

## REEXAMINING FINANCE-GROWTH NEXUS: A NEW LITERATURE SURVEY

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*The nexus between financial development and economic growth is a well-documented literature and it has continued to expand since the pioneer studies in the early 1990s. From this view point, the goal of this paper is to survey finance-growth literature. The results obtained from causality analyses are not uniformed across different countries or country groups, different measures of financial development, and different empirical methodologies. On the other hand, however, there is also evidence that results are not that much volatile once regression based empirical approaches are employed.*

**Keywords:** *financial development, economic growth, literature survey.*

**JEL Codes:** *E44; O40.*

**I. INTRODUCTION**

The literature on finance-growth nexus dates back at least to Schumpeter (1911) who argues the positive role of financial development on economic growth. Along with Schumpeter (1911), there have been some pioneer and promising studies in the literature until 1980s as well (see, for axample: Patrick, 1966; Goldsmith, 1969; McKinnon, 1973; Shaw, 1973). From that day on, a large amount of literature has examined the impact of financial development on economic growth using various empirical methods with focussing cross-country, time series, panel data, and firm-level studies (King and Levine, 1993a, 1993b; Levine, 1997, 2003; Rajan and Zingales, 1998; Levine et al., 2000; Beck and Levine, 2004; Beck et al., 2000, 2005; as among others). Bulk of these studies has found a positive impact of financial development on economic growth. However, global crisis in 2008 has lead researchers and policymakers to reconsider recent conclusions suggested by the literature (Law and Singh, 2014). Overall, empirical results provided by these studies have been found to be conflicting.

The channels how financial development affects economic growth could be explained via five lines (Uyanga and Suruga, 2008). *Efficiently allocated savings* can reduce the cost of financial resources for industry and firm and increase the funds available for investment. *Managing and reducing risk* can diminish the uncertainty of investment projects. *Monitoring firms* and *exerting corporate governance* can induce managers to maximize firm's value and improve allocation of resources. These functions support the effectiveness of corporate governance that has impact on firm performance with potentially substantial consequences on national economic growth rates. Taken as a whole, existing literature suggests that countries with better functioning financial systems facilitate the external financing constraints that promote firm and industrial expansion, suggesting that this is one mechanism through which financial development matters for economic growth. At this point it is particularly relevant when assessing the effects of financial market development in an economy with different aspects in detail. In cross-country studies, it is hard to determine the idiosyncratic obstacles for their financial market development-growth nexus.

Previous papers provide an excellent overview of large body empirical papers (Levine, 2003; Kakilli-Acaravci et al., 2009). However, we believe that a rapidly-developing literature needs a fresh and proper survey. The purpose of this paper is therefore to resurvey the literature of finance-growth nexus from a different viewpoint. Following introductory part, we review related literature in the next section and then conclude in the last section.

**II. THE CAUSALITY LITERATURE SURVEY ON FINANCE-GROWTH NEXUS**

Causal relationships between these two variables have been categorized into four lines (Kakilli-Acaravci et al., 2009). First, *supply-leading hypothesis* establishes causality from financial development to economic growth. This view figures a strong causality that finance positively influences the real economy through increasing in saving rates and investment or the efficiency improvements in the capital accumulation. Thus, this progress can contribute to technological innovation and lead to economic growth Second, *demand-following hypothesis* establishes the causality from economic growth to financial development. In line with this view Robinson (1952) states "finance follows where enterprise leads". This implies that financial development does not cause growth; financial development responds to changing demands from the real economy. The growth of economy induces increased demand for financial services and which in turn generates the creation of

financial intermediaries Third, *bi-directional causality hypothesis* contains supply-leading and demand-following views mutually. This mutual interaction may be detected in the same period, indicating that financial development encourages real growth, while the developing economy's demand for finance is met by the developing financial sector. Moreover the direction of causality whether financial development is supply-leading or demand-following may alter according to an economy's general development stage (Patrick, 1966; Thornton, 1996). Fourth, *irrelevance hypothesis* postulates an independent or non-causal relationship in line with neo-classical theory that assumes zero transaction costs and perfect information (Blum et al., 2002). According to this view, financial development induces a minor contribution to economic growth or the impact of financial development on economic growth can be ignored.

