, or possibility of buying and selling assets with minimal transaction costs that facilitates middle- and long-term investment projects; 3) possibility of risk distribution (diversification) that increases the inclination of economic agents to carry out more profitable (but also more risky) projects.

As for the transformation ratio of savings into investments, the more efficient the financial system is, the closer this indicator is to 1, or 100%. So, $1-\delta$ could be reckoned as transaction costs connected with financial intermediation and taking shape of commission fees to intermediaries or credit-deposit spreads.

The influence of financial market on the savings rate is ambiguous. An enhanced efficiency of the market (in terms of an improved yield/risk profile) may both lead to a rise and decrease in s. The latter effect is connected with the fact that expectations of more profitability could make economic agents refuse to increase current savings. The overall result is defined by the peculiarities of utility functions and indifference curves of economic agents.

The examined endogenous model setting shows an example of the indirect influence of the financial system on economic growth. There are also models taking into account its functioning in an explicit way by introducing a special financial

intermediation cost function. These costs along with the depreciation rate are a drag on capital accumulation and as a result on economic growth (Lee, 2005). Besides, it is necessary to mention another class of endogenous growth models in which financial market stimulates technical progress and innovations, increasing the volume of the resources directed to R&D activities (Morales, 2001).

To sum up, the value of the considered first two groups of models is great in the sense that they allow to prove formally the existence of the influence channels of financial markets on economic growth. They are distinguished by a high degree of mathematization and a complex system of prerequisites. These factors significantly complicate checking conclusions of the models empirically. In this respect purely empirical tests of finance-growth nexus have come to the fore.

This approach is based on R. Barro's ideas (Barro, 1991) who suggested a relatively simple econometric technique to assess growth determinants (the so-called Barro-regressions).

The model adapted to evaluate the role of finance in economic growth looks as follows:

$$Y_{it} = \alpha_0 + \alpha * F_{it} + \beta * X_{it} + \varepsilon_{it},$$

where α_0, α, β - coefficients, F_{it} - an indicator of a country's i financial system development (normally, one of financial depth ratios) at the moment t, X_{it} - the values of controlling variables for a country i at the moment t, ε_{it} - an error of the regression. We can speak about positive influence of the financial market on economic growth if the coefficient α at the variable F_{it} is positive and statistically significant.

Since 1993 when the article "Finance and growth: Schumpeter might be right" by R. King and R. Levine which initiated econometric tests of finance-growth nexus was published, a great number of papers addressing the similar issue has appeared.

In the majority of the papers a positive link between finance and growth for various groups of the countries and time periods was really confirmed. At the same time one cannot ignore critical remarks of some economists who consider impossible to grasp any economic phenomenon solely on the basis of econometric methods. In

their papers experimenting with the structure of country samples and indicator time-series, they question the robustness of a positive link between financial development and economic growth and its universality (Manning, 2003; Driffil, 2003).

In particular, it is noted that statistically significant positive linear dependence between financial development and economic growth really takes place in the developed countries but doesn't prove to be true in case of the states with low or lower-middle income per capita. It is due to the fact that financial development in the poorer countries involves prohibitively high fixed costs to set up the necessary financial infrastructure (stock exchanges, clearing houses, etc.) and if these countries still persist in such an unbalanced policy, it all results in a distraction of resources from the real sector where capital is also badly needed (Deidda, Fattouch, 2002). Accordingly, they are not recommended to rely too much on accelerated financial development as it may turn out to be a drag on economic growth.

Besides, the argument about nonlinear connection between financial development and economic growth can be based on the diminishing return which comes into being with an increase of financial depth. This concept assumes that, for example, a rise in credit/GDP ratio from 20 to 30% is almost sure to speed up growth while a rise from 120 to 130% will bring essentially smaller positive effect, if any at all, as it can overheat the economy. Thus, it seems that the law of diminishing returns is applicable to the financial system as if it were a sphere of material production.

