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The impact of financial development and globalization on economic growth: Evidence from a macro panel of ten countries

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Resumo

Este estudo examinou a relação entre os mercados de desenvolvimento financeiro e as dimensões de globalização no crescimento económico, para um painel de 10 países com um horizonte temporal de 1980-2015. Uma abordagem de teste de limites ARDL, demonstrou-se uma técnica adequada para examinar os efeitos a curto e a longo prazo. Os resultados apontam para uma relação unidirecional entre o desenvolvimento do setor bancário e o crescimento económico, nas elasticidades tanto de curto prazo como de longo prazo. A variável que representa o desenvolvimento do mercado ações afeta mais o crescimento económico nas elasticidades de longo prazo. Em relação ao índice de globalização (atualizado em 2018), agregado em indicadores de facto e de jure, demonstraram diversos tipos de significância estatística. As variáveis mais significativas no modelo são: a globalização política de jure, nas elasticidades de longo prazo e a globalização financeira de fato, nas elasticidades de curto prazo. Esses resultados ajudam os decisores políticos a projetar melhor as políticas para promover nas suas economias.

Palavras-chave

Desenvolvimento financeiro, Globalização, Crescimento Económico, Painel ARDL.

Resumo alargado

Nas últimas décadas, têm existido interesses crescentes nas pesquisas de crescimento económico e as suas determinantes. A maior parte dos países sofreram com as crises financeiras, causadas por ataques especulativos ou arrastados por outros países. Com a "era da globalização" cada vez mais enraizada no mundo, a tecnologia e a informação cada vez mais acessíveis, permite uma maior comunicação e concorrência entre os países. Assim sendo, a maioria dos países teve de adotar novas estratégias de desenvolvimento, fazendo face à concorrência que os mercados económicos apresentavam.

Este estudo examina os efeitos que os mercados de desenvolvimento financeiro e as dimensões de globalização têm no crescimento económico. Os mercados de desenvolvimento financeiro incorporados nesta investigação são o mercado bancário e de ações. É analisado um painel de 10 países, utilizando dados de séries temporais anuais entre 1980 a 2015. Utilizamos uma abordagem de testes de limite ARDL, demonstrando-se adequada para examinar os efeitos que existem a curto e a longo prazo entre as variáveis.

Para medir o crescimento económico foi utilizada a variável do Produto Interno Bruto *per capita*, em moeda local constante. As variáveis crédito interno ao setor privado e crédito interno fornecido pelo setor financeiro, são usadas para representar o mercado bancário. A capitalização de mercado de empresas nacionais listadas, é usada para o estudo do mercado de ações. O índice de globalização usado neste estudo foi atualizado em 2018. Esta nova versão é baseada em 45 variáveis individuais, agregadas em indicadores de facto e de jure. As medidas de facto da globalização incluem variáveis que representam fluxos e atividades, enquanto que as medidas de jure incluem variáveis que representam políticas.

As dimensões do índice de globalização utilizadas nesta investigação são: a globalização económica de jure; a globalização económica de facto; a globalização financeira de jure; a globalização financeira de facto; a globalização social de facto e a globalização política de jure. Através deste conjunto de variáveis descritas anteriormente, pretendemos responder à questão: o desenvolvimento financeiro e a globalização têm efeitos sobre o crescimento económico? A teoria apresenta explicações um tanto conflituantes e inclusivas sobre os papeis que os mercados de desenvolvimento financeiro e as dimensões de globalização têm no crescimento económico. Nos pretendemos responder a esta questão, através de uma abordagem ARDL (*Autoregressive Distributed Lag*).

Foram realizados diversos testes preliminares, nomeadamente o teste de dependência seccional *(Cross-sectional dependence)* para todas as variáveis em estudo, o teste VIF e posteriormente os testes de raízes unitárias de primeira e segunda geração, derivado à presença de dependência seccional em todas as variáveis. Além disso, foi realizado o teste *Hausman* para verificar a existência de efeitos fixos ou aleatórios. Os resultados foram consensuais e demonstram a existência de efeitos fixos para o modelo. Foram ainda realizados testes de

especificação (*Modified Wald test; Pesaran test; Wooldridge test*), verificando-se a existência de heterocedasticidade, correlação contemporânea e autocorrelação de primeira ordem. Deste modo, aplicamos o estimador *Driscoll e Kraay*.

Os resultados obtidos neste estudo permitem-nos responder à questão de investigação e assim contribuir para a literatura existente. Os resultados apontam que a relação entre o desenvolvimento do setor bancário e o crescimento económico é geralmente unidirecional, nas elasticidades de curto prazo como a longo prazo. A variável que representa o desenvolvimento do mercado ações afeta mais o crescimento económico nas elasticidades de longo prazo. As dimensões da globalização, agregadas em indicadores de facto e de jure, permitem um novo contributo para a literatura. Sendo um índice relativamente recente, até ao nosso conhecimento, nenhum estudo verificou os efeitos que estas dimensões têm no crescimento económico.

As variáveis de globalização mais significativas no modelo são: a globalização política de jure, nas elasticidades de longo prazo e a globalização financeira de facto, nas elasticidades de curto prazo. A dimensão económica de jure nas elasticidades de longo prazo não tem qualquer significância no modelo. Se analisássemos através da literatura existente apresentada com o índice KOF anterior, este resultado não seria novidade. No entanto, não podemos tirar uma conclusão totalmente definitiva, sem investigar mais aprofundadamente o porquê deste resultado. Em suma, estes resultados ajudam os decisores políticos a projetar melhor as políticas para promover as suas economias.

Abstract

This study examined the relationship between financial markets development, globalization dimensions on economic growth for a panel of 10 countries with a period 1980-2015. An ARDL bounds test approach is a suitable technique to examine effects the short-run and long-run. Our results point a one-directional relationship between banking sector development on economic growth, in elasticities the short-run and long-run. The variable that represents the stock market development affects more the economic growth in long-run elasticities. In relation to the KOF Globalization Index (updated in 2018), aggregated in de facto and de jure indicators, they demonstrated several types of statistically significance. The variables more significant in model are: de jure globalization political the long-run elasticities, and de facto financial globalization the short-run elasticities. These results help policy makers to better design policies to promote in their economies.

Keywords

Financial Development, Globalization, Economic Growth, Panel ARDL.

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Acronyms list

ARDL	Autoregressive Distributed Lag
ADF	Augmented Dickey-Fuller test
ARF	ASEAN Region Forum
BSD	Banking sector development
CIPS	Cross-sectionally augmented IPS
CSD	Cross-sectional dependence
dc_pc	Domestic credit to private sector
dcf_pc	Domestic credit provided by financial sector
DFH	Demand-following hypothesis
ECM	Error correction mechanism
FBH	Feedback hypothesis
FDI	Foreign direct investment
FE	Fixed effects
GDP	Economic growth
GMM	Generalized method of moments.
GLOB_DIM	Globalization dimensions
ICT	Information and communication technology
KOFE_df	Economic Globalization, *de facto*
KOFE_dj	Economic Globalization, *de jure*
KOFFi_df	Financial Globalization, *de facto*
KOFFi_dj	Financial Globalization, *de jure*
KOFPo_dj	Political Globalization, *de jure*
KOFSo_df	Social Globalization, *de facto*
LLC	Levin-Lin-Chu
MENA	Middle East and North Africa region
mk_pc	Market capitalization of listed domestic companies
NEH	Neutrality hypothesis
OECD	Organisation for Economic Co-operation and Development
OIC	Organisation of Islamic Cooperation
RE	Random effects
SLH	Supply-leading hypothesis
SMD	Stock market development
SSGR	Steady State Growth Rate
UBI	Universidade da Beira Interior

1. Introduction

In the last decade, most countries have adopted new development strategies, through the modernization of the financial sector and the link of that sector to economic growth. Moreover, an important statistic for evaluating and analysing economic performance of any economy is its gross domestic product (GDP) growth annual. The level of financial development has been identified as one of such drivers to evaluating and analysing of growth. One thing is right, the financial development has an undeniable effect on the macroeconomic performance of countries. In most countries today, a greater part of development in the international economy is attributed to financial markets (Sepehrdoust, 2018). Therefore, the first question is raised in this study: does financial development foster economic growth?