Following Ozturk (2010) that surveys energy-growth nexus, we provide chronological lists of the empirical studies on finance-growth causal nexus by author, time frame, empirical approach and empirical results in table 1-3. To this end, table 1 covers time-series analysis, table 2 covering multi-country time series analysis and finally table 3 summarizes panel data samples.

**Table 1 - Overview of the country-specific studies on finance-growth nexus**

Authors	Period	Country	Methodology	Causality Relationship
Ray (2013)	1990-91 to 2010-11	India	Granger Causality Test	FD⇒EG
Ndlovu (2013)	1980-2006	Zimbabwe	Multivariate Granger Causality Test-Johansen Cointegration Test	EG ⇒ FD
Carby et al. (2012)	1946-2011	Barbados	VAR- VECM	EG⇒FD (in the short run) FD↔EG (in the long run)
Bojanic (2012)	1940-2010	Bolivia	Granger Regression-ECM	FD⇒EG
Chimobi (2010)	1970-2005	Nigeria	Cointegration-Granger Causality Test	FD⇒EG
Maswana (2009)	1980-2002	China	Hsiao's Version of the Granger Causality Tests	FD↔EG
Perera (2009)	1955-2005	Sri Lanka	Johansen Cointegration-Granger Causality Test	Broad Money↔EG Private Sector Credit⇒EG EG⇒ narrow money, total credit, private sector credit to total domestic credit
Yucel (2009)	1989M1 -2007M11	Turkey	Johansen -Granger Causality Test	FD↔EG
Klimani (2009)	1970:I-2006:IV	Uganda	Granger Causality Test	FD⇒EG
Ozturk (2008)	1975-2005	Turkey	VAR	EG ⇒ FD FD---EG (in the long run)
Odhiambo (2008)	1969-2005	Kenya	Co-integration and Error Correction Techniques	EG⇒FD
Acaravci et al. (2007)	1986:I-2006:IV	Turkey	VAR	FD⇒EG
Liang and Teng (2006)	1952-2001	China	VAR Approach	EG⇒ FD
Shan and Jianhong (2006)	1978-2001	China	VAR Approach	FD↔EG
Odhiambo (2005)	1988-2012	Tanzania	Johansen Co-integration - ECM	FD↔EG
Lee (2005)	1870-1926 1948-2002	Canada	VAR	FD⇒EG
Akinboade (1998)	1976-1995	Botswana	Granger Causality Test-Error Correction Method	EG ↔ FD
Dritsakis and Adamopoulos (2004)	1960:I –2000:IV	Greece	VAR-Granger Causality Test	FD⇒EG

**Note:**  $FD \Rightarrow EG$  refers to the causality runs from financial development to economic growth.  
 $EG \Rightarrow FD$  refers to the causality from economic growth to financial development.  
 $EG \Leftrightarrow FD$  refers to a bi-directional causality.  
 $EG \dashrightarrow FD$  refers to no causality.