This point of view found its statistical confirmation in a number of papers: if squares of financial depth indicators are included in the traditional Barro-regressions, they appear to be statistically significant and negatively correlated with economic growth. This nonlinearity raises the question of searching threshold values of financial development. The threshold effect in a theoretical setting was characterized by Augier and Soedarmono (2011). Empirical estimates appeared even earlier. For the credit to the private sector/GDP ratio the threshold was reported to lie between 70 to 100% (Eschenbach, Francois, 2005). A similar threshold effect in the finance-growth nexus is also documented in recent papers. Ceccetti and Kharroubi (2012) examine the impact of financial depth and employment in the financial sector on aggregate

productivity growth in a sample of 50 developed and developing countries and conclude that a pro-growth credit/GDP ratio should not exceed 100%, while the share of employment in finance should not be above 3,5% of the work force. Arcand et. al (2012) confirm that finance starts exerting a negative effect on growth when credit to the private sector reaches 100%. This result holds when controlled for growth volatility, banking crises and regulation.

The conclusion according to which in the poorer countries the financial system does not almost exert any influence on economic growth, in the middle-income countries it is positive and strongly pronounced, whereas in the developed economies it is also positive, but weaker than in the middle-income countries, is an integration of the concepts explaining nonlinear connection between finance and growth (Demetriades, Adrianova, 2003). So, one may now speak of an inverted U-shaped link between financial development and growth.

Discussion about (non) linearity in finance-growth nexus does not settle all the methodological difficulties and restrictions connected with applying econometric methods within this research program. Another complicated problem arises: finance pushes economic growth or is pulled by the latter itself? The question was first asked in the 1960s, but hasn't received any final answer so far.

Moreover, perhaps, one should speak with caution about any causality between finance and growth as there may be some latent determinant influencing both. The attempts to overcome the identification problem embedded in Barro-regressions by means of instrumental variables have reached only limited success.

Therefore, with respect to the finance-growth nexus it is better to speak about the so-called Granger-causality, an econometric proxy of the cause and effect.

Defining what is the cause and what is the effect according to Granger with regard to finance and growth – today, perhaps, is the most burning avenue of research within the econometric paradigm. The analysis of historical time-series of financial performance and rates of economic growth by means of vector auto-regression model (VAR) is an example of the applied use of the Granger-causality concept. Most of the recent studies point to a bi-directional causality between finance and growth, but

Bangake and Eggoh (2011) also indicate that the magnitude of the causal relationship depends on the income level: in developing countries the relationship running from finance to growth appears to be stronger than in developed economies, where the link is more pronounced in the opposite direction. The result is consistent with the initial argument by Patrick (1966).

T. Beck notes that in the years to come the analysis of time-series has every chance to turn into the main "working horse" of the econometric paradigm replacing Barro-regressions. Some hopes are also pinned with dynamic panel data analysis, accounting for heterogeneity of the countries through the generalized method of moments (GMM), "difference-in-difference" method (Beck, 2008). This trend along with the development of economics is caused by continuous expansion of information sources on financial depth, increase in the number of the research papers which are based on microeconomic and industry-level data.

Another problematic area within the econometric paradigm deals with the impact of financial structure on economic growth. Not only the size of financial system, but also its "ingredients" may matter. In this sense financial systems can be bank-based or market-based. So, it is important to find out if one of the types is more favorable for growth. Or, perhaps, such a question is irrelevant at all. Empirical research yields contradictory results.

On the one hand, in his influential paper Levine (2002) states that it is the overall financial development, not the financial structure, that matters for growth. On the other hand, later studies (Luintel, et al., 2008) question the cross-section approach applied by Levine, as it ignores country specifics. Pooling countries in one sample is argued to be inadequate and should be replaced by time-series or dynamic heterogeneous panel data analyses which prove the significance of financial structure for economic growth.