This question is not easy to solve, since both theoretical and empirical literature on the nexus finance-growth is inconclusive. Our first objective is to resolve this issue through two financial markets: banking sector and stock market. The various financial markets have undergone profound changes. Constantly new products, forms of financing and even financial markets are created or developed. At the same time, the volume of transactions and the number of participants in existing markets have increased. This growing complexity has hurt the various financial markets. The economists and researchers begin to argue advocate that globalization is strongly linked to financial development (Muye & Muye, 2017), because barriers to international trade and foreign investment are reduced. Therefore, have reached another level in this study with the update of the globalization index (Gygli *et al.*, 2018).

The globalization is a phenomenon whit much characteristics. The globalization is usually thought of as a process of unification of goods and capital markets across the world (Gurgul & Lach, 2014). A phenomenon very important in an economic, so it is important to analyse it. The globalization-economic growth nexus already being investigated and the globalization has been gaining increasing popularity in economic blocs and investigations, some questions remain are underdeveloped empirically. Therefore, we come to the central question of our study: what the effect financial development and globalization has on economic growth?

In this context, investigate the relationship between two types financial markets development (banking sector and stock market), globalization dimensions (updated in 2018) on economic growth, for the period from 1980 to 2015. The study includes a panel of 10 countries (Argentina, China (Hong Kong SAR), Israel, Japan, Malaysia, Mexico, Singapore, Switzerland, United States and South Africa), selected through stock market development. The main objective of this selection was to have a long-time horizon to investigate the short-run and long-run distinction between the variables and due to the scarcity of data in this market we have chosen this method of selection for the countries. This situation enables to obtain robust results and to have perception of the variables behaviour throughout time. Therefore, the

model most indicated in study is Autoregressive Distributed Lag (ARDL), which allows to verify the variables behaviour long time.

This study is organized as follows: Section 2 presents de literature review divided in two subsections; Section 3 describes data, methodology and a preliminary analysis of the panel data. The Section 4 represent results the model and the discussion are present in Section 5. The conclusion in the section 6.

2. Literature Review

The financial markets are a key factor in producing strong economic growth as they contribute to economic efficiency (Durusu-Ciftci *et al.*, 2017). In last decades, the relationship between financial development and economic growth received great attention in economic investigations. With the technological advancement and the globalized world, various econometric techniques have been used in this kind of studies, through the as individual country analysis, cross-country analysis, time series, panel data, and threshold analysis, more recently (Ruiz, 2018). However, the existing evidence is mixed regarding the impacts that financial development has on economic growth.

The same is happening in studies related to globalization and economic growth. The globalization is a multifaceted economic phenomenon that included several realities among them, being a process stimulated by foreign trade and foreign direct investment (FDI), that benefits economic growth in most countries (e.g. Gurgul & Lach, 2014; Potrafke, 2013; Chanda, 2005; Stiglitz, 2003; Blomstrom *et al.*, 1992). However, most economists agree that globalization is an important factor in building an efficient system, but there is no consensus on the link between globalization and growth (Rao & Vadlamannati, 2011).

The content of this section will be divided into two theoretical parts, in order to simplify the existing nexus in this study. The first part is dedicated to a literature review on the nexus of financial development and economic growth. The second part, are focus concerned with literature review on the impacts that globalization has on economic growth.

2.1. Relationship between financial development and economic growth

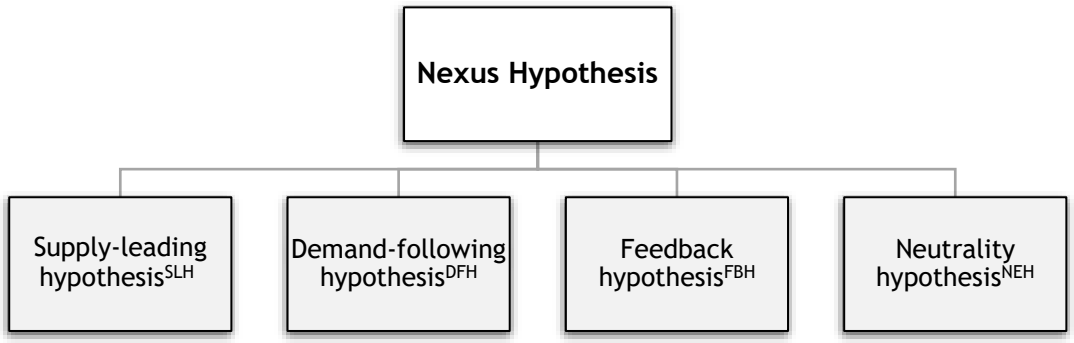
The financial development is beneficial to economic growth only up to a certain threshold, because should be accompanied with the proposition "more finance, more growth" (Law & Singh, 2014). An efficient financial system provides better financial services, which enables an economy to increase its growth rate (e.g. Pradhan *et al.*, 2017; Esso, 2010; Bencivenga *et al.*, 1995). The inverse is also true: Moshirian & Wu, 2012 report that an inadequately supervised financial system may be crisis-prone, with potentially devastating effects. Moreover, Demirguc-Kunt & Levine (2009) find that financial development is not only pro-growth, but it is also pro-poor, suggesting that financial development helps poor citizens to catch up with the rest of the economy as it grows.

The financial development is a pivot for economic growth (Pradhan *et al.*, 2014; Graff, 2003; Levine, 1997). The role of financial markets and financial intermediaries range significantly in the process of economic growth. These depend on the level of political freedom, the rule of law and the protection of property rights (Adu *et al.*, 2013). The hypothesis that

financial development is a major driver of economic growth is now popular among economists and researchers, from the seminal study of Schumpeter (1911), and subsequently Goldsmith (1969), McKinnon (1973), and Shaw (1973).

There are a variety of theoretical models proposed to analyze the connection between financial development and economic growth. Several authors have made the theoretical survey on the possible channels of how financial development affects economic growth (e.g. Pradhan *et al.*, 2017; Zhang *et al.*, 2012; Levine, 2005). These channels include: (i) providing information about possible investments so as to allocate capital efficiently; (ii) monitoring firms and exerting corporate governance; (iii) ameliorating risk; (iv) mobilizing and pooling savings; and (v) easing the exchange of goods and services.

Not surprisingly, there is no consensus theoretical among economists and researchers on the relationship between financial development and economic growth. In fact, the practical way to solve this controversial nexus problem is through an empirical study. In practice, there is still no definite conclusion about the nature and direction of the nexus relationship. Although most of the existing studies have confirmed the existence of the causal relationship between financial development and economic growth (e.g. Menyah *et al.*, 2014; Hassan *et al.*, 2011; Enisan & Olufisayo, 2009). In other cases, there is no evidence of causality from financial development to economic growth (e.g. Pradhan *et al.*, 2013; Eng & Habibullah, 2011; Mukhopadhyay *et al.*, 2011; Lucas, 1988). The figure 1, shows the summary of the four possibles relationships between financial development and economic growth.



Note(s): *SLH:* unidirectional causality from financial market development to economic growth; *DFH:* causality runs from economic growth to financial development; *FBH:* bidirectional causality between financial market development and economic growth are seen as independent of each other and growth; *NEH:* financial market development and economic growth are seen as independent of each other.

Figure 1 - Summary the relationships between financial development and economic growth

In the previous figure, empirical studies regarding the finance-growth nexus show different connections and hypotheses, about the causality between financial development to economic growth. These findings imply that causality between financial development and economic growth is diversified, depending on the period, countries, methodology, and other factors. Moreover, in the studies of the financial development have four types of relationships with economic growth. These links are: (i) between banking sector development and economic growth; (ii) between stock market development and economic growth; (iii) between bond

market development and economic growth; and (iv) between insurance market development and economic growth (Pradhan *et al.*, 2017). Our focus is finance-growth nexus and we define two dimensions of financial development, specifically the banking sector development and the stock market development.