**Table 2 - Overview of the studies covering selected countries on finance-growth nexus**

Authors	Period	Country	Methodology	Causality Relationship
Esso (2010)	1960-2005	Economic Community of West African States (ECOWAS)	Pesaran et al. (2001) approach Toda and Yamamoto (1995)	$FD \Rightarrow EG$ (Ghana, Liberia and Mali) $EG \Rightarrow FD$ (Cote d'Ivoire) $EG \Leftrightarrow FD$ (Cape Verde and Sierra Leone)
Enisan and Olufisayo (2009)	1980-2004	7 African Countries	ARDL Bounds Test-Granger Causality Test	$FD \Rightarrow EG$ (Egypt and South Africa) $FD \Leftrightarrow EG$ (Cote d'Ivoire, Kenya, Morocco and Zimbabwe)
Eita and Jordaan (2007)	1977-2006	Botswana	VAR-Granger Causality Test	$FD \Rightarrow EG$
Abu- Bader and Abu-Qarn (2006)	1960-2004	MENA Countries	VEC Methodology-Granger Causality Tests	$FD \dashrightarrow EG$ (in the short run)
Al-Tamimi et al. (2002)	different periods for each countries	8 Arab Countries	Granger Causality Test-Cointegration Tests	No clear evidence that financial development affect or is affected by economic growth.
Darrat (1999)	not reported	3 Middle Eastern Countries ( Saudi Arabia, Turkey and United Arab Emirates)	Multivariate Granger Causality Tests	$FD \Rightarrow EG$ (Turkey) $EG \Rightarrow FD$ (United Arab Emirates) $FD \Leftrightarrow EG$ (Saudi Arabia)
Arestis and Demetriades (1999)	1949-1992	12 countries	Cointegration and Causality Tests	$FD \Leftrightarrow EG$ (UK, US, Germany, South Korea, Greece, India and France) $FD \Rightarrow EG$ (Japan) $EG \Rightarrow FD$ (Turkey and Chile)
Habibullah (1999)	1980-1990	7 Asian countries	Granger Causality Test- VAR- VECM	$FD \Rightarrow EG$ (Philippines) $EG \Rightarrow$ ( Malaysia, Myanmar, and Nepal) $FD \Leftrightarrow EG$ (Indonesia, Sri Lanka and Thailand)
Demetriades and Hussein (1996)	1965-1992	Asian Countries	ADF, Engle-Granger, Johansen Cointegration Test	$FD \Rightarrow EG$ (Sri Lanka) $EG \Rightarrow FD$ (Pakistan) $FD \Leftrightarrow EG$ (India, South Korea and Thailand)
Thornton (1996)	1950-1990	22 Developing Countries	Granger Causality Tests	$FD \Rightarrow EG$ (Nepal, Malaysia, the Philippines and Thailand) $EG \Rightarrow FD$ (Myanmar and Korea) $FD \Leftrightarrow EG$ (Malaysia)

**Note:**  $FD \Rightarrow EG$  refers to the causality runs from financial development to economic growth.  
 $EG \Rightarrow FD$  refers to the causality from economic growth to financial development.  
 $EG \Leftrightarrow FD$  refers to a bi-directional causality.  
 $EG \dashrightarrow FD$  refers to no causality.

**Table 3 - Overview of multi-country studies on finance-growth nexus**

Authors	Period	Country	Methodology	Causality Relationship
Kar et al.(2011)	1980-2007	15 MENA Countries	Bootstrap Panel Granger Causality Analysis	EG $\Rightarrow$ FD FD $\Rightarrow$ EG } no consensus
Menyah, et al. (2014)	21 African Countries	1965-2008	Panel Causality Approach	FD $\Rightarrow$ EG
Hsueh et al. (2013)	1980-2007	10 Asian Countries	Bootstrap Panel Granger Causality Analysis	FD $\Rightarrow$ EG (Malaysia, Indonesia, Korea, Singapore, Thailand, Taiwan and China) FD $\Rightarrow$ EG (Philippines, India and Japan)
Chow and Fung (2013)	1970-2004	69 Countries	Regime Switching Panel Vector - Autoregression Model	in all clusters; EG $\Rightarrow$ FD or EG $\Leftrightarrow$ FD
Jun (2012)	1960-2009	27 Asian Countries	Panel Cointegration Techniques	EG $\Leftrightarrow$ FD
Hassan et al. (2011)	1980-2007	Low- Middle and High Income Countries Classified by Geographic Regions	Panel Estimations and Multivariate Time Series Methodology	In the short run; FD $\Leftrightarrow$ EG (Europe & Central Asia, Europe & Central Asia, Middle East & North Africa, South Asia, High-income OECD countries, High-income non-OECD countries) FD $\Rightarrow$ EG (Sub-Saharan Africa and East Asia & Pacific)
Rachdi and Mbarek (2011)	1990-2006	6 OECD and 4 MENA Regions Countries	Panel Data Cointegration and GMM System approaches	EG $\Leftrightarrow$ FD (in OECD) FD $\Rightarrow$ EG (in MENA)
Caporale et al. (2009)	1994-2007	10 New EU Members	Dynamic Panel Regression-GMM	FD $\Rightarrow$ EG
Kakilli-Acaravci et al. (2009)	1975-2005	Sub-Saharan African Countries	Panel Co-integration and GMM	EG $\Rightarrow$ FD(domestic credit) EG $\Rightarrow$ FD (in the long run)
Apergis et al. (2007)	1975-2000	15 OECD and 50 Non-OECD Countries	Panel Cointegration Methodology	EG $\Leftrightarrow$ FD
Habibullah and Eng (2006)	1990-1998	13 Developing Asian Countries	System GMM	FD $\Rightarrow$ EG
Christopoulos and Tsionas (2004)	1970-2000	10 Developing Countries	Dynamic Panel Data estimation	FD $\Rightarrow$ EG
Calderón and Liu (2003)	1960-1994	109 Developing and Industrial Countries	Geweke Decomposition Test	FD $\Rightarrow$ EG EG $\Rightarrow$ FD
Levine and Zervos (1998)	1976-1993	47 Countries	Cross Country Regressions	FD $\Rightarrow$ EG