Yet, such tests encompass a limited number of countries and, in a nutshell, an eclectic viewpoint on financial structure remains prevailing. Considering an individual country's financial system as bank-based or market-based is too narrow as institutional and behavioral aspects should be taken into account. Merton and Bodie (2004)

proposed the so-called functional and structural finance (FSF) hypothesis that synthesizes neoclassical, institutional and behavioral approaches to finance and endogenizes the financial system structure. Pretty much in line with this eclectic stance, Song and Thakor (2012) underline that banks and financial markets complement and co-evolve. The channels of the mutual influence are securitization and bank capital. Banking advances are transmitted to markets via securitization, while market ones affect bank capital. So, the financial structure is a derivative of this bi-directional process and policymakers are not advised to favor any of the segments (banks or markets) ex-ante, as such policies are distortionary and eventually undermine financial development. Saillard and Url (2012) compute a special index accounting for complementarity between banks and financial markets and establish that countries with higher values of this indicator tend to channel savings into investments more efficiently. The countries with more intertwined banks and markets are also less vulnerable to financial crises. In short, there is no any optimal financial structure for economic growth set once and forever. The financial structure of the economy changes along with the overall economic development, with financial markets becoming relatively more important (Demirguc-Kunt, Levine, 2012).

The burgeoning neo-institutional paradigm, on the one hand, inherits a historical and economic approach to the finance-growth nexus[1], and on the other hand creates its own agenda, analyzing the political economy of financial development and the role of political factors (democratic[2] and non-democratic regimes) in this process.

Within this paradigm a special emphasis is put on the role of legal doctrines in creating conditions for financial development and economic growth. According to Coase, financial transactions can be perceived as a set of contracts which the legal system is supposed to enforce. Consequently, in those countries where property rights are well protected, especially those of investors and creditors, there are more

[1] The analysis of historical case–studies of the finance–growth nexus is important. The most recent results of this approach are presented in *Political Institutions and Financial Development* / Ed. by Haber S., North D., Weingast B., Stanford University Press, 2007. The main conclusion lies in the necessity to secure political competition as a guarantee of an efficient financial system. It is made on the basis of the comparative analysis of financial development of Mexico, Brazil and the USA.

[2] Recent studies prove that the transit to democracy boosts financial development, with the effect being especially visible in case of the least developed countries. But this change also involves higher volatility of financial depth ratios. (Huang, 2010).

incentives to financial development and higher possibility of its positive impact on economic growth. In particular, the Anglo-Saxon legal doctrine which is based on the common law and is more adaptable to changes in the economic environment is associated with higher levels of financial depth, characterized by the prevalence of stock market in financial structure and contributes significantly to economic growth. In this sense the German and Scandinavian legal doctrines seem less favorable. The French law, probably, the least favorable for financial development owing to its centralization, insufficient flexibility and an exclusive statehood in the economic relations closes the list (La Porta R., et. al., 1998).

Now political institutions and legal doctrines are seen as competing determinants of financial development. Yet, political and legal aspects of the analysis are interconnected. Therefore, it could be more promising to integrate applied political science and macroeconomic research approaches to give a comprehensive analysis of finance-growth nexus from the neo-institutional perspective. It may be achieved by constructing and applying synthetic indices of institutional quality.

One more cluster of the papers at the intersection of the neo-institutional paradigm and political economics merits attention. They deal with the finance-growth nexus in the countries rich in mineral resources where institutional environment may have a significant impact on this interconnection. Abundance in natural resources seems to have an adverse effect on financial development. Beck (2011), in particular, argues that there are signs of a resource curse in financial development of such countries. Stock markets in these economies usually lack liquidity. On the contrary, banks are large, liquid, well-capitalized and profitable, but often engaged in credit rationing activities. So, access to credit in the countries rich in mineral resources is constrained, which is especially detrimental to enterprises irrespective of their size. Meanwhile, the finance-growth nexus is present in these economies as well and due to the resource curse in financial development they don’t exploit to the full their growth potential. It involves an interesting policy implication: to secure financial deepening these countries should make an extra effort in comparison with other economies. One

of the cornerstones of the policy should be the promotion of competition in the banking sector and financial services as a whole.

Other papers examining financial development in resource-abundant economies and its impact on growth, which are not actually numerous, arrive at similar conclusions, e.g. Bhattacharyya, Hodler (2010). In another important contribution, Saborowski (2009) stresses the importance of financial system deepening in resource rich economies as a deterrent to the Dutch disease symptoms such as the exchange rate appreciation effect due to foreign direct and portfolio investment inflows. These economies had really failed to absorb and retain the inflows prior to the Great Recession, as the latter translated into excessive exchange rate appreciation, inflationary pressures and a general fall in competitiveness.

