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Financial deepening and economic growth in the Western Balkans

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ABSTRACT

This paper explores whether financial deepening that occurred in the Western Balkans during the past decades had a significant impact on economic growth. We take into account different measures of financial deepening and estimate their impact on economic growth using panel data for seven countries over a period of thirty years. Our findings differ from expectations that financial deepening accelerates economic growth, but are in line with the findings of recent studies which emphasize that financial deepening at certain levels might become a drawback for economic growth.

Keywords: financial deepening, economic growth, Western Balkans, panel regressions

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LIST OF ABBREVIATIONS

BIS	Bank for International Settlements
BiH	Bosnia and Herzegovina
EBRD	European Bank for Reconstruction and Development
FDI	Foreign Direct Investments
FYROM	Former Yugoslav Republic of Macedonia
IMF	International Monetary Fund
GDP	Gross Domestic Product
M1	Money supply that comprises of cash and notes that are easily convertible to cash
M2	Money Supply that comprises of M1 and short term deposits
M3	Money Supply that comprises of M2 and marketable instruments
MFI	Micro-Finance Institution
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares method
WB	Western Balkans

1 Introduction

The impact of financial deepening on economic growth has gained much interest and attention from academic research during the last three decades. Studies that treat the role of financial deepening in economic growth point towards contrasting results although a vast amount of research suggest that financial deepening plays a crucial role for economic growth. On the other hand, recent studies find that the nature of the relationship between financial deepening and growth is not as simple as it was previously suggested, showing that for many countries finance matters for growth up to a certain level after which it becomes an obstacle to growth. Moreover, after the recent financial crisis the relationship between financial deepening and growth has become a topic of debate with studies arguing that too much finance may be harmful for the economy.

Considering the complex relationship between financial deepening and growth, we contribute to this topic by analyzing this relationship for the Western Balkans countries. The region has undergone fundamental changes, experiencing deep financial progress during the nineties and beginning of new century, while accompanied with high economic growth. The majority of countries in our sample reformed their financial sector and experienced rapid growth after transforming and opening up their markets. However, observing the direction along which financial deepening and growth progressed over the years we find that measures of financial depth do not always follow growth patterns as closely as we would expect. Even more so, financial depth variables often move in opposite direction to growth for the countries of the region. In order to explore this puzzling relationship, we estimate panel regression for seven Western Balkan countries and look into different phases of financial progress in attempt to assess the degree of impact of financial deepening in economic growth.

The paper is organized in the following way. The second chapter reviews theoretical studies and previous empirical studies on the relation between financial deepening and growth. The third chapter describes the way by which financial deepening has progressed in the Western Balkans over the years. The relationship between financial deepening and growth for the region is assessed in the fourth chapter, while the fifth chapter summarizes the key findings and draws some policy implications.

2 Financial Deepening and Growth

2.1. Definition of Financial Deepening

The idea that there exists a relationship between financial deepening and economic growth has been discussed by economists during the past decades of dynamic financial development. However, the idea that financial system impacts economic growth was brought earlier in the history of economic thought. In more general terms, the relationship between financial development and economic growth was first introduced as an idea by Bagehot in 1873 and supported conceptually and empirically ever since (Goldsmith, 1969; McKinnon 1973; Shaw, 1973). Although most theory supports the view that financial factors in general impact economic growth, this concept became more important when the discussion progressed from the viewpoint of development and transition economics. In particular, international financial organizations such as the World Bank and the International Monetary Fund view the role of financial sector as crucial to economic growth and financial deepening as promoter of economic development.

In 1973, the Stanford economist Edward Shaw defined financial deepening as the process of accumulation of financial assets at a faster pace than the accumulation of non-financial wealth.¹ He argued that financial deepening occurs when financial assets grow faster in comparison to income. According to Shaw, regardless of the important role that financial sector plays for the economy, the financial deepening has not gained the attention it deserves from development economists. Apart from Shaw's classical definition, in other studies financial deepening is defined as the amount of supply of financial assets in the economy and is measured as the level of financial intermediation or *the money supply in the economy*.² A more concise definition states that financial deepening is a quantifier of financial development. In this context, the IMF emphasizes that financial depth is a measure of all money supply provided in the financial markets and sectors that go beyond banking sector (IMF, 2011). This includes capital markets, non-banking sectors, pension funds and foreign investors.³

¹ See Shaw 1973, pp 23-36.

² See Fritz 1984, pp 91-111

³ See Ahmed, Goyal, Marsh, Raman, and Wang 2011, pp 4.

The definition of financial deepening becomes crucial when the need arises to measure its impact for economic growth. The most common measure of financial deepening, the increase in money supply (M2), cannot satisfy the concept as it only includes the amount of money in the economy which is available for spending. By that definition, the level of development in the capital markets, foreign investments and other means of funding are not included in the measurement of financial deepening. Viksnins (1980) summarizes the following measures of financial deepening: Money Supply (M1), Quasi Money Supply (M2), M2/M1, Real Quasi Money (M2/P) and Real Money (M1/P). However, Fritz (1984) argues that single measures of assets in the economy do not provide good measures of financial deepening, but instead develops weighted indexes with each financial deepening component. Therefore, when trying to define financial deepening and assess the impact of financial deepening in growth we should take into account all means of financing.

On the other hand, Levine (2005) and King and Levine (1993) summarize the financial development as “a process that involves financial markets, intermediaries and instruments which enable trading, allocation of resources, mobilization of savings and risk hedging”.⁴ More specifically, in many IMF discussion notes (IMF 2011; IMF 2012), the financial deepening occurs when “*sectors and agents use a range of financial markets for savings and investment decisions; financial intermediaries and markets deploy larger volumes of capital and handle larger turnover while financial sectors create assets for risk-sharing purposes*”.⁵ This definition captures the whole process of financial deepening as it takes into account all means of financing, whereas money supply is provided through different financial institutions (bank and non-bank institutions) using different financial instruments in different markets (money market, capital market, debt market).

Provided that afore mentioned developments take place in an economy, it is considered that this process will enhance economic growth by generating capital accumulation, investments, innovation and finally enabling better allocation of capital.

⁴ The definition is extended by Nguena and Abimbola, 2013. For a general summary on definition and theoretical background of financial deepening see Levine, 2005, pp 866-934.

⁵ See McDonald and Jahan, 2011, pp 16-19. Information on the definition of financial deepening can be found in Ahmed, Goyal, Marsh, Raman, and Wang, 2011, pp 3-25.

2.1. a. Financial Deepening and Growth: Theoretical Considerations

In theories of economic growth, a crucial role is given to investments whether being investments in technical progress as in the neoclassical theories, investments in human capital and knowledge as in the endogenous growth theories, or investments in innovations as in the Schumpeterian theories. Nevertheless, not enough attention is paid on questions of how investments are financed or more precisely where do firms or industries find the capital to make these investments. In fact, academic literature of economic growth has for decades ignored the role of finance in economic growth, and thus not included it in the traditional growth models. Financial intermediates and markets were treated as invisible elements that developed according to the developments in the real sector of economy. Moreover, the causal relationship between financial deepening and growth was often out of the question. At the other side, economists who agree that financial deepening plays an accelerating role in economic growth have different views over the level or degree of this impact. Therefore, in regards to this relationship we may find very contrasting opinions among researchers.

Although not included in the traditional growth models, the idea that financial development plays a central role in a country's growth has been around for quite a while among academics. Walter Bagehot in his famous "Lombard Street" of 1873 was one of the pioneers to state that finance, respectively financial markets fostered the industrial revolution in England. His statements certainly just tackled afore mentioned relationship and it was not until 1911 that Joseph Schumpeter gave attention to the financial development in the context of economic development in his "Theorie der Wirtschaftlichen Entwicklung".⁶ Indeed, Schumpeter argued that "*credit impacts the distribution of income, whilst bank credit specifically enhances flows or circulations of capital resources which then is used for productivity and innovation*". In Schumpeterian view, economic growth is heavily dependent on the availability of financial recourses, as well as in the flexibility of monetary system and policy.⁷

On the contrary, other economists believed that the role of financial deepening and development is not of crucial importance to economic growth (Meir and Seers 1984).

⁶ For English translation of the book by R. Opie, see Schumpeter, 1934.

⁷ King and Levine (1993) also discuss in details the views of Schumpeter in relation to financial development and economic growth, and find empirical evidence in support of Schumpeter's idea.

Moreover, academics who represented that side of economic thought, among them Lucas (1988), considered the role of finance to be “over-stressed” in determining economic growth.⁸ Not completely undermining the role of financial development for growth, it was often argued that financial development does not cause growth but “where growth leads, finance follows” and never the other way around (Robinson, 1952). Another far reaching view considers the contribution of finance to growth as “a proposition far too obvious for serious discussion” (Miller, 1988).

Regardless on which side of the theory we argue, it remains puzzling to academics the fact that countries with similar economic growth rates at one point in history experienced different economic growth rates later on, and interestingly different levels of financial deepening. Therefore, the puzzling question whether financial deepening was the factor that made some countries grow faster than the others, remains to be answered with more empirical evidence.

2.1. b. Modeling financial deepening

In 1973, significant contribution to this topic is added by Ronald McKinnon in “Money and Capital in Economic Development”, where the arguments were put forth to model the relationship between measures of financial deepening such as money stock and capital with economic growth. He provided a new view on how developing countries can stimulate economic growth using their financial resources and monetary policy. Indeed, by analyzing countries as South Korea, Brazil, and Chile, he argued that developing countries can enhance economic growth by liberalizing their domestic financial markets to allow for interest rates to reflect the real scarcity of money stock in the economy and not use inflationary financing.⁹

The impact of financial deepening is also studied and measured from the perspective of the role that financial intermediaries have in producing information and improving efficiency in markets. Boyd and Prescott (1986) modeled the impact of financial intermediaries in generating and processing financial information and by doing so enhancing investments and resource allocation. Lowe (1992) analyzing the case of Australia modeled the role that financial system plays in resource and knowledge accumulation which are linked to long-run

⁸ See Lucas, 1988, p 6.