**Note:** FD $\Rightarrow$ EG refers to the causality runs from financial development to economic growth.

EG  $\Rightarrow$ FD refers to the causality from economic growth to financial development.

EG $\Leftrightarrow$ FD refers to a bi-directional causality.

EG $\Rightarrow$ FD refers to no causality.

As can be seen from table 1-3, there results do not indicate a certain relationship, regardless of whether country or country groups are included into the analyses. That is causality results may vary across different countries and/or country groups.

In addition to the studies outlined from table 1 to table 3, there are several papers looking into the relationship between financial development and economic growth using different methodologies aside from causality. We summarize these studies below from the latest through the aged.

For Western China, Huang et al. (2016) evaluate the interdependence between financial development and economic growth using regression models in Western China. The findings reveal that financial development can spur economic growth via developing total factor productivity. Also, financial development is more substantial factor than human capital for growth.

In 52 middle income countries, Samargandia et al. (2015) reexamine the link between financial development and economic growth for the period 1980-2008 by employing pooled mean group estimations. Empirical findings reveal that there is an inverted U-shaped relationship between financial development and economic growth in the long term, while there is an insignificant relationship in the short run. In other words, too much financial development could cause a negative impact on economic growth.

Samargandia et al. (2014) study the connection between financial development and economic growth in Saudi Arabia using ARDL Bound Test approach. Findings reveal that financial development has a positive effect on economic growth of non-oil sector, while it has negative or insignificant effect on growth of oil sector and total GDP.

Owen and Temeswary (2014) examine the effects of bank finance and foreign bank relationship on economic growth over the period 1995-2010 by using maximum likelihood and BIC methods. The empirical results indicate that in countries which have undeveloped banking sectors, the impact of foreign-owned lenders relative to locally-owned banks can prevent growth.

By using innovative dynamic panel threshold method, Law and Singh (2014) investigate relationship between finance and economic growth in 87 developed and developing countries. The main finding of study reveals a threshold effect relationship between finance and growth. In other words, optimal financial development level is necessary for growth.

Herwartz and Walle (2014) analyze the relation between long run financial development and evaluable economic indicators for 73 economies during the 1975-2011 periods by applying a flexible semiparametric approach. The main finding of the study is that the effect of finance on economic development is usually more powerful in high income economies rather than low income ones.

Adu et al. (2013) explore the long run effect of financial development in Ghana over the period 1961-2010 using ARDL method. Empirical results show that growth effect of financial development is sensible to the choice of agent used. In other words, economic growth relies on selected financial development indicators.

Uddin et al. (2013) investigate the role of financial development on economic growth in Kenya for the period 1971-2011 by using ARDL and Gregory-Hansen's structural break cointegration techniques. Finding indicates that financial market has a positive effect on economic growth in the long run.

Chen et al. (2013) search non-linearity between financial development and economic growth in China during the period 1978-2010. Empirical findings demonstrate that finance has a significant positive impact on growth in cities that have high income cities while negative impact is detected in low income ones.

Shahbaz (2013) investigates relationship between financial development and economic growth in Pakistan by using ARDL bounds testing technique. Empirical results show a positive relationship between financial development and economic growth.

Narayan and Narayan (2013) investigate the role of financial system on economic growth for 65 developing countries. Empirical results show that when financial sector led growth in all countries, bank credit has a negative impact on economic growth. In Middle Eastern countries financial sector and banking sector do not effect growth. Generally growth effect of financial development is comparatively weak except Asia.

Anwar and Cooray (2012) explore direct effects of financial development on economic growth and quality of governance and financial development effects on economic growth in South Asia over the period 1970-2009 by employing GMM approach. Results indicate that financial development affects economic growth.