6. Current challenges

The number of the papers dedicated to the finance-growth nexus has been growing steadily over the past three decades along with the availability of data and has totaled several hundreds. Yet, the nexus seems to be less robust in the latest papers than it used to be in the works published in the 1990 – early 2000s.

Several explanations for this less stable link have been suggested. First, the time span that recent studies cover moved from 1960-1989, as in King and Levine (1993) to include the latest years. According to Reinhart and Rogoff (2009) or Laeven and Valencia (2010), the incidence of financial crises has increased immensely in the 1990-2000s in comparison with the 1960-1970s. It may have contributed to the partial erosion of the positive link between finance and growth documented before, as an excessively rapid growth of financial depth led to higher inflation rates and deterioration of credit standards and ultimately resulted in growth-inhibiting financial turmoils. Rousseau and Watchel (2011) run Barro-regressions for two sub-periods, 1960-1989 and 1989-2004, and find no statistical significance of financial depth regressors for the latter. Second, the same authors assumed that major financial liberalizations could have played a role, but didn’t find enough evidence that would support the hypothesis. Dabos and Gantman (2010) confirm the findings by Rousseau

and Watchel, dealing with the data for 98 countries (1961-2005) and accounting for institutional quality variables.

A fading finance-growth nexus is also based on the results of meta-regression analysis of the relevant literature. Asongu (2011) makes this conclusion methodologically narrowing down from 186 papers to a summary of 20 studies and also relates it to a greater number of financial crises over the past years. This meta-regression analysis discovers some signs of publication bias, i.e. the papers that support the finance-growth nexus are more likely to be published rather than those that yield opposite findings.

However, one cannot rule out a re-consolidation of the finance-growth nexus in the future. In the aftermath of crises economic agents resort to external financing with more caution, so speculative and Ponzi-schemes are rare and deleveraging often takes place. Hedge finance, according to Minsky (2008), reigns at such times. Though conservative, this type of financing promotes growth. The 1950-1970s were a good illustration and the basis of the finance-growth research that covered the 1960-1989 period.

The empirical research of the finance-growth nexus has dealt with a vast array of financial depth indicators. They were compiled and incorporated into the World Bank and the IMF statistics. Now these metrics have been supplemented by a comprehensive dataset on financial inclusion (Demirguc-Kunt, Klapper, 2012). There seems to be a positive link between financial depth and inclusion (World Bank, 2008), but both may be crucial from the growth-enhancing perspective and thus, can hardly replace one the other. After all, there are countries where these two metrics are not in a complete harmony, e.g. the Baltic states (Estonia, Lithuania). These countries have inclusive financial systems which are far from being really “deep”. Most emerging economies provide an opposite example: important financial centers there may absorb large financial resources, securing significant financial depth ratios, but access to financial services across other parts of the country may be significantly constrained. BRICs illustrate the case well. Consequently, it would be essential for policymakers to learn more about the complementarity of financial depth and inclusion.

More effort is surely needed to make financial inclusion data as reliable and common as financial depth indicators and to facilitate a richer analysis of their joint impact on growth. But this avenue for the research looks plausible and promising.

7. Conclusions

To sum up, studying the impact of finance on economic growth has been fruitful. It concerns both substantive and methodological issues. Finance acts as a catalyst of economic growth, promoting capital accumulation and its optimal allocation. It is possible to assert with a high level of certainty that countries with more developed financial systems exhibit higher rates of economic growth in the long-run. Yet, it happens until a threshold is reached, when more finance is no longer more growth.

Banking systems and stock markets seem to be equally important: the scale of both segments of the financial system is positively correlated with the dynamics of economic growth. The conclusion in question, according to the experts of the World Bank, is cleared of simultaneity of macroeconomic and financial development indicators (simultaneity bias) and can be treated almost as a stylized fact (Demirguc–Kunt, Levine, 2008).

At the same time the impact of financial system on economic growth doesn’t follow any uniform pattern and depends on the level of economic development, financial system structure, legal system and the overall quality of institutions. So, many pending issues and promising avenues for future research remain.