⁹ See McKinnon, 1973, pp 617-633.

growth. It is obvious that financial deepening goes far beyond the classical definition of money provided in the economy by financial institutions and includes other means of financing such as stock and bond markets. In this context, Grossman and Stiglitz (1980) modeled the stock markets variables to evaluate the ability of these measures in generating information and liquidity which are factors associated with efficient resource allocation and growth.

2.2. Financial Deepening and Growth: Previous Studies

Studies that test the relationship between financial deepening and growth have been conducted using different measurement techniques and with contrasting results. Generally, empirical studies have tested this relationship by analyzing data across countries, in time series and panel structure. Although, the relationship was documented earlier (Goldsmith, 1969), most studies emerged during the 80s and 90s which coincides with periods of financial boom in the Western world, and which perhaps intrigued economist to consider financial depth and development as promoters of economic growth.¹⁰

2.2. a. Cross Section, Time Series and Panel Studies

The largest number of studies has been conducted using the cross section method mainly during the nineties whereby the averages of financial depth variables were estimated and tested against averages of variables that measure economic growth.¹¹ The cross-section method became famous by Barro (1991), and was widely applied during the 90s to test the degree of impact of financial deepening in growth. As shown in the Table 2.1, a large number of studies use this method with data for financial deepening measures which mainly

¹⁰ The first empirical study of this relationship was conducted by Raymond Goldsmith in his book “Financial Structure and Development”. Goldsmith performed cross country analysis for a set of 35 countries over a period of 1860-1963, trying to test whether financial structure represented by financial intermediaries and markets affect the growth level of countries. The study aimed to determine how the growth in financial institutions is related to the rate of growth of national product of countries, and if there is a causal effect of financial structure on growth. The general results from this approach indicated that the positive correlation between financial development and economic growth is significant for all subgroups of countries. Tests are conducted for different sub-group of data with a wide selection of countries, developed and developing countries.

¹¹ Most often variables used as measures of economic growth are GDP growth rate, real per capital GDP growth rate, and real per capita capital stock rate. Variables used to measure financial deepening was often are: money supply (M2 and M3) often referred to as the measure of liquid liabilities, credit provided by bank as a percentage of GDP, credit provided by financial sector as a percentage of GDP, credit to private sector as a percentage of GDP, stock and bond market sizes measured in amounts of transaction as a percentage of GDP, and interest rate spreads.

capture the size of financial sector, banking sector and capital market relative to GDP. Overall, more than 20 studies that use cross section method show positive and significant results on the impact of financial deepening components on growth.

The most known study that has used this method was conducted by King and Levine (1993) who use data on 77 countries for the period 1960-1989. Authors use the following measures of financial depth: liquid liabilities (% of GDP), bank credit relative to central bank assets, private credit (% of GDP), and credit to nonfinancial private sector (% of GDP), while all variables prove to affect economic growth. The tested model is based on previous work by Goldsmith (1969) and developed further to control for variables that affect economic growth in the long run. Also, the study is based on a wide selection of countries and does not distinguish between different sub-groups of countries at different levels of economic development.

The cross section method is extended to use more measures that capture the supposed impact for different set of countries. Rajan and Zingales (1998) using data on 42 developed countries for the period 1980-1989 find that measures of financial deepening in the country are crucial for firms to finance their growth. Moreover, financial deepening components can foster industry growth as well as economic growth in general. Demirguc-Kunt and Maksimovic (1996) also using firm level data show that large banking sector and stock market affect the growth of firms and productivity. The authors perform estimations on different groups of countries according to the level of economic growth, and find that developments in the stock market have a tendency to stimulate financing by banks in developing countries. Levine and Zervos (1998a and 1998b) also extend the cross sectional study to include more measures of financial depth that have an impact for growth, such as stock market liquidity and banking development. In the first study they use data on 16 developing countries, while in the second study they perform estimations on 40 countries over a period of 1976-1993. The study is also built on the previous findings of Levine (1991) with data on 49 countries and Atje and Jovanovic (1993) with data on 40 countries over 30 years, who also use the cross-section method to test the role of equity markets for economic growth.

Using the cross-section analysis there are also attempts to find out if the structure of financial sector impacts economic growth, respectively if bank based or market based financial sector could produce different impacts on growth (Levine 1997, Levine 2002). The models are

tested with data of over 40 countries with variables that capture the structure of financial sector. Overall, findings suggest that different types of financial sectors do not effect growth differently. Thus, there is no difference if financial sector is market or bank based, because it is the overall financial sector that impacts growth. More recent studies that use this method, Demirguc-Kunt, Feyen and Levine (2011) using data from 26 high income OECD countries for 1980-2008 find evidence of the positive relationship between financial depth and economic growth, whereas securities market becomes very important for economic growth in the future.

Apart from cross-section analysis, the relationship between financial depth and economic growth has been analyzed for individual and group of countries in time series. Harvey (1989) using data from US market over the period 1941-1987 found linkages between bond markets and real economic output whereas bond markets often serve as predictors of future economic performance. Furthermore, Arestis and Demetriades (1996) using data from 12 developed and developing countries for 15 years find that there is a positive and significant relationship between the two phenomena. However, the relationship is also dependent on the nature of financial institutions and policies in observed countries. Demetriades and Hussein (1996) test the causality between financial depth and economic growth for 16 less developed countries and results suggest that there is no uniformity among all countries regarding this relationship. For some countries, financial depth causes growth, while for 6 out of 16 countries causality is reversed. Using a similar approach, Luintel and Khan (1999) examined the causality for 10 developing countries with 36-41 observations found that the relation between financial deepening and growth is bi-directional. Moreover, Arestis, Demetriadis and Luintel (2001) using data from 5 developed countries also find a significant relationship between measures of financial deepening, respectively stock market and banking sector on growth, although banking sector appeared more significant to growth. On the other hand, Sinha and Marci (2011) found reverse causality; respectively that only growth enhances financial deepening for a set of Asian countries. Another study conducted earlier by Shan, Morris and Sun (2001) with data from 9 OECD countries supports the same argument, which is in line with the previously stated theory by Robinson (1952) that “where growth leads, finance follows”.

2.2. b. Studies with mixed findings

The empirical relationship became more puzzling when a number of studies started pointing towards a non-linear relationship between financial deepening and growth. Favara (2003) performing different techniques including cross-section, panel and time series analysis with data of over 85 countries for a period of 1960-2000 finds evidence of non-linearity in the relationship between financial deepening components and growth, suggesting that finance matters for growth only at intermediate levels of financial development but may be negative for certain stages of growth. In contrast, an amount of empirical research argues that financial deepening and growth are not necessarily related in the long run. Perhaps the most striking study of this kind is conducted by Thornton (1996) who applied Granger-causality tests on 22 developing countries to find that financial deepening does not make much difference to economic growth. Fidrmus et.al. (2014) find that there is no linear positive long-run of financial development on growth for a set of 52 middle income countries over a period of thirty years of data. Kenourgios and Samitas (2007) studied twenty years of quarterly data from Poland and found that economic development is not driven endogenously by financial development variables. At the other hand, Rousseau and Wachtel (2002) analyzing data on 84 countries from 1960-2000 provide results that financial development or deepening does not affect growth in countries that are experiencing high inflation. Moreover, in a more recent study Rousseau and Wachtel (2011) using data for the same period 1960-2000 for 52 middle income countries find that financial depth measured as credit to private sector is not statistically significant for growth over a period of fifty years. A far reaching view that financial deepening may even generate negative effect on growth was presented earlier by Gregori and Guidotti (1995) who use panel data from Latin America to find that long run growth and financial development are negatively related.

Interestingly, the recent troubled years in the financial markets have attracted the interest of academics to reassess the financial deepening-growth duplet in order to examine the problems that might emerge from “too much finance”. New studies have tried to determine a threshold above which financial development has no longer a positive impact on growth as conducted by Arcand, Berkes and Panizza (2011) with data of over 80 countries for 40 years (1960-2000). Perhaps the most striking finding is that of Cechetti and Kharoubi (2012) who use data on 50 advanced and emerging economies for the period 1980-2010 to show that a

larger financial system boosts economic growth, but that too much finance particularly in time of crises impacts growth negatively.

In general, we cannot conclude from previous studies that financial deepening and growth follow a clear relationship. We can summarize the evidence presented above in three main findings:

- (i) Financial deepening has a positive impact on growth; mainly found in cross section and time series regressions for developed and developing countries.
- (ii) Financial deepening has a negative relationship to growth; mainly found in panel estimations for developing countries with data for the last three decades.
- (iii) Financial deepening has a complex relationship with growth, whereas it impacts growth positively at a certain level of development after which takes a U-turn and effects growth negatively; mainly found in studies that use different estimation techniques with data from advanced and developing economies. This last finding is largely based on the impact that the financial crisis has had on economic growth of countries and poses the important question if too much finance can be bad for the economy.