In most of the studies it is concluded that the economic growth of countries is significantly affected by the banking sector development and the stock market development. Besides that, it has been demonstrated that have a bidirectional relationship between the banking sector development and the stock market development (Allen *et al.*, 2012; Cheng, 2012; Gimet & Lagoarde-Segot, 2012). Although the policies that drive economic growth differ across countries, it was conclude that the two strands of the financial sector significantly affect economic growth. Consequently, Marques *et al.* (2013) consider that any approach to the relationship between the stock market and economic growth cannot fail to include the banking system.

The table 1, resumes the most important researches about the relationships between financial development in two types of financial markets and economic growth.

Table 1 - Describe the studies between two types of financial development and economic growth

Article	Period	Country(ies)	Type study	Main finding(s)
Ang (2008)	1960-2001	Malaysia	a	DFH
Cheng (2012)	1973-2007	Taiwan	a	FBH
Chow & Fung (2011)	1970-2004	69 countries	b	FBH
Coşkun *et al.* (2017)	2006	Turkey	a	SLH
Enisan & Olufisayo (2009)	1980-2004	7 Sub-Saharan African countries	a	SLH
Hou & Cheng (2010)	1971-2007	Taiwan	a	FBH
Hsueh *et al.* (2013)	1980-2007	10 Asian Countries	b	SLH
Jalil *et al.* (2010)	1977-2006	China	b	SLH
Kar *et al.* (2011)	1980-2007	15 MENA countries	a, b	SLH, DFH
Kolapo & Adaramola (2012)	1990-2010	Nigeria	a	SLH
Liu & Sinclair (2008)	1973-2003	China	a	DFH
Menyah *et al.* (2014)	1965-2008	21 African countries	b	SLH
Naceur & Ghazouani (2007)	1979-2002	MENA region	b	SLH
Odhiambo (2010)	1969-2006	South African	b	DFH
Owusu & Odhiambo (2014)	1960-2008	Nigeria	a, b	SLH
Panopoulou (2009)	1995-2007	5 countries	a, b	DFH
Pradhan (2013)	1988-2012	16 Asian countries	a	SLH
Pradhan *et al* (2013)	1988-2012	16 Asian countries	a	SLH
Pradhan *et al.* (2014a)	1960-2011	Asian countries \	b	FBH
Pradhan *et al.* (2014b)	2011	15 Asian countries	a	DFH
Pradhan *et al.* (2017)	1991-2012	ARF countries	a, b	DFH, FBH
Wolde-Rufael (2009)	1966-2005	Kenya	b	FBH
Zhu *et al.* (2004)	1973-2007	Taiwan	a	FBH

Note(s): DFH: results support the demand-following hypothesis; SLH: results support the supply-leading hypothesis; FBH: results support the feedback hypothesis; NEH: results support the neutrality hypothesis; due to different variables analysed in different studies it was used two letters to specify the causal relationship in study; a: study analyses the relationship between stock market development and economic growth; b: study analyses the relationship between banking sector development and economic growth; MENA: Middle East and North Africa region; ARF: ASEAN Region Forum.

On a general note, considering the financial development influencing economic growth, exist a lot number of studies between relationship of financial development and economic growth. It is also known that it was Schumpeter (1911) who started this research finding evidence of the hypothesis that financial development leads to economic growth (the supply-

leading hypothesis). From this point on, other authors began to investigate this relationship (table 1), finding different hypotheses mentioned in figure 1. However, the relationship between financial development, globalization dimensions and economic growth is little investigated. There has been no empirical studies to trace the relationship between their level of globalization and financial development (Muye & Muye, 2017). Therefore, we focus the study of economic growth and globalization in next subsection.

2.2. Relationship between globalization and economic growth

The debate regarding the connection between globalization on economic growth has become increasingly intense over the last decades. The lack of consensus is due to the different forms of analysis by economists and researchers (Baldwin, 2004). This situation occurs because of the different approaches made by economists and researchers, since some researchers are only interested in: (i) impacts that policies have on the outside, not only in relation to economic growth, but also in other variables; (ii) the causal relationship between trade and growth; and (iii) different specifications, data and estimations methods (Rao & Vadlamannati, 2011).

When we began to deepen the existing studies on this nexus, we confirmed the lack of consensus in the various investigations. There are studies that show a positive correlation between globalization and economic growth, but they differ in their approaches: trade liberalization, the distribution of scarce resources, and the effectiveness of economic growth for developing countries (e.g. Fischer, 2003; Sachs *et al*., 1995; Dollar, 1992). For example, Dreher (2006), and Rao & Vadlamannati (2011) have used a more comprehensive globalization index to investigate the impact of economic, social, and political dimensions of globalization on economic growth. The study of Rao & Vadlamannati (2011) used low-income African countries and confirmed the positive effect of globalization on economic growth.

Other studies have demonstrated have number of negative or mixed results in the relationship between globalization and economic growth. For example, Rodriguez & Rodrik (2000) have observed the impact of trade liberalization on growth, finding low evidence on the link between globalization and economic growth. This study contradicted the investigations of Dollar (1992) and Edwards (1998). In addition, Gu & Dong (2011) and Chang *et al*. (2009), demonstrated that the rapid growth resulting from globalization, it depended on the level of development of an economy.

How we can see the impact of globalization is difficult measure the quantify, having to find way to account for various manifestations of globalization (Gygli *et al*., 2018). The fact, globalization is a way to improve economic growth and the well-being of societies, that is, it eliminates cross-border trade restrictions and also investment with other countries (Shahbaz *et al*., 2016). With the creation de KOF Globalization index has become the most used/appropriated in the literature (Potrafke, 2015). This original index it introduced by Dreher (2006) and updated in Dreher *et al*. (2008). The index measures the globalization overall, but also in the economic, social and political dimension for almost every country since 1970.

The table 2, resumes the main researches and results about the relationship between globalization dimensions and economic growth, since the introduced the index by Dreher (2006).

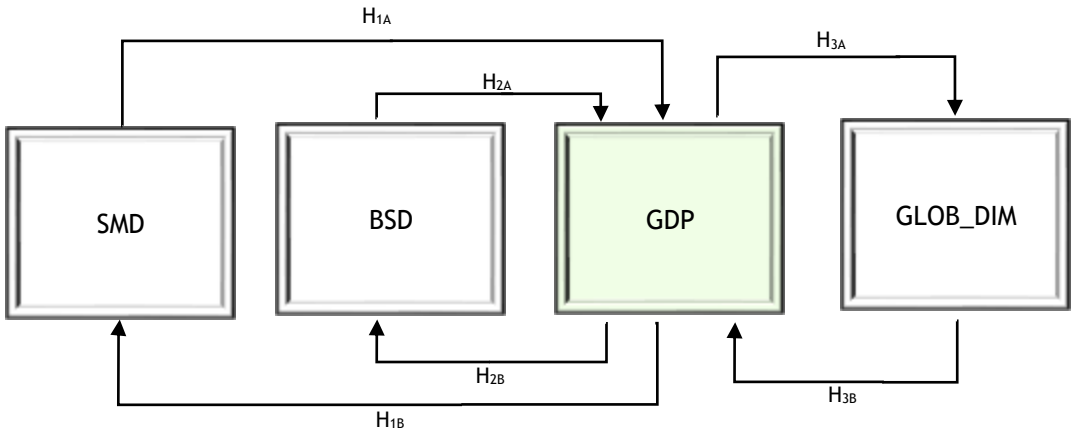
Table 2 - Summary the workings with globalization and economic growth