Bittencourt (2012) examines the finance-growth nexus in four Latin American Countries over the period 1980 and 2007 by employing panel time series technique. Empirical results suggest that financial development has a significant effect on growth in the region. It means that Schumpeter's view is true.

Zheng et al. (2012) examine relationship between financial development and economic growth for 286 Chinese cities by applying cross-sectional regressions and system GMM approach. The results indicate that financial development indicators affect economic growth positively.

Nyamongo et al. (2012) explore impact of remittances and financial development on economic growth in 36 countries of Africa between 1980 and 2009. They employ panel econometrics technique. Results show that financial development has a weak influence on economic growth.

Charby et al. (2012) investigate Patrick hypothesis (1966) which explains the direction of causality between financial development and economic growth in Barbados during the 1946-2011 period by employing VECM and VAR models. Empirical results reject the validity of this hypothesis.

Jalil et al. (2010) reconsider relationship between financial development and economic growth in China. They employ principal components analysis and ARDL approaches. Empirical results show that financial development increases economic growth and principal components has significant impact for evaluating relationship between financial development and economic growth.

Koetter and Wedow (2010) investigate relationship between financial development and regional growth in Germany by using 97 economic planning regions and all German banks over the period 1995-2005. They

separate impacts of financial development like traditional volume effect and a quality effect. Panel estimation results show that quality indicator  $t$  has a significantly positive effect on growth and volume effect indicator has no significant effect on economic growth.

Ang (2008) investigates the impacts of financial development on economic growth in Malaysia by using ARDL, UECM and DOLS procedures. The main finding is that financial development has a significant positive impact on economic growth.

Al-Zubi et al. (2006) examine relationship between financial development and economic growth in eleven ARAB countries from 1980 to 2001. They employ Hausman's specification test for investigate fixed and random effects in the panel data. Obtained results reveal that selected indicators of financial development are not significant and there is no positive relationship between financial development indicators and growth.

Liu and Hsu (2006) explore relationship between financial development and growth in three Asian countries which are Taiwan, Korea and Japan by employing GMM method and principal component analysis. The results indicate that financial development has a positive impact on economic growth in Taiwan unlike the other countries that has a negative effect. Besides the stock market development has a positive effect on economic growth in Taiwan.

Bolbol et al. (2005) explore relationship between financial structure and total factor productivity in Egypt over the period 1974–2002. The findings reveal that banking indicators have a negative effect on total factor productivity as long as they are not related per capita income threshold level.

Levin et al. (2000) investigate the role of financial intermediary on economic growth in 74 developed and developing countries for the period 1960-1995 by using two econometric methods such as GMM and cross sectional analysis. Findings indicate that there is a strong positive relationship between financial development and economic growth.

Levin (1997) examines that the role of financial development indicators on economic growth in eleven Arab countries for the period 1980-2001 by using panel data method. The empirical findings reveal that all used financial indicators are insignificant and do not effect economic growth.

King and Levin (1993a) explore positive relationship between financial indicators and economic growth which is consistent with Schumpeter's view in 80 countries during 1960-1989 periods. The results show that financial development is potentially related with economic growth rates, physical capital accumulation, and economic efficiency improvements.

Results of aforementioned studies reported above commonly show that financial development has a significant positive impact on economic growth. That is, results based on regression approach achieve a consensus unlike the results based on causality approaches.

### III. CONCLUSION

The goal of this paper is to survey the literature exploring the relationship between financial development and economic growth. Finance-growth literature is not only a well-know but also a still growing literature. Although there are some previous surveys on this issue, we aim to explore latest studies and provide a fresh review for the literature. Understanding the interaction between financial development and economic growth is very crucial for policymakers to develop an appropriate economic strategy. A general conclusion has drawn from studies under review here shows that it seems impossible to reach a consensus on the direction of causality. This means that causal relationship between financial development and economic growth is responsive to the different dataset, countries' characteristics, different measures of the variables and various empirical methodologies. Results based on regression estimations, on the other hand, are seen to provide more uniformed findings. It is found for the majority of the samples that financial development has a significant positive impact on economic growth.

As a conclusion of this survey, policymakers should realize the fact that although it is unclear whether financial development induces growth or vice versa first, it is more likely that financial development affects economic growth positively in the majority of the countries and/or country groups.

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