Table 2.1: Previous studies in chronological order

Authors (Year)	Method/Technique	Main Results	Financial deepening measures (Independent variables)
Goldsmith (1969)	Cross-section analysis, OLS	Analysis of 35 countries over 1860-1963, positive and significant relationship between financial development and growth for the sample of countries.	Size of financial intermediaries relative to economic activity, size of financial markets and supply of money relative to economic activity
McKinnon (1973)	Econometric modeling of financial variables, country-based comparisons	Average real return on capital and investment to GDP rise with rising in financial deepening.	Money stock, and domestic capital or credit to the economy.
Grossman and Stiglitz (1980)	Econometric modeling of interactions between measures of financial deepening with economic growth	Stock markets have the ability to produce information liquidity which are factors linked to efficient resource allocation and growth.	Prices (yields) of securities (financial assets) in the market
Boyd and Prescott (1986)	Mathematical derivations using measures that capture action of agents (intermediaries) in an equilibrium environment	Financial intermediaries produce information and help efficient allocation of resources.	Number of financial intermediaries, i.e. agents, and borrowers.
Harvey (1989)	Mainly time series regressions; forecast growth levels using bond yields and stock prices	Developments in bond and stock market can predict economic growth rates. Data range: 1941-1987 for US market.	Asset prices, respectively tradable bond and stock prices
Greenwood and Jovanovic (1990)	Modeling a paradigm with economic agents (intermediaries) assuming competitive equilibrium	Financial intermediation promotes growth because it allows higher rate of return to be earned on capital.	Financial intermediaries, agents and asset prices
Levine (1991)	Cross section analysis	Liquidity in financial markets facilitates investments in longer run and boosts productivity growth. 49 countries over 1960-1990.	Stock market liquidity measured by volumes of stocks and transactions
Lowe (1992)	Individual country study	Using the data on development of financial depth in Australia, finds evidence of the link between economic growth and country's financial system.	Interest rates, activity of financial intermediaries, and liquidity insurance of financial sector
Atje and Jovanovic (1993)	Cross section analysis	Stock markets help efficient allocation of wealth and contribute to economic growth. 40 countries over 1960-1991.	Stock market capitalization (traded volumes) and activity
King and Levine (1993a)	OLS - Cross-section analysis	Regression using data on 77 countries for the period 1960 – 1989 show that financial development and growth are robustly related.	Credit to private sector, liquid liabilities of the financial sector, and bank size relative to central bank assets.
Gregorio and Guidotti (1995)	Cross section analysis of proxies of financial deepening (credit provided to the economy) on growth	Negative correlation between credit and growth in the 1970s and early 1980s in Latin America.	Total amount of credit provided to the economy as a percentage of GDP, money supply (M2 and M3)
Demetriades, P. and K. Hussein (1996)	Co-integration analysis	Regression on 16 developing countries shows that generally there is evidence of causality from financial deepening to growth, but not universal for all countries. 6 out of 16 countries show reverse causality.	Supply of credit to the economy by banks and financial sector relative to the size of the economy
Arestis and Demetriades (1996)	Time series Analysis	Analyzing data on 12 developing and developed countries over 15 years point out that there is a positive and significant relationship between financial depth and economic growth	The amount of credit provided relative to the size of the economy
Thornton (1996)	Granger Causality tests	Estimations on 22 countries: Asian, Latin American and Caribbean developing economies show that financial deepening does not make	Liquid liabilities and money supply

		much difference to economic growth.	
Demetriades, P. Luintel, K., (1996)	Time series regressions of financial deepening variables on growth	Results from regressions with data for India show that policies which affect financial deepening will effect economic growth.	Banking sector control variables, interest rate ceiling.
Demirguc-Kunt and Maksimovic (1996)	Cross section analysis on countries with different level of development	Firm level regressions show that large banking sector and stock market affect the growth of firms and productivity	Size of banking sector, bank depth and stock market capitalization
Levine, R. (1997)	Cross-section regression of financial depth for growth. Individual country study, industry-level analysis, and firm level investigation	Functioning of financial system is vitally linked to growth	Domestic credit from financial sector, domestic credit to private sector, bank size, and liquidity.
Levine, R. and S. Zervos (1998a)	Cross country regression of bank credit, stock market size on productivity growth.	Results from a set of 16 developing countries show that stock market becomes more liquid and more integrated after liberalization which then generates growth.	Credit provided by banks, size of stock market and volume.
Levine, R. and S. Zervos (1998b)	Cross country regression of stock market size, liquidity, and volatility	Results from 40 countries for the period 1976-1993 show that stock market becomes more liquid and more integrated after liberalization which then generates growth.	Stock market size, volumes of trades and volatility of stock market prices
Rajan and Zingales (1998)	Cross section ; OLS	Data on 42 countries over 1980-1990 show that firms and industries rely on financing to grow faster.	credit to firms and money supply to manufacturing industries
Luintel, K and M. Khan (1999)	Vector auto-regression	Results from 10 developing countries with yearly data for 45 years identified long-run financial depth and output relationship linking financial and economic development.	Financial sector size, financial sector credit and money supply
Levine, R., N. Loayza and T. Beck (2000)	Cross section, (IV) instrumental variable	Development of financial intermediaries exerts a large causal impact on growth	Private credit to GDP, Bank credit to GDP, liquid liabilities and market turnover.
Arestis, Demetriades and Luintel (2001)	Time series analysis	5 developed counties (Germany, France, US, Japan and UK). Banks and stock market promote growth, but the banking sector has a more powerful role.	Banking sector size and credit provision, stock market size, volume and activity
Shan, Morris and Sun (2001)	Granger causality tests and VAR	Results on 9 OECD countries and China. Time-series approach is superior to a cross-sectional one and that the VAR framework avoids technical problems in assessing the relationship between financial depth and growth. Three OECD countries have reversed causality, meaning that only growth causes financial depth.	Money supply, liquid liabilities, financial intermediaries and size of financial sector
Rousseau and Wachtel (2002)	Cross sectional analysis of financial depth on economic growth including inflation rate in the model	Results from estimation on 84 countries for fifty years show that when inflation exceeds the threshold, finance ceases to influence growth.	Liquid liabilities M3, private sector credit, and M3 less M1
Levine (2002)	Cross country and instrumental variables	The difference between bank based or market based financial sector is not statistically significant to growth.	Bank size, bank credit, stock market size, stock market activity
Favara (2003)	Panel data analysis, time series and cross sectional regressions.	Regressions from 85 countries over fifty years of data show that the relationship between financial depth and growth is non-linear. Financial depth matters for growth only at intermediate level of development.	Money supply, credit from financial sector, credit to private sector, liquid liabilities
Kenourgios, Dimitris, and Samitas (2007)	Co-integration analysis	Analysis of financial depth on economic growth for ten years of quarterly data for Poland. Results show that economic development is not driven by financial development.	Credit by financial intermediaries to the private sector, shares traded on the Polish stock exchange market
Demirguc-Kunt, Feyen and	Quantile regressions, Ordinary least squares	26 high income OECD countries from 1980-2008. Securities market	Logs of financial structure gap (difference between bank

Levine (2011)		highly important for future economic growth.	based and market based) financial sector.
Arcand, Berkes and Panizza (2011)	Panel estimations, cross country OLS	Results from subsets with over 80 countries show that finance starts having a negative effect on output growth when credit to the private sector reaches 100% of GDP.	Total credit to the private sector over GDP, square of the level of credit to the private sector over GDP
Sinha and Marci (2011)	Multivariate causality test	Estimation on 8 Asian developing economies show that causality flows from growth to financial deepening for Korea, Pakistan and Philippines which means that growth causes financial depth, while financial depth has no impact on growth. For other Asian countries the relationship between financial depth and growth is significantly positive.	Private domestic banking sector, foreign owned banks, state owned banking sector, deposit base and interest rates.
Rousseau and Wachtel (2011)	Cross country and panel analysis	Estimation on 52 middle income countries from 1960-2000 show that excessive financial deepening has negative impact on growth.	Credit provided by the financial sector, liquid liabilities and overall money supply by banks
Cecchetti and Kharroubi (2012)	Panel data analysis	Data from 50 advanced and emerging market economies over the past three decades. Results from different subset of countries, developed, developing and less developed show that financial development is good only up to a point, after which it becomes a drag on growth.	Private credit to GDP, private credit by banks, financial systems asset to GDP, Banking systems assets to GDP, financial intermediation share in total employment.
Fidrmuc, Ghosh, Samargandi, and Nahla, (2014)	Panel data analysis	Estimations on 52 middle income countries over 1980-2008 show a U-shaped relationship between finance and growth in the long run.	Liquid liabilities expressed in M3 and M2 to GDP, credit to private sector, and credit by financial sector.

3 Financial Deepening in the Western Balkans

In this chapter we will examine the process of financial deepening in the Western Balkans.¹² Financial developments of this region make an interesting example due to the rapid financial sector transformation that countries experienced during the nineties with the fall of communism. New Balkan countries that were formed, Croatia, Macedonia (FYROM), Bosnia and Herzegovina, Serbia, Kosovo and Montenegro, have undergone economic and financial sector growth after declaring their independence from what was left of Yugoslavia. Although similar to Yugoslavian economic model, Albania was the country with a large financial sector transformation going from an isolated country towards an open economy when the communistic regime fell in the beginning of nineties.

Four components of financial deepening will be examined. This choice of indicators is motivated by previous studies that have used them as presented in Table 2.1. For developing and transition countries in previous studies, variables such as credit provided to the private sector, credit to government, credit from banking sector, size of the banking sector, size of non-banking sector and stock market size and activity resulted to be significant for economic growth. Therefore, in our view the above stated components should be tested for our sample of countries in order to determine if the supposed relationship between financial deepening and growth is valid for Western Balkans.

Overall the financial deepening components to be tested for Western Balkans can be divided in the following four categories:

- i. Banking sector depth and transformation
- ii. Financial sector money supply
- iii. Developments in the capital market
- iv. Quality of financial deepening

¹² Western Balkans includes seven countries of South Eastern Europe: Albania, Bosnia and Herzegovina, Croatia, Serbia, Montenegro, Macedonia (FYROM), and Kosovo. Apart from Albania, all six countries were part of the Yugoslavian Federation. We will refer to Former Yugoslavian Republic of Macedonia (FYROM) as Macedonia further on this document.