Article	Period	Country(ies)	Methodology	Main finding(s)
Dreher (2006)	1970-2000	123 countries	Panel data OLS and GMM	Analysed empirically whether the overall index of globalization as well as sub-indexes constructed to measure the single dimensions affect economic growth. The globalization indeed promotes growth.
Chang & Lee (2010)	1970-2006	23 OCDE countries	Pedroni's panel	The evidence *of short-run causality is very weak*, *it does show long-run unidirectional causality running from the overall index of globalization and of dimensions of the globalization to growth*.
Rao *et al*. (2011)	1974-2004	Singapore, Malaysia, Thailand, India, Philippines	Solow Model, ARDL and Two-stage nonlinear least squares instrumental variables	Concluded that *countries with higher globalization policies have higher SSGR*, but the impact of *globalization on economic growth is not the same for the countries in study*.
Rao & Vadlamannati (2011)	1970-2005	21 African countries	Extreme bounds analysis and Fixed Effects	Evidence *positive and significative long-run has been found on the effects of globalization on growth*.
Chang *et al*. (2011)	1970-2006	G7 countries	Panel Cointegration	The empirical findings provide strong evidence of what the *overall globalization index and the social globalization index have a directly positive impact on economic growth*. However, exhibit *negative impacts on real output via the channel of social globalization*.
Gurgul & Lach (2014)	1990-2009	10 CEE countries	Solow growth model	The globalization was a significant growth factor of CEE economies. *The economic and social dimensions the globalization stimulated positive of the economies* CEE. But, the *dimension political of the globalization played minor role in economic growth* of new EU members in transition.
Samimi & Jenatabadi (2014)	1980-2008	33 OIC countries	GMM	The results demonstrate a relationship positive greater in the countries with better-educated workers and well-developed financial systems. Besides that, the effects the dimension economic the globalization also depends on the country level of income. The economic globalization not on only directly promotes growth but also indirectly does so via complementary reforms. The countries should receive appropriate income level to be benefited from globalization.

Lee *et al*. (2015)	1970-2006	30 municipalities and the autonomous regions of China	Two Step GMM	The results demonstrate that different globalization indices have different impacts on regional in China at the economic growth. The effects between the globalization and economic growth in the period of higher global integration, the democracy may harm economic growth in the case of China.
Majidi (2017)	1970-2014	100 developing countries	Panel data	The empirical findings demonstrate that the *dimensions economic and social of globalization has not significant effect on economic growth*. The dimension *political of globalization have negative effects and significative on economic growth in upper middle-income countries. The inverse is also true when the overall and political the globalization in developing countries with lower middle income is positive and significant but economic and social globalization continued not significative in model*.
Latif *et al*. (2018)	2000-2014	5 BRICS countries	OLS with fixed effects, the FMOLS, the DOLS and the group-mean estimator techniques robust to heterogeneity and cross-sectional dependence	The main results are: (i) *the long-run elasticities between information and communication technology (ICT) positively contributes to economic growth*; (ii) *the long-run output elasticities show that both foreign direct investment (FDI) and globalization have a long-run effect on economic growth*; (iii) *the bi-directional causality exists between GDP and FDI, globalization and economic growth, and trade and economic growth*.

Note(s): OECD: Organisation for Economic Co-operation and Development; OIC: Organisation of Islamic Cooperation; SSGR: Steady State Growth Rate; GMM: generalized method of moments.

Briefly, the literature approaches the essential points. Firstly, a literature review was carried out on financial-growth nexus, concluding that there is no consensus among researchers, policy makers and economists. Besides that, there are four causal hypotheses present in financial development, provoking disagreement in the numerous articles on the subject. This is due to sample types, time horizons, and the type of econometrics associated with research. In second, the literature review of nexus globalization and economic growth demonstrated that have not consensus. The figure 2, summarizes the hypotheses studied in this literature review and how they helped define our study.



Note(s): Financial development is represented by: SMD is stock market development and BSD is banking sector development; GDP is economic growth; GLOB_DIM represented the various types the globalization dimensions in literature review.

Figure 2 - Summarizes the hypotheses studied in this literature review

This literature review represents the following three blocks of hypotheses.

H_1: SMD hypothesis:

H_{1A}: Stock market development (SMD) causes economic growth (GDP). This is termed the SMD-led economic growth hypothesis.

H_{1B}: Economic growth (GDP) causes stock market development (SMD). This is termed the economic growth-led SMD hypothesis.

H_2: BSD hypothesis:

H_{2A}: Banking sector development (BSD) causes economic growth (GDP). This is termed the BSD-led economic growth hypothesis.

H_{2B}: Economic growth (GDP) causes banking sector development (BSD). This is termed the economic growth-led BSD hypothesis.

H3: Globalization hypothesis:

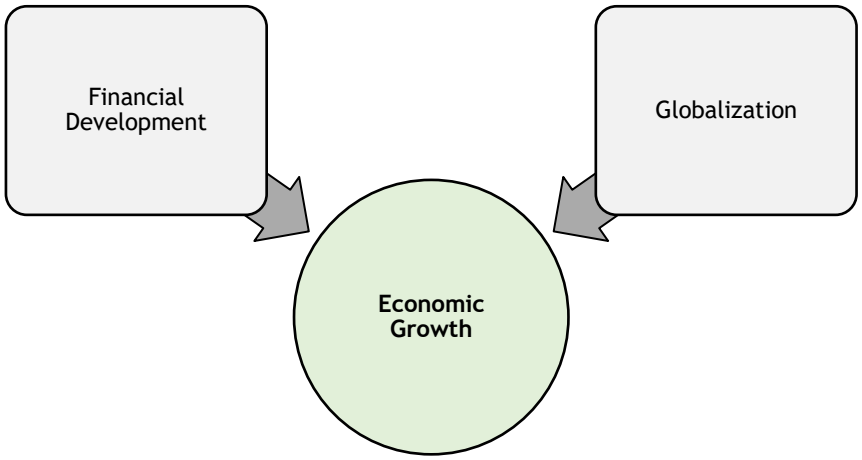
H_{3A}: Globalization dimensions (GLOB_DIM) causes economic growth (GDP). This is termed the GLOB_DIM-led economic growth hypothesis.

H_{3B}: Economic growth (GDP) causes globalization dimensions (GLOB_DIM). This is termed the economic growth-led GLOB_DIM hypothesis.

In the next section, will explore and explain how the literature review helped to define the research question. In short, this study explores the relationship between two types of financial development (stock market and banking sector development), globalization index and economic growth. To our knowledge, few studies have tried to investigate simultaneously this relationship with the new KOF index, updated in 2018.

3. Data and Methodology

The focus of this study is to analyse the relationship between the markets financial development and globalization in economic growth. Based on figure 2, we present in a schematic form what will be treated in this section.



Note(s): GDP_pc is economic growth *per capita*; Globalization represented the various types the globalization dimensions in study. Globalization represent for six indicators: KOFE_dj, KOFE_df, KOFFi_dj, KOFFi_df, KOFSo_df; KOFPo_dj. Financial development represents the proxies the stock market development (mk_pc) and banking sector development (dc_pc, dcf_pc).

Figure 3 - Variables that will explain the growth

Following the figure, the standard log-linear functional specification of the long-run relationship for economic growth, equation nesting theoretical approaches introduced in the next subsection 3.2. can be expressed initially as:

$$GDP\_pc_t = f(mk\_pc_t;\ dc\_pc_t;\ dcf\_pc_t;\ KOFE\_dj_t;\ KOF\_df_t;\ KOFFi\_dj_t;\ KOFFi\_df_t;\ KOFSo\_df_t;\ KOFPo\_dj_t;\ \varepsilon_t), \quad (1)$$

where denotes ε the error term, and t is the time index.

The following subsections deepen and describe what will be explored in this study. Therefore, the date is in subsection 3.1 describe in detail the variables, countries in study and the time horizon. The methodology is described in subsection 3.2. This describe the model used in study he methodology. In topic 3.3, incorporates the preliminary tests.