References

Ang, J., 2008. “A Survey Of Recent Developments In The Literature Of Finance And Growth,” *Journal of Economic Surveys*, Vol. 22(3), 536-76.

Arcand, J.-L., Berkes, E., Panizza, U., 2012. “Too Much Finance?”, IMF Working Paper № 12/161.

Asongu, S., 2011. “Finance and growth: Schumpeter might be wrong in our era. New evidence from Meta-analysis,” MPRA Paper 32559, University Library of Munich, Germany.

Augier, L., and Soedarmono, W., 2011. “Threshold Effect and Financial Intermediation in Economic Development”, *Economics Bulletin*, Vol. 31(1), 342–57.

Bagehot, W., 1873. “Lombard Street: A Description of the Money Market” (available at www.econlib.org).

Bangake, C. and Eggoh, J., 2011. “Further Evidence on Finance-Growth Causality: a Panel Data Analysis”, *Economic Systems*, Vol. 35 (2), 176–88.

Barro, R., 1991. “Economic Growth in Cross Section of Countries”, *Quarterly Journal of Economics*, Vol. 106, 407–43.

Beck, T., 2008. “The Econometrics of Finance and Growth”. World Bank Policy Research Working Paper № 4608.

Beck, T., 2011. “Finance and Oil: Is there a Curse in Financial Development?” European Banking Center Discussion Paper 2011–004.

Bhattacharyya, S., Hodler, R., 2010. “Do Natural Resources Hinder Financial Development? The Role of Political Institutions”, OxCarre Research Paper 53.

Cameron, R., 1967. “Banking in the Early Stages of Industrialization. A Study in Comparative Economic History”. Oxford University Press.

Ceccetti, S., and Kharroubi, E., 2012. “Reassessing the Impact of Finance on Growth”. BIS Working Paper 381.

Dabos, M., Gantman, E. 2010. “The Fading Link? A New Empirical Analysis of the Relationship Between Financial Development and Economic Growth,” Working Paper 2010-013, Becker Friedman Institute for Research In Economics.

Deidda, L., Fattouch, B., 2002. “Non linearity Between Finance and Growth”, *Economic Letters*, Vol. 74(3), 339–45.

Demetriades, P., Andrianova, S., 2003. “Finance and Growth: What We Know and What We Need To Know”, University of Leicester Discussion Paper 03/15.

Demirguc–Kunt, A., Levine, R., 2008. “Finance, Financial Sector Policies, and Long–Run Growth”. World Bank Policy Research Working Paper № 4469.

Demirguc-Kunt, A., Feyen, E., Levine, R., 2012. “The Evolving Importance of Banks and Securities Markets,” NBER Working Paper № 18004, National Bureau of Economic Research.

Demirguc-Kunt, A., Klapper, L., 2012. “Measuring financial inclusion: the Global Findex Database,” Policy Research Working Paper Series 6025, The World Bank.

Driffill, J., 2003. “Growth and Finance”. *The Manchester School*, Vol. 71, 363-380.

Eschenbach, F., Francois, J., 2005. “Finance and Growth: a Synthesis of Trade and Investment related Transmission Mechanisms”, Tinbergen Institute Discussion Paper.

Gerschenkron, A., 1962. “Economic Backwardness in Historical Perspective”. Cambridge, Massachusetts: Belknap Press of Harvard University Press.

Goldsmith, R., 1969. “Financial Structure and Development”. New Haven: Yale University Press.

Gurley, J., Shaw, E., 1955. “Financial Aspects of Economic Development” *American Economic Review*, Vol. 44(4)., 515–38.

Hicks, J., 1973. “A Theory of Economic History”. Oxford University Press.

Hilferding, R., 1981. “Finance Capital. A Study of the Latest Phase of Capitalist Development”. London: Routledge.

Huang, Y., 2010. “Political Institutions and Financial Development: An Empirical Study”, *World Development*, Vol. 38(12).

King, R., Levine, R., 1993. “Finance and Growth: Schumpeter Might Be Right,” *Quarterly Journal of Economics*, Vol. 108(3), 717-37.