3.1. Banking sector depth and transformation: A brief history on reforms

A common characteristic for countries that experience economic transition, especially countries that move from centrally-planned to open market economies, is to deal with difficulties in finding capital to foster growth and development. Similar to other Eastern European countries, the transition process in economies of Western Balkans has undergone these challenges at dynamic paces. Although the financial sector of this region resembled the mono-banking system of Eastern bloc, Yugoslavia implemented a two-tier banking system back in 1960.¹³ The commercial banks in this so called two-tier system were not typical commercial banks as they were not free to decide on allocation on credit or to generate profit. Central banks controlled all the activities of state-owned banks and thus strongly controlled the distribution of credit.¹⁴ This way, banks had no role in allocating credit to enterprises and to industries that had the best growth potential.¹⁵ Taking into account that almost all enterprises that benefited from credit were state-owned there was no need for banks neither to consider risks nor to allocate resources efficiently in the economy. This type of banking system was replaced at almost the same time in all South Eastern European transition countries during late 1980s, and the aftermath of it led to a large number of new banks entering the markets and lowering state ownership in this sector.¹⁶

The reforms that took place in the economies of Western Balkans showed rapid results in the financial sector.¹⁷ After opening, the region dealt with a fast increase in capital inflows, which was carried through the banking sector. This development led to another large increase in credit provided to the economy by banks and offered an adequate environment for the banking sector to grow. Some of the state owned banks were transformed into commercial banks, but new banks also entered these markets, mostly owned by parent Western European banks. Additionally, the reforming process of financial sector was accompanied with assistance from international organizations, IMF, World Bank, BIS and EBRD, through advisory, technical assistance, donations, lending or equity participation in financial intermediaries that provide credit. The credit supplied in these economies was first intended to support government expenditures in rebuilding countries that were damaged from wars

¹³ The development of the Yugoslavian banking sector is discussed in Černohorská and Honza, 2013, pp 53-56.

¹⁴ Bonin, 2001, pp 22-24

¹⁵ Mehl and Winkler, 2003, pp 4-15.

¹⁶ Stubos and Tsikripis, 2004, pp 3-8.

¹⁷ See Gardo (2008) for studies on rapid financial deepening in Croatia; Barisitz and Gardo (2008) on financial developments in Serbia, Golubovic and Golubovic (2005) on financial sector reforms for the Balkans.

while later on this money supply was allocated to other sectors of the economy with growth potential.

Table 3.1: Banking Sector reforms in Western Balkans

EBRD index of banking sector reform*	Years		
	1999	2010	2014 ¹⁸
Albania	2.0	3.0	3-
Bosnia and Herzegovina	2.3	3.0	3-
Croatia	3.0	4.0	3+
Kosovo	n/a	2.7	2+
Macedonia	2.7	3.0	3-
Montenegro	n/a	3.0	3-
Serbia	1.0	3.0	3-

Source: EBRD Structural Change Indicators

Note: *According to EBRD, the transition indicators range from 1 to 4+, with 1 representing little or no change relative to a rigid centrally planned economy and 4+ representing the standards of an industrialized market economy.

As shown in Table 3.1, the country that stands out in terms of transforming the banking sector is Serbia that has moved from a state owned banking sector towards a liberalized one. Croatia and Macedonia, as two countries that became independent earlier than its peers, had a better start as a results of state owned banks which had a smaller share in the banking sector. Although, not very far from its peers, Kosovo remains behind in reforms, mainly due the absence of additional banks that are prepared to compete in the market as well as the slow legislative reform in the banking sector.

Western Balkan countries that rank higher in the reform index of EBRD had also an increased foreign bank ownership in its banking sector over the years. Foreign banks, supported by their Western parent banks could afford to lend beyond domestic deposit base which created opportunity for financing not to be limited only to domestic financial resources. Moreover, foreign banks that entered these markets brought professionalism and know-how which improved the process of credit allocation.¹⁹

Table 3.2: Banking Sector Ownership

Banking Sector Asset Ownership by Foreign Banks*	Years	
	1998	2012
Albania	14.4%	90.3%

¹⁸ EBRD provides annual data from the online data source for banking sector reforms up until 2010. Meanwhile, information on banking sector reforms for more recent years can be found in annual EBRD Transition Reports.

¹⁹ For a detailed description on the structure of ownership of banking sector in Western Balkans, see Ilahi, Miniane, Murgasova, Scott and Hollar (2015), pp 66-68.

Bosnia and Herzegovina	1.9%	94.5%
Croatia	6.6%	90.6%
Kosovo	n/a	92.0%
Macedonia	11.4%	92.4%
Montenegro	n/a	89.7%
Serbia	0.5%	74.5%
Mean	7.0%	89.1%

Source: Authors' own calculation based on data from EBRD Structural Change Indicators.

Note: *Foreign ownership defined as banks with assets of foreign ownership > 50%. Data are only provided up to 2012.

On average, the foreign bank ownership in the Western Balkans remains large with regional mean of 89%.²⁰ Bosnia and Herzegovina is the country that experienced the fastest structural change in the bank ownership whereas foreign banks have become the main drivers of credit growth (IMF, 2006).

Banking Sector Deepening in the Western Balkans has progressed in three major phases as the data point out.²¹ The first phase started in mid-nineties until the beginning of new century with foreign banks entrance and sector reforms as shown in Table 3.1 and 3.2. The second phase is the phase of stabilization and slowdown in banking sector deepening during 2000s up until the financial crises, while the last phase is characterized as the phase when consequences of global financial turmoil were evident in WB economies. We look at the credit provided by banks to the private sector as one common measure used to capture financial deepening. Meanwhile, measures used to test the deposit deepening in a country are often expressed in bank deposit as a percentage of GDP and deposit money bank assets to deposit money bank and central bank assets.²²

Table 3.3: Bank credit supply to private sector for Western Balkan countries

Domestic credit to private sector by banks (% of GDP) ²³	Deepening Phases		
	1990-2000	2001-2008	2009-2013
Albania	3.87	16.36	37.94

²⁰ Also, more information on banking sector ownership can be found in Deutsche Bank Report on Western Balkans, 2012.

²¹ Different stages in financial development and economic development of WB countries are also studied by Ilahi et.al (2015).

²² The ratio is used by King and Levine (1993) as a measure of the size of banking intermediation to distinguish from the central bank assets.

²³ The averages are calculated as arithmetic means for the entire sample of countries with available data from mid-nineties.

Bosnia and Herzegovina	50.87	39.95	54.67
Croatia	30.06	50.94	70.01
Kosovo	n/a	14.82	33.14
Macedonia	29.75	25.68	45.98
Montenegro	n/a	36.47	61.60
Serbia	29.91	26.97	46.56
Mean	28.9	30.2	50.0

Source: Authors' own calculations based on data from World Bank Development Indicators

It is interesting that during the late nineties and beginning of the new century, domestic credit provided by banks to the private sector has increased substantially for all Western Balkan countries, and in particular for Albania where this ratio has grown by more than ten times in years after the crisis.²⁴ However, the level of credit supply to private sector in Albania, Kosovo and Macedonia remains lower as opposed to Croatia which has experienced an advanced level of credit to private sector provided by banks. Also, credit provided to private sector in Albania and Kosovo are lower than the regional mean of 50 percent as Table 3.3 shows.

Table 3.4: Deposit deepening for Western Balkan countries

Average yearly percentage change; 1990 – 2013 ²⁵			
Country	Bank deposit to GDP (%)	Bank credit to bank deposit (%)	Deposit money bank assets relative to deposit money bank assets and central bank assets (%)
Albania	6.74	9.40	3.10
Bosnia and Herzegovina	7.64	-8.55	0
Croatia	11.27	-3.41	0
Kosovo	12.99	48.12	n/a
Macedonia	0.077	17.15	-0.34
Montenegro	11.61	8.42	1.27
Serbia	14.24	-4.31	0.32
Mean	9.2	9.5	0.7

Source: Authors' own calculations based on data from World Bank Global Financial Development Indicators

²⁴ Ilahi, Miniane, Murgasova, Scott and Hollar (2015), pp 15-78, also report on different phases of financial deepening in Western Balkans.

²⁵ Data from the World Bank are provided in annual basis from mid-nineties. For Montenegro and Kosovo data are provided from 2003 after countries' independence. We have calculated the year on year percentage change to capture yearly growth/decline in ratios for each country.

When observing the yearly changes in deposit deepening as reported in Table 3.4, it becomes clear that on average all Western Balkan countries had a growth in the size of deposits relative to GDP (9.2% and 9.5 %) and relative to overall central bank assets (0.7%). This implies that the entire banking sector experienced deposit deepening in the majority of countries and this process was accompanied with growth in credit deepening as shown earlier in Table 3.3. The shaded cells with negative values imply that in Bosnia, Croatia and Serbia the deposit base grew stronger compared to the loan supply as the banking sector became less leveraged and more efficient.

3.2. Financial sector money supply

Apart from substantial changes in the banking sector, the region also experienced changes and reforms in the overall financial sector. Certainly, the main driver of the financial sector transformations is the banking sector as it holds the biggest share in the overall financial system in most of Western Balkan countries. Indeed, credit provided by other non-banking institutions, credit unions and micro finance institutions is small or insignificant in most of the countries studied. An exception to this pattern is Albania that has a larger credit supply from credit unions and other financial cooperatives as shown in Table 3.5. Overall, the financial sector remains dominated by banks and the provision of credit in the economy is highly dependent on the domestic credit provided by banks.

Table 3.5: Credit Supply in the Western Balkan countries

Country Year: 2013	Albania	BiH	Croatia	Kosovo	Macedonia	Montenegro	Serbia
Outstanding loans from commercial banks (% of GDP)	38.87	60.09	70.81	36.00	49.99	55.74	52.35
Outstanding loans from credit unions and financial cooperatives (% of GDP)	10.48	-	-	-	-	-	-
Outstanding loans from all MFIs (% of GDP)	0.02	-	-	1.44	-	1.10	-

Source: Authors' own calculations based on the data World Bank Development Indicators

Similar to the developments in the banking sector, the financial sector as a whole has experienced patterns of rapid expansion during mid-nineties and stabilized during the first

years of the new century.²⁶ Measures of financial sector depth expressed in Table 3.6²⁷ confirm this trend during the three phases of financial deepening. However, it is important to notice that not all credit provided by financial sector was channeled into private sectors, due to the fact that many Western Balkans governments used the credit to finance their expenditures as reported in *Net Domestic Credit* levels by the World Bank.