3.1. Data

The study incorporates the dimensions of the globalization index and two markets of financial development, namely the banking sector development and stock market development (table 3). The last market, defined the time horizon and the countries in study, due to limited data and to get a balanced panel. Therefore, the selection of data was annual, with the horizon incorporated in this investigation is 36 years, covering a period beginning in 1980 and extending to 2015. To carry out the analysis, 10 countries were selected: Argentina, China (Hong Kong SAR), Israel, Japan, Malaysia, Mexico, Singapore, Switzerland, United States and South Africa. The software used in econometric analysis is Stata 14 and Eviews 9.

Table 3 - Variables description and sources

Variable(s)	Description	Source
GDP_pc	Gross Domestic Product (constant LCU)	World Bank
mk_pc	Market capitalization of listed domestic companies (% of GDP)	World Bank
dc_pc	Domestic credit to private sector (% of GDP)	World Bank
dcf_pc	Domestic credit provided by financial sector (% of GDP)	World Bank
KOFE_dj	Economic Globalization, *de jure*	ETH Zürich.
KOFE_df	Economic Globalization, *de facto*	ETH Zürich.
KOFFi_dj	Financial Globalization, *de jure*	ETH Zürich.
KOFFi_df	Financial Globalization, *de facto*	ETH Zürich.
KOFSo_df	Social Globalization, *de facto*	ETH Zürich.
KOFPo_dj	Political Globalization, *de jure*	ETH Zürich

Note(s): the pc suffix denotes *Per Capita* values; the dj denotes *de jure* and df denotes *de facto*.

The dependent variable is Gross Domestic Product *per capita* (GDP_pc), represent the *sum of gross value the all citizen resident in countries*. The variable is measured in constant LCU, transformed in *per capita* through the division by total population.

The variable market capitalization of listed domestic companies(mk_pc), it is proxy the stock market development, transformed in per capita through the division for population total and measured in % GDP. The definition is *he share price times the number of shares outstanding (including their several classes) for listed domestic companies*. The variable that represent in stock market, used in study the Ngare *et al*. (2014).

The proxies banking sector development is domestic credit to private sector(dc_pc) and domestic credit provided by financial sector (dcf_pc), both measures in % GDP, transformation in per capita through the division for population total. The definition the domestic credit to private sector report *to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment*. The domestic credit provided

by the financial sector represent *all credit to various sectors on a gross basis, except for credit to the central government, which is net*.

The KOF Globalization Index used in study updated in 2018. The revised version of the KOF Globalization Index is based on 45 individual variables, aggregated in de facto and de jure indicators, that includes five sub-dimensions (Trade, Financial, Personal contact, Information flows, Cultural proximity), three dimensions (Economic, Social and Political), and one total index.

This revised version of the index introduces a clear distinction between *de facto* and *de jure* measures of globalization. Moreover, *de facto* measures of globalization include variables that represent flows and activities and de jure measures include variables that represent policies that, in principle, enable flows and activities (Gygli *et al.*, 2018).The dimensions the KOF Globalization Index used in this investigation are: (i) de jure economic globalization (KOFE_dj) compound by trade regulations, taxes, tariffs and, others; (ii) de facto economic globalization (KOFE_df) includes trade in goods, services, partner diversification, foreign direct investment and, others; (iii) de jure financial globalization (KOFFi_dj) compound by investment restrictions and, capital account openness; (iv) de facto financial globalization (KOFFi_df) includes foreign direct investment, portfolio investment, international debt, international reserves and, international income payments; (v) de facto social globalization (KOFSo_df) compound international voice traffic, international tourism, patent applications, international students and, others; and (vi) de jure political globalization (KOFPo_dj) includes international organisations, international treaties and, number of partners in investment treaties.

3.2. Methodology

Our panel sample includes 10 countries and 36 years. There are more time (years) than cross-sample units (countries). In this framework the use of an Autoregressive Distributed Lag (ARDL) model is more appropriate. The ARDL model has several advantages, namely: (i) it allows dealing with both stationary and non-stationary series, provided that its integration order is not higher than one; (ii) when compared to the Johansen and Juselius cointegration technique, the ARDL approach ensures more consistent estimates in the case of small samples; (iii) the asymptotic theory developed in the ARDL bounds test approach is not affected by the inclusion of "one-zero" dummy variables; and (iv) given that it is free of residual correlation, the ARDL method can handle the eventual phenomenon of endogeneity among variables (e.g. Marques *et al.*, 2016; Fuinhas & Marques, 2012; Pesaran *et al.*, 2001). Moreover, this estimator is constructed under the assumption of heterogeneity of the short-run coefficients and homogeneity of the long-run slope coefficients (Pesaran *et al.*, 1999).

The ARDL method has several advantages compared to other cointegration methods (Arize *et al.*, 2017). The "l" and "d" prefix indicates the natural logarithm and the first

differences, respectively. The first coefficients correspond to the elasticities and the second to the semi-elasticities. The ARDL model specification follows:

$$lGDP\_pc_{it} = \alpha_{1i} + \sum_{j=1}^{a} \beta_{11ij} lGDP\_pc_{it-j} + \sum_{j=0}^{b} \beta_{12ij} lmk\_pc_{it-j} + \sum_{j=0}^{c} \beta_{13ij} ldcf\_pc_{it-j} + \sum_{j=0}^{d} \beta_{14ij} lKOFE\_dj_{it-j} + \sum_{j=0}^{e} \beta_{15ij} lKOFFi\_dj_{it-j} + \sum_{j=0}^{f} \beta_{16ij} lKOFPo\_dj_{it-j} + \varepsilon_{1it}, \quad (2)$$

where, equation (2) was transformed into equation (3) in order to capture the dynamic relationship between short-run and long-run:

$$\begin{aligned} dlGDPpc_{it} = {} & \alpha_{2i} + \sum_{j=1}^{a} \beta_{21ij} dlGDP\_pc_{it-j} + \sum_{j=0}^{b} \beta_{22ij} dlmk\_pc_{it-j} + \\ & \sum_{j=0}^{c} \beta_{23ij} dldc\_pc_{it-j} + \sum_{j=0}^{d} \beta_{24ij} dldcf\_pc_{it-j} + \sum_{j=0}^{e} \beta_{25ij} dlKOFE\_df_{it-j} + \\ & \sum_{j=0}^{f} \beta_{26ij} dlKOFFi\_df_{it-j} + \sum_{j=0}^{g} \beta_{27ij} dlKOFSo\_df_{it-j} + \gamma_{21i} lGDP\_pc_{it-1} + \\ & \gamma_{22i} lmk\_pc_{it-1} + \gamma_{23i} ldcf\_pc_{it-1} + \gamma_{24i} lKOFE\_dj_{it-1} + \gamma_{25i} lKOFFi\_dj_{it-1} + \\ & \gamma_{26i} lKOFPo\_dj_{it-1} + \varepsilon_{2it}, \end{aligned} \quad (3)$$

where, α_{2i} denotes the intersection, δ_{2i}, β_{2kij}, k = 1, ..., 7 and γ_{2im}, m= 1, ..., 6, the estimated parameters; and ε_{2it} the error term.

3.3. Preliminary tests

The preliminary data analysis is most important and crucial to understand the characteristics the variables in study. The figure 3, describe the tests and statistic performed in the preliminary test.

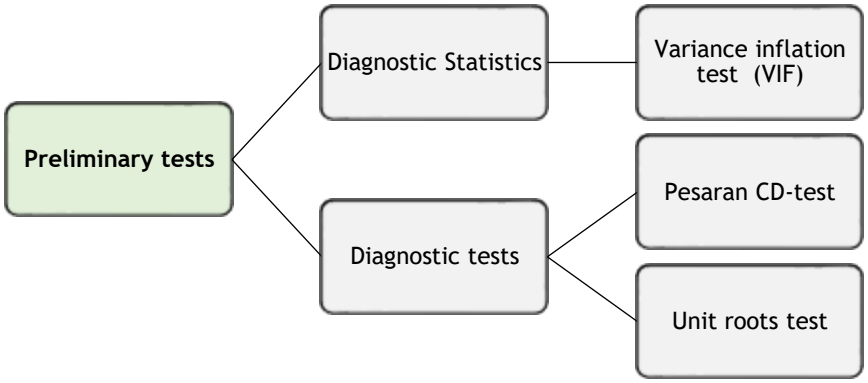


Figure 4 - Summary of the preliminary test

An analysis of the statistics and integration order shall be done, for a better analysis and so to not produce results deceiving. As the data form a macro panel, in table 4 discloses the descriptive statistics of the variables and the presence of cross-sectional dependence (CSD). Moreover, to test cross-sectional dependence in panel, it was performed the CD test Pesaran (2004).