Laeven, L., Valencia, F., 2010. Resolution of Banking Crises: the Good, the Bad, and the Ugly”, IMF Working Paper № 10/146.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. “Law and Finance”. *Journal of Political Economy*, Vol. 106(6), 1113–1155.

Lee, J., 2005. “Financial Reforms: Benefits and Inherent Risks”. Asian Development Bank Institute Discussion Paper № 44.

Levine, Ross, 2002. “Bank-Based or Market-Based Financial Systems: Which Is Better?”, *Journal of Financial Intermediation*, Vol. 11(4), 398-428.

Levine, R., 2005. “Finance and Growth: Theory and Evidence,” Handbook of Economic Growth, in: Philippe Aghion & Steven Durlauf (ed.), Handbook of Economic Growth, edition 1, Vol. 1, chapter 12, 865-934.

Luintel, K., Khan, M., Arestis, P., Theodoridis, K., 2008. “Financial structure and economic growth,” *Journal of Development Economics*, Vol. 86(1), 181-200.

Manning, M., 2003. “Finance Causes Growth: Can We Be So Sure?” *The BE Journal of Macroeconomics*, Contributions 3.

McKinnon, R., 1973. “Money and Capital in Economic Development”. Washington, D.C., Brookings Institution.

Merton, R., Bodie, Z., 2004. "The Design of Financial Systems: Towards a Synthesis of Function and Structure," NBER Working Paper № 10620, National Bureau of Economic Research.

Michaelides, P. and Milios, J., 2005. “Did Hilferding Influence Schumpeter?” *History of Economics Review*, Vol. 41, 98-125.

Minsky, H., 2008. “Stabilizing an Unstable Economy”, McGraw-Hill.

Morales, M., 2003. “Financial Intermediation in a Model of Growth Through Creative Destruction”, *Macroeconomic Dynamics*, Vol. 7 (3), 363–393.

Patrick, H., 1966. “Financial Development and Economic Growth in Underdeveloped Countries”, *Economic Development and Cultural Change*, Vol. 14, 174-89.

Political Institutions and Financial Development / Ed. by Haber S., North D., Weingast B., Stanford University Press, 2007.

Reinhart, C., and Rogoff, K., 2009. “This Time is Different: Eight Centuries of financial Folly,” Princeton University Press.

Reinhart, C., 2012. “The Return of Financial Repression”. *Financial Stability Review*, Vol. 16, 37–48.

Robinson, J., 1952. “The Generalization of the General Theory”. London: MacMillan Press.

Rousseau, P., Wachtel, P., 2011. “What is Happening to the Impact of Financial Deepening on Economic Growth?” *Economic Inquiry*, Vol. 49(1), 276-288.

Saborowski, C., 2009. “Capital Inflows and the Real Exchange Rate: Can Financial Development Cure the Dutch Disease?”, IMF Working Paper № 09/20.

Saillard, A., Url, T., 2012. “Measuring Complementarity in Financial Systems”. CES Working Paper 2012.39, Paris 1 Pantheon Sorbonne University.

Schumpeter, J., 1982. “The Theory of Economic Development”. New Jersey: Transaction Publishers.

Schumpeter, J., 2005. “Business Cycles: A Theoretical, Historical, and Statistical Analysis of Capitalist Process”. 2 Vol. set., Martino Publishing.

Shaw, E., 1973. “Financial Deepening in Economic Development”. Oxford University Press.

Sinha, T. “The Role of Financial Intermediation in Economic Growth: Schumpeter Revisited”. In *Economic Theory in the light of Schumpeter’s Scientific Heritage*. India: Spellbound Publishers, 2001.

Song, F., Thakor, A., 2012 (forthcoming). “Notes on Financial System Development and Political Intervention”. *World Bank Economic Review*.

Thiel, M., 2001. “Finance and Economic Growth. A Review of Theory and the Available evidence”. European Commission.

World Bank 2008. “Finance for All? (Policies and Pitfalls in Expanding Access)”. World Bank Policy Research Report, Washington, DC: World Bank.