Table 3.6: Financial Sector Deepening in Western Balkans

Country	Domestic Credit by Financial Sector			Net Domestic Credit		
	1990-2000	2001-2008	2009-2013	1990-2000	2001-2008	2009-2013
Albania	49.12	52.22	67.92	19.667	13.93	4.98
BiH	51.82	42.40	65.76	3.41	16.67	4.52
Croatia	39.65	60.70	90.90	9.24	17.35	4.09
Kosovo	n/a	3.42	18.87	n/a	97.60	29.72
Macedonia	45.52	22.87	47.62	-6.42	24.53	7.95
Montenegro	n/a	36.75	65.58	n/a	82.71	-5.39
Serbia	36.30	26.78	52.30	106.10	24.75	13.15
Mean	44.48	35.02	58.42	26.40	39.65	8.43

Source: Authors' own calculations based on the data from World Bank, Development Indicators

Notes: * Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net (World Bank).

** Net domestic credit is the sum of net claims on the central government and claims on other sectors of the domestic economy (World Bank).

It is important to emphasize the fact that a large amount of credit supply took place for many countries right after separating and becoming independent states.²⁸ This is a typical case for Montenegro and Kosovo that reached high levels of money supply to new government institutions, a trend which stabilized in the years following the financial crisis. In Kosovo and Montenegro, the high levels of net domestic credit presented in shaded areas occurred as results of increased government borrowing from international organization such as the IMF and World Bank. The two countries had undeveloped government bond market and this type of borrowing was the only way of financing some of the government expenditures (IMF,

²⁶ See Gardo (2008) for studies on rapid financial deepening in Croatia; Barisitz and Gardo (2008) on financial developments in Serbia, Golubovic and Golubovic (2005) on financial sector reforms for the Balkans.

²⁷ Arithmetic mean for each phase of financial deepening is calculated for each country in each phase of financial deepening.

²⁸ See Ilahi, Miniane, Murgasova, Scott and Hollar (2015) for findings related to countries of the Western Balkans that had an extended credit expansion and credit boom as measured by domestic credit provided by financial sector (Albania, Bosnia and Montenegro).

2015). Serbia has also experienced an increased supply of credit to government but mainly at the end of the 90's, and not in the overall credit supply by financial sector. This may well be the reason that Serbia opened its banking sector to foreign banks later on during the 90's.²⁹ Another development occurred in Croatia, where financial depth took another path, respectively where the increase in credit provided by financial sector to all other sectors culminated in the years after the financial crisis.³⁰ However, Ilahi et. al. 2015 finds that Serbia had a moderate and steady growth in credit provided by financial sector throughout nineties and in the beginning of new millennium. The study also finds that while some countries suffered from an excessive credit as the economy was not able to absorb all the liquidity and consequently led to resource misallocation and greater credit risk, other countries experienced credit growth which was not sufficient to foster the needs for economic development. Typical examples of the former case are Albania and Macedonia that lived the highest credit growth, while Serbia had a mild but insufficient growth in credit and money supply.

In order to observe the patterns in financial deepening that occurred in the region we take into account the yearly percentage change in the most often used indicators of financial depth such as liquid liabilities to GDP, also referred to as M3, and the overall financial system deposit to GDP. As reported in Table 3.7, the indicators of money supply experienced a strong growth over years in Kosovo, Montenegro and Serbia which confirms the data on Table 3.4 of bank deposit base increasing in these countries over time. Once again, this is an indicator of the dominant structure of financial system by banking sector.

Table 3.7: Financial Deepening in Western Balkans

Country	Average yearly percentage change; 1990 – 2013 ³¹	
	Liquid liabilities to GDP (%)	Financial system deposits to GDP (%)
Albania	4.85	6.74
Bosnia and Herzegovina	6.82	7.64
Croatia	10.59	11.27
Kosovo	12.38	12.99
Macedonia	6.58	7.65
Montenegro	11.81	11.60
Serbia	12.19	14.24

²⁹ Refer to Table 2 and 3 in this chapter for information on bank ownership and credit to private sector by banks in Serbia.

³⁰ For a study on rapid financial deepening in Croatia, see Gardo, 2008, pp. 61-80.

³¹ Data from the World Bank are provided in annual basis from mid-nineties. For Montenegro and Kosovo data are provided from 2003 after countries' independence. We have calculated the year on year percentage change to capture yearly growth/decline in ratios for each country.

Mean	9.32	10.30
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Source: Authors' own calculations based on the data World Bank Development Indicators

3.3. Developments in the capital market

In order to obtain a clear view of the structure of financing in the Western Balkans we ought to look at the developments in the stock and bond market of these countries over different phases of financial deepening as identified in the previous section.

Table 3.8: Stock Market Capitalization in Western Balkans

Stocks traded, total value (% of GDP)	Financial deepening phases*		
	Country	1990-2000	2001-2008
Croatia	0.70	2.50	1.61
Macedonia	1.43	1.92	0.46
Montenegro	n/a	5.13	2.86
Serbia	0.10	3.35	0.84
Mean	0.74	3.23	1.44

Source: Authors' own calculations based on data from World Bank Development Indicators

Note: *Values are averaged out for each period.

It is noticeable that the years prior to the financial crisis are characterized with higher volumes of traded stock as % of GDP, while the values are halved after the region was hit by the crisis. In general, stock market activity and volume remains weak in the Western Balkans, with exception of Croatia and Montenegro as the only countries that were able to keep the volume of shares traded higher than other countries in the region. However, it is common for transition countries to have underdeveloped stock markets and the Western Balkans is not an exception in this pattern.³²

The overall capital markets remain underdeveloped in the Western Balkans. Mainly, government primary bond market is the only developed structure in the region whereas secondary trading of government securities has seen some progress in the recent years. An exception to this case is of course Croatia, who apart from government bond market has developed corporate bond trading in the primary and secondary markets. As reported in Table 3.9, Croatia is the only country in the region to have made progress in developing and reforming its capital market with a mark of 3+ by EBRD structural change indicators.

³² Although the role of stock market has been proved significant for country's financial deepening, see Levine and Zevros (1998a; 1998b), more recent studies on stock market development for transition countries find that this sector remains underdeveloped in transition economies (see Berglöf, 2002).

According to EBRD Transition Report, Croatia is upgraded by one notch (grade) due to its reforms in private equity and capital markets in 2014. The grade of 3+ brings Croatia closer to the highest level of development which is 4+ for highly industrialized market economies.

Table 3.9: Progress in Capital Markets of Western Balkans

EBRD index of capital market reform*	Year
	2014
Albania	2-
Bosnia and Herzegovina	2
Croatia	3+
Kosovo	1
Macedonia	2-
Montenegro	2
Serbia	2

Source: EBRD Structural Change Indicators, Transition Report 2014

Note: *According to EBRD, transition indicators range from 1 to 4+, with 1 representing little or no change relative to a rigid centrally planned economy and 4+ representing the standards of an industrialized market economy.

3.4. Interest rate spreads

It remains important to observe the development in interest rate differentials between lending and deposit collection, respectively interest rate margins as a measure of the quality of financial depth in a country.³³ The interest rate margins or spreads are an important indicator of the quality and efficiency of the financial sector. Countries that experience high interest rate spreads are characterized as high risk countries where interest margins make up for different types of risks in the financial sector. Therefore, experiencing high spread is an indicator of inefficient financial sector, whereas the money supply is provided by few intermediaries and there is no proper competition in the sector. Koivu (2002) when studying transition economies finds that interest rate spreads are an indication of low efficiency and quality in financial intermediation and countries that struggle with banking sector reform have also higher interest rate spreads.

Interest rate spreads for the Western Balkans skyrocketed during the 90s after the massive entrance of new banks in the market. During 2000s the rates gradually decreased, although perhaps not sufficient enough to indicate that the quality of financial deepening has improved in the region. The period of financial crisis may have also contributed for the interest rate spreads not to decrease fast enough. It is demonstrated in Table 3.10 that interest rate

³³ See Koivu (2002) for findings related to the importance of interest rate margins as measures of the quality of financial depth in the country.

margins have decreased over the years which is a sign of improvement in the quality of financial deepening in the overall Western Balkan region.

Table 3.10: Average Interest Rate Margins in Western Balkans

Interest rate spread Country	Financial deepening phases*		
	1990-2000	2001-2008	2009-2013
Albania	6.02	7.51	6.00
Bosnia and Herzegovina	16.04	5.58	4.27
Croatia	12.76	8.64	8.06
Macedonia, FYR	15.56	6.85	3.09
Kosovo	-	10.76	9.82
Serbia	18.49	14.08	7.38
Montenegro	-	5.21	6.14
Mean	13.77	8.38	6.39

Source: Authors' own calculation based on data from the World Bank, Development Indicators

Note: *Values are averaged out for each period.

3.5. Comparing financial deepening across WB countries

In summary, observing the above mentioned developments in WB region we find that overall financial deepening progressed rapidly over the first decade, slowed down in pace but continued to growth in the second and third phase. The first period strikes out as the time of large transformations in the financial sector characterized with an inflow of credit from foreign banks, large supply of credit to finance government expenditures, high interest rate spreads and some stock market activity. The pace of progress slows in the second period but is characterized with significant banking sector reforms for all countries. Meanwhile, the period after the financial crisis does not seem to have impacted the level of credit supply in general. We notice that credit provided by banking and financial sectors remained high during the last period, but government borrowing through financial sector suffered a drawback. On the other hand, stock market activity and capitalization decreased significantly and this is a clear indication on the impact of financial crisis in this particular sector. Moreover, given the progress that the region has shown in financial deepening, we would expect lower interest rate spreads during the recent year, but the level of these spreads remain high for the majority of countries in the region.