Table 4 - Descriptive statistics and cross-sectional dependence

Descriptive statistics						Cross-sectional dependence (CSD)		
Variable	Obs	Mean	Std. Dev.	Min	Max	CD-test	Corr	Abs(corr)
lgdp_pc	360	11.67643	2.156821	9.148628	17.17422	33.15***	0.830	0.830
lmk_pc	359	-13.21241	1.961901	-18.98475	-9.241097	16.93***	0.423	0.427
ldcf_pc	359	-12.64494	1.394387	-15.10255	-9.906331	-2.02**	0.044	0.593
lKOFE_dj	360	4.128304	0.2858447	3.199235	4.494295	10.85***	0.270	0.463
lKOFFi_dj	360	4.057317	0.3975304	2.428746	4.513494	3.57***	0.089	0.484
lKOFPo_dj	360	4.267618	0.2551829	3.565363	4.59065	35.71***	0.887	0.887
dlgdp_pc	350	0.0207878	0.0365423	-0.1264381	0.1241312	11.02***	0.280	0.300
dlmk_pc	349	0.028009	0.3491068	-1.267671	1.397897	13.91***	0.354	0.355
dldc_pc	348	0.0003954	0.1135923	-0.9487581	0.6547937	1.92**	0.049	0.171
dldcf_pc	348	0.0019161	0.1247292	-0.9182701	0.6145086	3.41***	0.087	0.173
dlKOFE_df	350	0.01134	0.0762669	-0.2815704	0.59267	4.78***	0.121	0.181
dlKOFFi_df	350	0.0130015	0.0806732	-0.274441	0.5517373	6.94***	0.175	0.216
dlKOFSo_df	350	0.0095253	0.024742	-0.0873199	0.1376858	3.27***	0.082	0.131

Note(s): ***, **, * denote statistical significance level of 1%, 5% and 10%, respectively. CD test has N (0,1) distribution, under the H0: cross-sectional independence. The Stata command *xtcd* was used to achieve the results for cross-sectional dependence.

The presence of cross-sectional dependence (CSD) is present in all variables, as indicated in table previous. This presence of CDS suggests common shocks among the crosses. The CDS can be present because: (i) countries have the same reaction to the shocks; (ii) due to events in countries geographically linked; and (iii) countries they have similar policies, or take the same measures (Moscone & Tosetti, 2010). Moreover, the collinearity is also a concern because to analysing long periods of time, it is advisable to verify this occurrence, therefor the variance inflation factor (VIF) are calculated. According to the results observed in table 5, it is concluded the collinearity is not a concern, the means VIF far from the borderline value of 10.

Table 5 - VIF test

Variable	VIF	1/VIF	Variable	VIF	1/VIF
lKOFE_dj	8.89	0.112507	dlKOFFi_df	7.14	0.139999
lKOFFi_dj	7.69	0.130068	dlKOFE_df	6.76	0.147827
lmk_pc	5.82	0.171735	dldcf_pc	2.40	0.416590
ldcf_pc	5.00	0.200129	dldc_pc	2.09	0.479290
lKOFPo_dj	1.22	0.817859	dlmk_pc	1.10	0.911589
			dlKOFSo_df	1.08	0.925466
Mean VIF		5.72	Mean VIF		3.43

To verify the order of integration the all variables, the unit root test (table 6). Following the defined path, we started with the unit root tests the first generation was used: LLC (Levin *et al.*, 2002), ADF-Fisher (Maddala & Wu, 1999), and ADF-Choi (Choi, 2001). Moreover, due to the presence of cross-sectional dependence is necessary to calculate the second-generation unit root tests (Pesaran, 2007). This test is more robust to heterogeneity and unit roots when under a nonstandard distribution. It is verified that the variables are I(0), and I(1) when analysing in levels, but the most important for this study was to verify that variables I(2) are not present. Concluding the conditions for the use of the ARDL technique, because the problem of order 2 integration in the variables is not verify.

Table 6 - Unit root test

	1st generation									2nd generation			
	LLC			ADF-Fisher			ADF-Choi			CIPS lag=0		CIPS lag=1	
	a)	b)	c)	a)	b)	c)	a)	b)	c)	d)	e)	d)	e)
lgdp_pc	-9.95167***	-9.33660***	-7.77816***	112.941***	113.319***	102.855***	-8.27390***	-8.27471***	-7.59285***	-2.153**	1.179	-1.407*	1.232
lmk_pc	-9.21533***	-10.7877***	-15.9846***	149.141***	179.465***	252.669***	-10.1309***	-11.4081***	-14.0631***	-2.209**	-0.785	-2.896***	-1.613*
ldcf_pc	-8.00636***	-8.82983***	-13.1964***	120.631***	143.018***	189.473***	-8.56645***	-9.80979***	-11.8103***	0.318	-0.123	0.279	0.512
lKOFE_dj	-5.32475***	-6.71875***	-11.8214***	85.2531***	111.170***	161.335***	-6.63422***	-8.25115***	-10.7029***	-0.253	-1.265	-0.177	-1.564*
lKOFFi_dj	-7.22039***	-8.94778***	-14.1142***	114.404***	146.615***	204.954***	-8.22749***	-9.95548***	-12.4008***	1.160	-1.593*	1.588	-2.010**
lKOFPo_dj	-6.84258***	-7.98709***	-9.45862***	66.0226***	92.8282***	122.306***	-5.11682***	-7.00475***	-8.72009***	-1.655**	-1.036	-3.033***	-2.359***
dlgdp_pc	-11.4122***	-14.1647***	-21.8479***	227.442***	259.426***	402.337***	-13.2385***	-14.4114***	-18.4726***	-7.443***	-8.035***	-4.684***	-5.010***
dlmk_pc	-14.6801***	-18.0744***	-24.4141***	304.261***	305.764***	534.888***	-15.7320***	-15.9080***	-21.6478***	-13.317***	-12.852***	-9.336***	-8.392***
dldc_pc	-11.3955***	-14.4357***	-22.1640***	240.917***	257.149***	421.061***	-13.5143***	-14.3052***	-18.7282***	-11.090***	-10.264***	-6.734***	-5.390***
dldcf_pc	-10.6432***	-14.1013***	-23.1443***	252.797***	275.630***	439.359***	-14.1168***	-14.9568***	-19.3992***	-12.662***	-12.058***	-8.564***	-7.426***
dlKOFE_df	-10.9526***	-13.6084***	-20.4848***	202.979***	238.274***	359.271***	-12.3079***	-13.6447***	-17.3038***	-11.828***	-11.032***	-8.756***	-7.869***
dlKOFFi_df	-9.77468***	-12.5470***	-19.3814***	184.573***	222.643***	331.693***	-11.5376***	-13.0509***	-16.4974***	-11.787***	-11.008***	-7.788***	-6.935***
dlKOFSo_df	-12.1543***	-14.7580***	-21.0092	208.829***	243.101***	366.921***	-12.5661***	-13.8490***	-17.5405****	-12.948***	-12.590***	-6.947***	-5.947***

Note(s): a) Trend and intercept; b) Intercept; c) None; d) Without trend; e) With trend; ***, ** , * denote statistical significance level of 1%, 5% and 10%, respectively; Levin-Lin- Chu: panels contain unit roots; Im-Pesaran- Shin: all panels contain unit roots, these unit-root tests have cross-section means removed and 1lags; ADF-Fisher and ADF-Choi: Unit root (individual unit root process); first generation tests follow the option "no constant", which was decided after a visual inspection of the series; Pesaran (2007) Panel Unit Root test (CIPS): series are I(1); the presented results include 1 lag; n.a. denotes not available; and the Stata command *multipurt* were used.