To sum up the financial deepening progress in WB and the differences between the countries studied we have ranked countries from 1 to 7, from best to worst, for each of the dimensions

of financial deepening. The assessment is tentative but it provides a fair picture of the differences between the countries.

Table 3.11: Country ratings for financial deepening progress

Country	Components of financial deepening				Overall score (sum)	Ranking
	Banking sector	Financial sector	Capital Market	Interest Rate Spread		
Croatia	1	1	1	3	6	1
Montenegro	2	2	1	3	8	2
Albania	2	1	5	4	12	3
Macedonia	3	4	4	1	12	4
Serbia	4	5	4	4	17	5
BiH	5	6	5	3	19	6
Kosovo	5	4	7	7	23	7

Note: Countries are ranked from 1-7, from best to worst.

We have ranked Croatia as the best performing country due to its well reformed financial sector, solid credit supply and well performing capital markets. Credit to private sector for Croatia has shown steady growth over three phases of deepening while in the last phase it reached 70.01 percent of GDP, way above the regional mean of 50 percent (Table 3.3). Meanwhile, credit supply to government has decreased over the years and this signals that funds were channeled to sectors with growth potential rather than being landed to finance government spending. Table 3.6 shows that the ratio of money supply to government decreased from the second phase of deepening to the last one, from 17.35 to 4.09 percent. However, Croatia suffers from high interest rate spreads which may be as a result of an uncompetitive financial sector mainly dominated by banks.

Although, the smallest country in the region, Montenegro has a good supply of credit, solid capitalization of stock market but also suffers from high interest rate spreads. Montenegro has made progress in the supply of credit to private sector which grew from 36.47 to 61.60 percent over the last two phases of deepening (Table 3.3). Furthermore, credit to finance government expenditures decreased from 82.71 to -5.39 percent which is an exceptionally important development for the country's financial progress. Similarly to Croatia its credit supply is mainly dominated by banks, even though in small amounts credit is also provided

by non-banking institutions such as micro-finances but accounts for only 1.10 percent of GDP (Table 3.5).

Albania is a country that stands out in terms of having more competition in money supply as can be shown in Table 3.5 whereas credit provided by credit unions and other financial cooperatives accounts for 10.48 percent of GDP. This is an indicator that the supply of money in the country is not dominated only by banks as we have seen in other countries of the region. Moreover, Albania also made progress in decreasing its credit supply to government from 13.93 to 4.98 percent of GDP over two last phases of financial deepening (Table 3.6). Another, positive development in Albania is the average growth in its deposit base relative to central bank reserves, which stands at 3.10 percent for the period 1990-2013, and is way above regional average of 0.70 percent. However, relatively high interest rate spreads remain Albania's drawback.

Macedonia is the only country with low interest rate spreads similar to industrialized economies, whereas the average spreads for the last two deepening periods halved from 6.85 to 3.09 percent (Table 3.10). The spreads also remain below regional average of 6.39 percent. In comparison to Albania, Macedonia's disadvantage is that its financial sector is mainly dominated by banks. Both, Macedonia and Albania are graded with 2- on their capital market reform according to EBRD and in other financial deepening components stand at similar levels. On the other hand Serbia has made progress in reformation of its financial sector although the process started later compared to other countries. High interest rate spreads are a significant problem in Serbia, and stock market capitalization which is 0.84 percent compared to Montenegro that has a ratio of 2.86 percent (Table 3.8). Bosnia and Herzegovina is characterized by lower interest rate spreads although other indicators of financial deepening are of similar levels to Serbia. Stock markets remain nonfunctional in Bosnia, while overall financial sector reform was graded with 3- by EBRD.

Lastly, we have ranked Kosovo at the bottom of the list, mainly due to its exceptionally high interest rate spreads and inexistent capital market. Unlike, the majority of countries in the region, credit supply in Kosovo is also offered by other non-banking institutions, which is an advantage but the banking sector is dominated by very few banks which indeed hurts competition in its financial sector.

4 Assessing the impact of Financial Deepening on Economic Growth for Western Balkans

The financial sector deepening in the region was a process accompanied with substantial economic reforms that occurred at almost the same time in the majority of the countries of Western Balkans. As identified in the third chapter, the pace of developments varied from period to period and between countries, but generally progressed in three main phases. The first phase started in the early nineties when most countries experienced high economic growth due to the rapid transformation in their economic systems. The second phase started with the new millennia and is characterized with sustained growth which lasts up until the global financial crisis hit the region. Lastly, the aftermath of financial crisis is the phase characterized with lowest growth levels for all Western Balkan countries in contrast to the last twenty years.

Contrary to what we would expect, the data presented in Table 4.1, specifically the average economic growth for the seven countries in the region show that growth varied significantly over the three phases, but financial deepening components did not follow the same development. It remains striking to us that the average annual growth rates in the region are approximately ten times worse off compared to pre-crisis levels, while bank and financial sector depth even looks as it has improved after the crises. The components of financial deepening that follow a similar trend are credit provided to government (net domestic credit) which also decreased significantly in the period from 2009-2013, and proxy of stock market capitalization as measured by stocks traded to GDP (%), that also halved after the crisis hit the region.

Table 4.1: Economic growth and financial deepening indicators for Western Balkans

Indicators ³⁴	Phases of economic growth and financial deepening		
	1990-2000	2001-2008	2009-2013
GDP per capita growth (annual %)	26.4	39.6	8.4
GDP growth (annual %)	7.1	5.3	0.7
Domestic credit provided by financial sector (% of GDP)	44.5	35.0	58.4

³⁴ The averages are calculated as arithmetic means for the entire sample of seven countries. Net domestic credit is calculated as percentage change year on year from the annual data provided in total amounts.

Domestic credit to private sector by banks (% of GDP)	28.9	30.2	50.0
Net domestic credit	26.4	39.6	8.4
Stocks traded, total value (% of GDP)	0.7	3.2	1.4

Source: Authors' own calculation based on data from the World Bank.

Note: Stocks traded, total value (% of GDP), are only calculated for the four countries that have functioning stock markets: Croatia, Macedonia, Montenegro and Serbia.

Therefore, observing the direction of the relationship between financial deepening and economic growth variables as presented in Table 4.2 we would notice that some measure of financial sector depth like credit provided by financial sector move in different direction in comparison to GDP growth. Moreover, the correlation coefficient is negative, providing more evidence on data reported in previous table where we inform that financial sector depth does not follow economic growth patterns, in particular during the years after the financial crisis. In contrast, other measures of financial deepening such as stock market capitalization have moved in the same direction as economic growth over time which is a sign that there might be a potential relationship to be estimated. Interest rate spread which is a measure of the quality of financial depth as presented in the previous chapter shows a negative relation to growth which could be accurate as economic growth progresses over time, the spreads between lending and borrowing should have decreased.³⁵

Table 4.2: Correlation coefficients between financial deepening and economic growth indicators for WB countries over 1980-2013

Indicators	Financial Sector Depth	GDP Growth	Stock Market Cap	Interest Rate Spread
Financial Sector Depth	1.0000	-0.2106	0.1716	-0.2055
GDP Growth	-	1.0000	0.2883	-0.2479
Stock Market Cap	-	-	1.0000	-0.0553
Interest Rate Spread	-	-	-	1.0000

Source: Authors' own estimations based on data from the World Bank

Note: Financial sector depth is domestic credit by financial sector (% of GDP), Stock Market Cap is stocks traded in volume (% of GDP), and interest rate spread is the difference between lending and borrowing interest rates.

Therefore, it remains puzzling to determine which components of financial deepening have followed patterns and trends of economic growth and if these components have created an impact in growth in the Western Balkans.

³⁵ In page 28 of the fourth chapter we have described the role of interest rate spreads as indicators of financial sector performance.

4.1. The Model

To study the relationship between financial deepening and growth in the region we will estimate panel data regression for the period 1980-2014³⁶ for the seven Western Balkan countries, expressed as following:

$$GROWTH_{i,t} = \alpha_{i,t} + \beta_{i,t} * DEEPENING_{i,t} + \gamma_{i,t} * CONTROL_{i,t} + \varepsilon_{i,t}$$

or

$$G_{i,t} = \alpha + \beta_{i,t} F_{i,t} + \gamma_{i,t} C_{i,t} + \varepsilon_{i,t}$$

where, $F_{i,t}$ will be the set of measures used to capture the financial deepening in the country, and $C_{i,t}$ will be the control variables that capture other factors related to growth. The dependent variable Growth (G) is the annual GDP growth or per capita GDP growth. To control for additional factors that may have an impact on economic growth, the variables C_t will include: Exports (% of GDP), Foreign Direct Investment (FDI), Inflation, Government Spending on Education (% of GDP), and Secondary School Enrollment³⁷. As recent studies use panel regression models to estimate the finance-growth relationship (Favara 2003, Rousseau and Wachtel 2011, Cecchetti and Kharroubi 2012) we find this technique to be the most appropriate for generating robust financial deepening coefficients. We avoid using cross-section method due to its documented limitations,³⁸ and we do not perform time series analysis due to scarcity of data for individual countries.³⁹ Our estimations will be organized in the following order:

- (i) Pooled OLS regressions with panel data for seven countries over the observed period 1980-2014
- (ii) Tests for random vs. fixed effects to detect possible heterogeneity among countries in our sample
- (iii) Separate panel regressions for three phases of economic and financial development.

³⁶ In general, data sample starts from 1980. The data are available for different periods depending on the year when the countries became independent or when they started reporting, e.g. for Albania data on growth rates start from 1981, but for financial deepening variables data start from 1994.

³⁷ Our choice of control variables is motivated by the use of these variables in previous studies by King and Levine (1993b); Levine and Zvros (1998), Beck and Levine (2004).

³⁸ Although cross-section method was widely used by economist during the 90s, studies (Arestis and Demetriades, 1997) found that this method produces econometric problems due to heterogeneity of slope coefficients as it can only compute the average effect of financial variables in economic growth across countries. For more findings on the limitations of cross country method see Arestis and Demetriades (1997), pp.783-790.

³⁹ In particular, countries that were formed after 2000, Kosovo and Montenegro, offer very limited data which at best are from 2003-2014. Moreover, countries like Serbia and Bosnia and Herzegovina started reported data later on, mainly during the 90s.

Measures that are used to capture the level of financial deepening have been presented in the second and third chapter and are mainly summarized in three categories: (1) measures that capture the depth of financial sector, (2) measures that capture the size of the financial sector, and (3) measure of the quality and efficiency of the financial sector. In this way, each category of measures will be tested in order to determine the aspects of financial deepening that have impacted economic growth. More specifically, the financial deepening variables which will be tested against growth rates are presented in Table 4.1. Overall, variables are categorized in the following way: (1) Financial Sector Depth: *BANK DEPTH*, *FIN DEPTH*, *PRIV*, *CREDIT GOV*; *DEPOSIT DEPTH*, *MONEY*; (2) Financial Sector Size: *BANK SIZE*, *STOCKS*; and (3) Financial Sector Quality: *RATE SPREAD*⁴⁰

Table 4.3: Description of Financial Deepening Variables⁴¹

<i>BANK DEPTH</i>	Domestic credit to private sector offered by banks as a percentage of GDP.
<i>FIN DEPTH</i>	Domestic credit provided by the financial sector as a percentage of GDP. This includes all credit to all sectors. Credit to government is excluded from this measure.
<i>PRIV</i>	Domestic credit to private sector as a percentage of GDP.
<i>CREDIT GOV</i>	Net domestic credit is the sum of all credit provided to the government and other governmental institutions.
<i>DEPOSIT DEPTH</i>	Demand, time and saving deposits in deposit money banks and other financial institutions as a percentage of GDP.
<i>MONEY</i>	Ratio of liquid liabilities as a percentage of GDP.
<i>BANK SIZE</i>	Deposit money bank assets relative to deposit money bank assets and central bank assets (%).
<i>STOCKS</i>	Stocks traded or total value as a percentage of GDP.
<i>RATE SPREAD</i>	The interest rate differential between lending and deposit rates.

Note: The variables are defined and collected by the World Bank.*

⁴⁰ The measure (interest rate margin) is used by Koivu (2002), pp. 12, and appears statistically significant in explaining the quality and efficiency of the banking sector.

⁴¹ The descriptions are obtained from the World Bank Development Indicators: data.worldbank.org.

4.2. Data and Source

The sample includes data expressed annually from 1980 to 2014. There is no uniformity in available data due to the fact that countries became independent or started reported data on different years. Albania is the country with the most available data, followed by Macedonia and Croatia. For Serbia and BiH data start in mid-nineties, while for Kosovo and Montenegro data start after 2000. Data availability is also different for different variables, e.g. for Albania data on growth rates can be found from 1981, while data for financial deepening indicators of this country are only available from the 90s. The sources of data are World Bank Development Indicators and Global Financial Indicators, Financial Access Survey from the International Monetary Fund (IMF), European Bank for Reconstruction and Development (EBRD) data from Structural Change Indicators and yearly Transition Reports.

4.3. Estimation and Results

4.3. a. Pooled Panel OLS

First, we perform pooled OLS regressions with panel data to test for possible impact of financial deepening components in economic growth for the period 1980-2014. The regressions are conducted with the statistical tool, E-views 8. Financial deepening components are regressed in different combinations against annual GDP growth and annual per capital growth while controlling for other factors that may have created an impact on growth. Due to high correlation among financial deepening components with each other as described in Appendix A, we do not use financial variables that are highly correlated with each other in the same regression model so as to avoid for multi-collinearity bias.

The estimation results are summarized in Table 4.4. Only the results with statistically significant variables and highest R^2 are reported. Out of pooled panel regressions the results indicate that there is a significant impact of financial deepening components, money, stocks, financial sector depth, credit to private sector (priv), and interest spread, on both measures of economic growth. Interestingly, the measure of liquid liabilities as a percentage of GDP (M3), or variable Money, is statistically significant but the coefficient of the variable is negative. However, the negative impact of this indicator could be due to numerous reasons

which are also found in previous studies and which we may explore later.⁴² Another interesting result is that stock market capitalization appears positive and statistically significant to growth. Countries that have active stock markets like Croatia and Montenegro, and to some extent Macedonia, are also the ones that made better financial sector progress.

Other variables that capture the depth of financial sector are tested separately in equations of growth so as to avoid correlation between explanatory variables of financial deepening as shown in Table 4.4. We have estimated the effect of credit provided to private sector and financial sector depth in combination with stock market capitalization and rate spread as explanatory variables, even after controlling for additional factors affecting growth such as exports, government spending in education, inflation and foreign direct investments. In support to previous results where the negative impact of variable *Money* is significant to growth, here we also find that the measures of financial depth are negatively related to growth (-0.09966), although at 92% confidence (p-value 0.079). Interest rate spread appears statistically insignificant once we add *Fin Depth* in the equation. Due to high correlation between financial sector and banking sector depth we also found same results for the impact of other measures of financial deepening such as the *bank depth*.

Moreover, additional estimations point out to similar findings even when we add variable *privy* in the equation, which captures the impact of credit to private sector in the economy. The coefficient is negative and statistically significant with 93% confidence (p-value 0.0702). Once again, this interesting relation should be explored further in order to determine if the results are applicable to all the countries in our sample, or if we have idiosyncratic characteristics in our sample.

Contrary to the findings mentioned in other studies, where the size of banking sector measured by total banking assets relative to central bank assets appears significant to growth, in our estimation this variable (*bank size*) is insignificant. Moreover, the variable that captures the amount of credit landed to government (*credit gov*) appears to be statistically insignificant for growth. This result is interesting as it proves that landing to finance government spending had not generated a positive and significant impact on economic growth.

⁴² Similar findings of negative impact of financial deepening variables in economic growth are found in Favara (2003) and Cecchetti and Kharroubi (2012) where it is pointed that financial deepening is good only up to one point, but becomes a drag on growth once the deepening is rapid.

Table 4.4: Pooled OLS Regression results on growth for Western Balkans

	<i>Dependent Variable: GDP Growth</i>				<i>Dependent Variable: Per Capita Growth</i>			
	Coeff.	Std. Error	T-test	P-value	Coeff.	Std. Error	T-test	P-value
<i>Intercept</i>	-122.0975	33.51266	-3.643324	0.0054	-128.1464	39.78884	-3.220663	0.0105
Money	-0.323401	0.071218	-4.540983	0.0014	-0.307112	0.084556	-3.632065	0.0055
Fin Depth	-0.099658	0.050955	-1.955849	0.0790	-0.049069	0.024741	-1.983254	0.0526
Priv	-0.145738	0.071921	-2.026277	0.0702	-0.067273	0.031434	-2.140145	0.0371
Bank Depth	-0.076966	0.029850	-2.578411	0.0128	-0.067222	0.031431	-2.138688	0.0372
Stocks	0.640708	0.218609	2.930839	0.0050	0.516600	0.224077	2.305460	0.0252
Rate Spread	-0.093214	0.038426	-2.425791	0.0188	-0.084418	0.040551	-2.081777	0.0423

Method: Panel Least Squares

Goodness of fit for the model ranges from $R^2 = 0.501076$ to $R^2 = 0.783644$ depending on combination of explanatory variables and the choice of control variables.

Control variables: export, inflation, government spending on education, secondary school enrollment and foreign direct investment.

Note: Fin Depth is credit provided by financial sector (% of GDP), Money is total liquid liabilities or M3 (% of GDP), Stocks is volume traded (% of GDP), PRIV is credit provided to private sector (% of GDP), Bank depth is domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations, Rate Spread is the difference between lending and borrowing rate. Only variables with statistically significant coefficients are reported. For detailed results on other variables see Appendix B.

4.3. b. Random or Fixed Effects in estimations

In order to capture for heterogeneity among countries in our estimations, we have performed the regular Hausman test for the above estimated equations. Finding a presence of fixed effects in our sample would require investigating country to country differences in estimations and adding up country dummies in the regression, while a presence of random effects in our estimation would give us the comfort of assurance that our estimations do not suffer from heterogeneity and we can safely ignore individual country characteristics when explaining growth dependence on financial deepening components.

Table 4.5: Fixed vs. Random Effect Estimation Results

HAUSMAN TEST			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random/ Explanatory variables: Money, Stocks and Rate Spread	1.018468	3	0.7968
Cross-section random/ Explanatory variables: Fin Depth, Stocks and Rate Spread	4.094423	3	0.2514
Cross-section random/ Explanatory variables: Priv, Stocks and Rate Spread	2.088718	3	0.5542

In both cases, we do not have sufficient evidence to reject the null hypothesis that the random effect model is appropriate, and therefore we do not have to look into country to country characteristics when estimating the relationship between financial deepening and growth. This finding is also in line with previous statements whereby we have emphasized that the financial deepening process occurred in the same way and almost simultaneously in most of Western Balkan countries. Another reason which may explain the fact that we do not find presence of fixed effects in our regressions is that data are not available for all financial deepening components over the entire period of time, and therefore the measurements might suffer from scarcity of data. However we may still be able to generate different effects of financial deepening variables in economic growth by looking at different phases of economic and financial development as specified in section 4.1.

4.3. c. Regressions on three phases of deepening

As suggested in chapter 2, the impact of financial deepening on growth may vary over time. Therefore, we will look how financial deepening variables impacted growth during the three development phases identified in the previous section. This will be conducted in order to capture for potential impact that financial deepening components may have created during periods of rapid financial and economic development. Due to the fact that most of the reforms in the banking sector occurred mainly from 2000 and onwards we would expect that financial deepening variables will impact growth significantly during this phase of development, as well as during the nineties when most countries passed through important financial sector transitions.