Briefly, in the preliminary analysis, tests were performed (see figure 4) to determine if the methodology used is the most correct. First, presence of cross-sectional dependence (CSD) was performed. The results showed that all variables are significant in the test. This presence of CDS suggests common shocks among the crosses. Second, multicollinearity was tested using the Variance Inflation Factor (VIF), present in table 5. The results show that all VIF values are less than 10, demonstrating have not presence of multicollinearity. In table 6, unit root tests the first generation (LLC, ADF-Fisher, and ADF-Choi) and, second generation (CIPS). The conclusions suggest that the variables are stationary in levels I(0), and I(1). Moreover, the results for the CIPS suggest the same conclusion. These outcomes confirm the appropriateness of the ARDL model applied, because of the variables are not integrated of order two I(2).

In the next section, the results will be presented. The Hausman test is performed to select between the Fixed Effects (FE) and Random Effects (RE) estimators. This test allows to detect in the panel data, what is the most efficient estimator to deal with its characteristics. Depending on the outcome of this test, the panel data analysis proceeds.

4. Results

This study analyses the effects the two of financial markets development and dimensions of the globalization index on economic growth. It is worth highlight the countries in study, were selected through the stock market. The central idea is to have a balanced panel and a long-time horizon. The proxy the stock market was the variable that made this situation more difficult, since the data incorporated in the database are reduced, selecting only this ten countries to comply the central objective of this study.

In the panel approach, before proceeding to the results, it is necessary to verify which is the most adequate estimator in the study. Therefore, we use the Hausman test that allows us to select the most suitable model. Using the Hausman test this allows to confront fixed effects (FE) and random effects (RE). This test is accompanied by two hypotheses: null hypothesis: random effects model (RE) and alternative hypothesis: fixed effects model (FE). For example, when applying FE against RE, if the P-value is less than 5% the model should be calculated with FE, since the null hypothesis is rejected with a 5% significance. The options in the Hausman test of *Sigmamore* and *Sigmaless* were used, as in previous studies by Fuinhas *et al*. (2015). The obtained results are presents in table 7, and indicate the presence of fixed effects(FE).

Table 7 - Hausman test

	Chi^2
Hausman	87.28***
Hausman, sigmamore	77.18***
Hausman, sigmaless	97.67***

Note(s): *** denotes statistical significance level of 1%.

To identify the proper estimator more diagnostics tests are using. The heteroscedasticity, contemporary correlation and serial correlation are analysed. In table 8, the results of the following tests are presented:

- *Modified Wald test*: the presence of heteroscedasticity is appraised, considering two hypotheses: null hypothesis: the absence of heteroscedasticity and alternative hypothesis: existence of heteroscedasticity;
- *Pesaran's test of cross-sectional independence*: to evaluate if the individual variances are correlated;
- *Wooldridge's test:* performed to evaluate the existence of autocorrelation, considering two hypotheses: null hypothesis: absence of autocorrelation and the alternative hypothesis: the existence of autocorrelation.

Table 8 - Specification's tests

Test	Statistics
Modified Wald's test	218.26***
Pesaran's test	7.193***
Wooldridge's test	50.650***

Note(s): *** denotes statistical significance level of 1%; results for H_0 of Modified Wald test: sigma(i)^2 =sigma^2 for all I; results for H_0 of Pesaran test: residuals are not correlated; results for H_0 of Wooldridge test: no first-order autocorrelation.

The results obtained in the previous table, indicated that heteroscedasticity, first order serial correlation and autocorrelation are presents in model. To overcome the presence of heteroscedasticity, cross-sectional dependence and first order serial correlation, the Driscoll & Kraay (1998) estimator is used. This estimator translates into a matrix estimator that produces standard errors, which are robust for various phenomena, those found in sample errors. Before passing to the final estimation, were corrected the existing outliers. Therefore, to identify these outliers was observed the residuals and when there was disparity of data (some economic and political problems in the country), a dummy variable is added to smooth this shock. In this study, after visualisation of the series we applicated a dummy in Malaysia for the year of 1998 and Mexico for the year of 1981. These outliers occurred due to financial crises in both countries.

Table 9 - Estimation results

	Models (dependent variable dlGDP_pc)		
	FE (I)	FE Robust (II)	FE-DK (III)
dlmk_pc	0.0136***	0.0136*	0.0135951*
dldc_pc	0.0850***	0.0850	0.0850168**
dldcf_pc	-0.1057***	-0.1057***	-0.1056897**
dlKOFE_df	0.1704***	0.1704***	0.1703976**
dlKOFFi_df	-0.2409***	-0.2409***	-0.2409435***
dlKOFSo_df	0.1439**	0.1439**	0.1438855***
lGDP_pc(-1)	-0.0455***	-0.0455***	-0.0455324***
lmk_pc(-1)	0.0135***	0.0135**	0.0134521***
ldcf_pc(-1)	-0.0150***	-0.0150***	-0.0150457**
lKOFE_dj(-1)	-0.0153	-0.0153	-0.0152563
lKOFFi_dj(-1)	0.0015	0.0015	0.0014576
lKOFPo_dj(-1)	0.0318***	0.0318***	0.0318499***
IDmalaysia1998	-0.1185***	-0.1185***	-0.1184859***
IDmexico1981	0.1369***	0.1369***	0.1369281***
Constant	0.4612***	0.4612***	0.4612111*
Statistics			
N	347	347	347
R^2	0.4638	0.4638	0.4638
F	19.9533		536.72

Note(s): ***, **, * denote statistical significance level of 1%, 5% and 10%, respectively; and the Stata commands *xtreg*, and *xtscc* were used.

The table 10, shows the short and long-run elasticities for FE (I), robust FE (II) and FE-DK (III) models. Moreover, the long-run elasticities were not directly provided by model estimates and therefore should be estimated. The form used was obtained by dividing the coefficient of the variables by the coefficient of lGDP_pc(-1), both lagged once, and then the ratio was multiplied by -1.

Table 10 - Elasticities, impacts, and adjustment speed

	Models		
	FE (I)	FE Robust (II)	FE-DK (III)
	Short-run impacts		
dlmk_pc	0.1873518*	0.1873518	0.1873518
dldc_pc	1.92932***	1.92932**	1.92932***
dldcf_pc	-2.334573***	-2.334573***	-2.334573***
dlKOFE_df	3.79429***	3.79429***	3.79429*
dlKOFFi_df	-5.412348***	-5.412348***	-5.412348***
dlKOFSo_df	3.145252**	3.145252***	3.145252*
	Computed elasticities (long-run)		
lmk_pc	0.2139292***	0.2139292*	0.2139292***
ldcf_pc	-0.3418011**	-0.3418011***	-0.3418011**
lKOFE_dj	-0.3130037	-0.3130037	-0.3130037
lKOFFi_dj	0.0546355*	0.0546355	0.0546355
lKOFPo_dj	0.7446379***	0.7446379***	0.7446379**
	Speed of adjustment		
ECM	-0.0455324***	-0.0455324***	-0.0455324***

Note(s): ***, **, * denote statistical significance level of 1%, 5% and 10%, respectively. ECM denotes the coefficient of the variable lGDP_pc lagged once.

The error correction mechanism (ECM) is statically significant and negative and comprised between [-1, 0], indicating the correct specification of the obtained model and the presence of a long-run relationships. It is verified that adjustment speed after a shock is very slow, as we can see in the previous table.