Table 4.6: Financial deepening and Growth during three phases of development

Regression Results		Financial deepening phases		
Dependent variable: GDP Growth				
Explanatory Variables of Financial Depth	1990-2000	2001-2008	2009-2013	
Fin Depth/Money/ Deposit Depth	Insignificant	Significant ** (negative)	Significant** (negative)	
Rate Spread	Insignificant	Significant* (negative)	Significant** (negative)	
Stocks	Insufficient observations	Significant***	Significant**	

*Note: *significant at 10%, **significant at 5%, ***significant at 1%. See Appendix C for detailed statistics.*

Based on the estimations for different periods we find that the impact of financial deepening variables again does not generate the expected impact throughout the periods of important financial and economic developments. During the nineties the financial deepening components result insignificant in driving growth, while findings for the following period reconfirm the results of section 4.2. Most measures of financial depth are significant to growth but in negative relation which is striking but at the same time logical for the reasons which we will summarize in the final chapter. Stock market capitalization results as a variable that has driven growth positively and significantly even during different phases of development.

5 Summary of Results and Policy Implications

In this paper we have investigated the patterns of financial deepening in the Western Balkans and its relation to economic growth. We have observed this process during three main phases of financial and economic sector transformations which occurred in the Western Balkans over the past decades. From the panel regressions that we have performed in order to determine the explanatory power of financial deepening variables in growth, we may summarize our findings as follow:

1. Generally, financial deepening components do not generate the expected impact on economic growth in Western Balkans and often indicate that they are negatively related to growth. In particular, variables that captured the money and credit supply, financial sector and deposit depth, demonstrated a negative impact on growth when estimations were conducted for the entire observed period. Contrary to findings in King and Levine (1993) where banking sector size (bank size) is significantly and positively related to growth, in our estimations this variable has no explanatory power on growth.
2. Variable that measures the quality of financial sector depth, respectively *interest rate spread*, resulted in significant and negative impact on economic growth which we have expected due to the fact that in Western Balkans the margins between lending and borrowing rates are exceptionally high. Having high interest rate margins and a financial sector largely dominated by foreign ownership indicates that profits are soaked out of countries, and therefore high interest rate have even generated a negative impact on economic growth. This finding could also serve complimentary to the previous findings where financial depth variables appeared negatively related to growth.
3. Stock market capitalization has a positive and significant impact on economic growth and we consider this result to be a very important factor in explaining growth for certain countries. We have shown in the third chapter that countries like Croatia and Montenegro with more active stock markets have also had better performance in terms of financial sector reforms and are closer to the levels of industrialized economies as rated by EBRD. This indicates that stock market is a variable that is important and also impacts economic growth because it provides a source of funding for enterprises, opportunity for investors and often serves as a competitor to the banking sector which then drives interest rate spreads to lower levels.

4. Testing for individual country characteristics in our sample, we found that financial deepening variables affect economic growth in a similar way for all our sample of countries and there are no statistical significant differences among countries.
5. Financial deepening components are insignificant to growth for periods before 2000, and become significant but negative in the second phase of deepening and when the region is hit by the global financial crisis.

It is worth noting that our model and estimations suffer from insufficient data for all financial deepening variables, in particular for the newest countries of the region. With more available data, and more advanced estimation techniques one should produce more robust results and perhaps shed light on country to country differences. Nevertheless, the simplicity of the model has produced results that correspond with financial deepening trends which we have observed in the third chapter and this gives us the assurance that the estimated coefficients capture the true nature of the relationship between financial deepening and economic growth for the Western Balkans. In our view, two important findings of this paper should be considered by policy makers of the region. First, the stock market development is a variable that positively and significantly impacts growth and provided that countries of this region are relatively small in size, the region may benefit from creating a regional stock exchange which would provide alternative access to funding for Balkan companies. So far, the idea of a regional stock exchange was discussed in regional conferences but concrete measures are yet to be taken⁴³. Second, the interest rate spread variable impacts growth negatively and countries could do more to lower these spreads by creating conditions for other non-banking financial intermediaries to compete with the banking sector, therefore reducing interest rate margins. Overall, the impact of financial deepening components in economic growth did not show the expected outcome for the Western Balkan region. The reason why the progress in financial sector has not produced the expected impact may also be due to the way that money was channeled into these economies. To a large extent, credit supply for countries was destined to finance government expenditures, instead of being channeled to the private sector. The region also suffers from low quality of financial depth due to very high interest rates and a financial sector dominated by banks only.

⁴³ The integration of stock exchanges or creation of a regional stock exchange in Western Balkans was discussed in numerous regional events. Prishtina (2012), “Regional opportunities for capital growth of Kosovo enterprises”; Müller-Jentsch (2007), “Financial Sector Restructuring and Regional Integration in the Western Balkans”. Also, Stefanova and Kalaydzhieva (2014) present opportunities of regional integration of stock exchanges in “Strengthening the Regional Integration in Central and Eastern Europe through Cohesion Policy Instruments and Cooperation among Stock Exchanges”.

APPENDIX

APPENDIX A: CORRELATION BETWEEN INDEPENDENT VARIABLES

Table A shows the correlations between financial deepening variables. As discussed in chapter 4, we have not regressed independent variables that showed high correlation between each other in the same equation. Shaded areas indicate high correlation among variables.

Table A: Correlation between financial deepening explanatory variables

	BANK_DEPTH	BANK_SIZE	CREDIT_GOV	DEPOSIT_DEPTH	MONEY	FIN_DEPTH	STOCKS	RATE_SPREAD
BANK_DEPTH	1.000000	0.560047	0.101102	0.830381	0.790439	0.960057	0.354113	-0.226508
BANK_SIZE	-	1.000000	0.270743	0.637826	0.629984	0.613643	0.173596	-0.134462
CREDIT_GOV	-	-	1.000000	0.113410	0.118848	0.098199	-0.058303	-0.057901
DEPOSIT_DEPTH	-	-	-	1.000000	0.996301	0.829691	0.257268	-0.113826
MONEY	-	-	-	-	1.000000	0.795248	0.224180	-0.109470
FIN_DEPTH	-	-	-	-	-	1.000000	0.222492	-0.212262
STOCKS	-	-	-	-	-	-	1.000000	-0.069489
RATE_SPREAD	-	-	-	-	-	-	-	1.000000

Data Source: World Bank, Development and Global Financial Indicators

APPENDIX B: SUMMARY STATISTICS OF ALL INDEPENDENT VARIABLES

Tables present regression results of all financial deepening variables in the equation. The explanatory variables are GDP growth and Per Capita Growth.

Table B.1: Regression results of independent variables. Dependent variable annual GDP Growth

	Coefficient	Std. Error	t-Statistic	Prob.
BANK DEPTH	-0.076966	0.029850	-2.578411	0.0128
FIN DEPTH	-0.099658	0.05095	-1.955849	0.0790
PRIV	-0.145738	0.07192	-2.026277	0.0702
CREDIT GOV	-1.12E-12	1.18E-12	-0.950245	0.3464
DEPOSIT DEPTH	-0.053375	0.031779	-1.679595	0.0995
MONEY	-0.323401	0.071218	-4.540983	0.0014
BANK SIZE	-0.021526	0.116393	-0.184942	0.8541
STOCKS	0.640708	0.218609	2.930839	0.0050
RATE SPREAD	-0.093214	0.038426	-2.425791	0.0188

Table B.2: Regression results of independent variables. Dependent variable annual per capita GDP growth

	Coefficient	Std. Error	t-Statistic	Prob.
BANK DEPTH	-0.067222	0.031431	-2.138688	0.0372
FIN DEPTH	-0.049069	0.024741	-1.983254	0.0526
PRIV	-0.067273	0.031434	-2.140145	0.0371
CREDIT GOV	-7.40E-13	1.23E-12	-0.601922	0.5498
DEPOSIT DEPTH	-0.042104	0.033355	-1.262325	0.2129
MONEY	-0.307112	0.084556	-3.632065	0.0055
BANK SIZE	0.063402	0.120377	0.526699	0.6008
STOCKS	0.516600	0.224077	2.305460	0.0252
RATE SPREAD	-0.084418	0.040551	-2.081777	0.0423

*Note: Equations mainly include one of the explanatory variables in combination with Stocks and Rate Spread.
Data Source: World Bank Development Indicators*

APPENDIX C: SUMMARY STATISTICS OF REGRESSIONS IN THREE PHASES OF FINANCIAL DEEPENING

Table C presents regression results from estimations in different period of financial deepening. Data are split in three samples: 1990-2000, 2001-2008, and 2009-2013.

Table C: Coefficients and P-values from Regression Output

	Financial Deepening Phases		
	1990-2000	2001-2008	2009-2013
BANK DEPTH	-1.556292 (0.1023)	-1.212908 (0.0967)	-1.654391 (0.0312)
FIN DEPTH	-0.103212 (0.2426)	-0.092312 (0.0342)	-0.097691 (0.0198)
PRIV	-1.559580 (0.1342)	-0.087691 (0.0845)	-0.214329 (0.0471)
CREDIT GOV	-1.06E-11 (0.8827)	-0.004516 (0.4129)	-6.22E-8 (0.2239)
DEPOSIT DEPTH	-0.020215 (0.9738)	-0.049826 (0.0813)	-0.062299 (0.0912)
MONEY	-0.027498 (0.9649)	-0.295378 (0.0210)	-0.331992 (0.0014)
BANK SIZE	-0.332674 (0.6687)	-0.05398 (0.3278)	-0.019853 (0.1989)
STOCKS	Insufficient observations	0.427012 (0.0008)	0.778939 (0.0467)
RATE SPREAD	-0.530277 (0.1184)	-0.084530 (0.0989)	-0.104921 (0.0891)

The values are standardized coefficients (β). P-values are reported in brackets.

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