5. Discussion

In last decades, the countries have been exposed some various transformations, namely economic, political, and social ones. Moreover, most countries have suffered financial crises, caused from speculative attack or dragged in these crises. With the "era of globalization" increasingly rooted in the world, technology and information increasingly accessible, allows for greater competition and efficiency between countries. In this study, analysed the relationships between two of financial markets development and globalization dimensions on economic growth, in ten diversified countries. It is worth highlight the countries in study, were selected through the variable proxy of stock market. The central idea is to have a balanced panel and a long-time horizon. The proxy of stock market was the variable that made this situation more difficult, since the data incorporated in the database are reduced, selecting like this only ten countries to comply the central objective of this study. The used methodology it is the ARDL (Autoregressive Distributed Lag) for a balanced panel.

The research was based on the economic growth literature incorporating two types of financial markets developments, and the globalization dimensions updated in 2018. By large, the results support the presence of cointegration (see table 6). In fact, the coefficients of error correction mechanisms are negative and statistically significant. Nonetheless, the adjustment speed after a shock is very slow.

We investigate the short-run and long-run dynamics in the error-correction model (ECM) associated with the ARDL. This allows drawing conclusions about the dynamic adjustments of short-run deviations of the variables from their long-run state (Arize *et al*, 2018). The table 10, it shows the short-run and long-run elasticities.

Focusing in the short-run impacts we verified that de facto financial globalization (dlKOFFi_df) have a significant influence and negatively affects economic growth. An important finding for literature review, because the variable of financial globalization was introduced in the revised of the KOF Globalization Index. Second, there is a significant short-run impact on the variables that represent the banking sector development. According to the results exist one impact positive of domestic credit provided by financial sector (dldcf_pc) and negative of domestic credit to private sector (dldc_pc) on economic growth.

There is strong evidence linked to the literature in this banking sector development. There is suggestion in the results of a unidirectional causality from financial market development to economic growth (supply-leading hypothesis). This latter achievement is not consensual in the literature, as can be seen previously in figure 1. Moreover, it is found that the estimated coefficients in the short-run elasticities referent the stock market development, through of capitalization of listed domestic companies (dlmk_pc) for economic growth are positive but not unanimously significant (only at 10% significance level in the FE model). Based

on this result could mean that stock market development has a little significant role to carry in the growth of these ten economies in short-run.

Furthermore, de facto economic globalization (dlKOFE_df) is highly significant in the models FE, FE Robust, except in FE-DK (only significant at 5%). Moreover, the variable de facto social globalization (dlKOFSo_df) is highly significant in the FE-Robust model, but it loses statistical significance in the model (only at 5% significance level in the FE and 1% significance level in model FE-DK). As mentioned earlier, we are analysing at variables of KOF Globalization Index revised in 2018, which limit us to comparation with the literature review existing.

This analysis makes a valuable contribution to the literature stemming, from the fact up to our level of knowledge, there are still no studies with these revised variables. Therefore, it was observed that de facto economic globalization (dlKOFE_df) and de facto social globalization (dlKOFSo_df) the short-run positively impacts on economic growth. This means that with the increase of de facto economic globalization and de facto social globalization the short-run, economic growth will increase.

Considering on long-run elasticities, we verified that de jure political globalization (lKOFPo_dj) is the main driving force of economic growth. This means that de jure political globalization is positively and significantly linked with economic growth the long-run. Moreover, the promotion of de jure globalization political will most likely lead to economic growth, through the promotion of international organisations, international treaties and number of partners in investment treaties.

Conversely, the variable de jure globalization financial (lKOFFi_dj) have not significance in FE Robust and FE-DK models, only a statistical significance of 10% in FE model. This result, by the meaning of the variable and lack of literature, could mean the lack of the regulations to international capital flows and capital account openness in long-run.

Focused in the variable de jure economic globalization (lKOFE_dj) have not statistical significance to the model in long-run elasticities. If we analysed this result by the variable of economic globalization before being revised in 2018, this finding agreed with a body of literature existing, for example Majidi (2017). However, we do not want to draw any definitive conclusions about this result, more study will be needed.

Considering the variable domestic credit provided by financial sector (ldcf_pc) in long-run, that represent the banking sector development is highly significant in the FE-Robust model and only at 5% statistical significance in the FE and FE-DK model. Based on the models in table 10, all estimations coefficients have been negative in the long-run elasticities, but with different levels of significance. The literature tends to argue in different ways regarding the role of banking sector development on economic growth. In the long-run elasticities, the unidirectional causality is observed at the financial market development to economic growth.

Focusing in the variable which represents the stock market development in the long-run elasticities. The variable market capitalization of listed domestic companies (lmk_pc) is highly significative in FE and FE-DK models and only at 10% significance level in the FE Robust. Based on the models, all estimations coefficients have been positive in the long-run elasticities,

but with different levels of significance. The fact, that most of the estimation the long-run elasticities show that the stock market development indicator has positive and statistical significant coefficients, suggests that stock market development perform a significant role in economic growth of these economies.

The option for using dynamic panel techniques appears adequate, as the phenomenon under analysis is both a short-run and long-run one. The speed of adjustment is very slow, under 5%, as shown by the ECM term in table 10, revealing that the adjustment to shocks requires a longer time span in order to achieve equilibrium.

Understanding the policy implications of the between development markets financial, globalization dimensions, and economic growth variables is of great importance in the field of investigated. Our results carry some policy implications:

I. to promote economic growth, verification must be paid to policies that promote banking sector development. There should be sound regulation for the banking system. A banking markets should instil confidence in the market, so that resources can be effectively mobilized to increase productivity in the economies;
II. if the stock market is well-developed will facilitate the raising equity capital for investment by companies, causing an increase in economic growth. Moreover, may attract foreign direct investment by multinational corporations;
III. in the study indicate at the more the countries are political and financial globalized, the more they experience higher growth rates due to less restriction existents. Dreher (2006) argued that globalization promotes economic growth, through as it reduction poverty, creation employment opportunities, openness in trade and reduces the restrictions on trade and capital. For our set of countries, it is noted that the policies of promoting economic growth through economic globalization in long-run are not being well implemented, because it is not statistically significant to the model.

The possibilities for future investigation, can go through: (i) the complete analysis of the channels of transmission of finances to the economies; (ii) reduction the time horizon for absorb more countries in this type of research; (iii) and to investigate only the effects the KOF Globalization Index (updated in 2018) and economic growth.

6. Conclusion

The study analyses the relationships between of two types the financial markets development, globalization dimensions on economic growth. Using the ARDL model with the sample of ten countries, since 1980 to 2015. To ensure the trustworthiness of using the panel data estimators, which are sensitive to the asymptotic properties of time, a long-time period is used, for which data is available. The CD-tests indicate the presence of cross-sectional dependence, because the countries share shocks. The decision to decompose the total effects into their short-run and long-run components proved to be wise. Bringing together diverse panel data estimators constitutes a valid contribution to the literature of the financial development, globalization and economic growth.

The results observed response the initial question. Our results point to the notion that the relationship between banking sector development on economic growth is generally one-directional, both short-run and long-run. Considering the variable represents the stock market development, we discovered that market capitalization of listed domestic companies, affects more the economic growth in long-run. It appears that the market capitalization of listed domestic companies is driving economic growth in long-run elasticities. This evidence can mean the idea that as the economy grows to long-time, the equity markets tend to expand in terms of the number of listed companies.

The globalization dimensions more important in model are: de jure globalization political the long-run elasticities, and de facto financial globalization the short-run elasticities, which are highly significant in the model. However, we do not want to draw any definitive conclusions about these results, more study will be needed. Moreover, due to the revised of the KOF Globalization Index in 2018, this analysis makes a valuable contribution to the literature stemming. The fact up to our level of knowledge, there are still no studies with these revised variables. Finally, the speed of adjustment of the panel in statistical terms is negative and highly significant. In fact, the speed of adjustment is very slow for long-run equilibrium, reveals that the adjustment to shocks takes very to recover.

One main limitation on the development of this study was the unavailability of data for the market capitalization of listed domestic companies, resulting in the use of only 10 countries for the analysis in the study. Moreover, there are still few studies that incorporate financial globalization, derived to be a variable introduced in this updated the KOF Globalization Index. Nevertheless, it provides original results and offers possibilities for future studies.

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