

## **Analysing the Effect of Financial Development and Symmetric Information on Economic Growth of European Union Members**

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### **Abstract**

The relationship between financial development and economic growth is the crucial issues which could grab economists and policy makers' attention to it. Financial market plays an essential role on each economy, because it conducts funds to those individuals or firms which have productive investment opportunities. If the financial system does not perform this role efficiently, the economic efficiency will decrease and consequently economic growth will be barricaded. One of the main disturbing cases of efficient financial system is asymmetric information. This paper tries to study the effect of financial development and symmetric information on economic growth for whole European Union members. For measuring the symmetric information, some proxies like ICT, IT and economic freedom components are used. In order to have a separate model per country, Pooled Data model is applied in 2000-2012. The results Show that financial development and symmetric information lead to a higher rate of economic growth among European Union members.

**Keywords:** financial development, economic growth, symmetric information, economic freedom, EU.

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## 1. Introduction

The nature of the relationship between financial development and economic growth has been one of the most debates in the recent years. For the first time, Schumpeter (1934) has studied such relationship. Then it has been extensively followed by McKinnon (1973), Shaw (1973), Fry (1988), Levin and Beck (2000), Bekaert and Harvey (2001), La Porta (2002) and some others till now so that it is now well recognized that both of them are so crucial.

However, the direction of causality between financial development and economic growth is challenging issue which has grab great attention of economists in the long term, because this can have significantly different implications for policy makers. The first, Patrick (1966) studied it as the supply-leading and demand-following hypothesis. The supply-leading hypothesis posits a causal relationship from financial development to economic growth. After him, Mckinnon (1973), King and Levin (1993) and Levin et al. (2000) support it. Additionally, Gurley and Shaw (1967), Goldsmith (1969) and some others support the hypothesis that financial development causes significantly economic growth of most economies worldwide.

This study follows the first hypothesis and studies the effect of financial development on economic growth in selected OECD countries. This paper distinction is thus bringing the symmetric information indexes to analysis. Indeed, the goal is how symmetric information and financial development can influence economic growth. In this respect, some variables are selected as proxies for symmetric information. IT, ICT and economic freedom index are applied to presents symmetric information, appearing in an economic growth model per country of the OECD, which is estimated by the Pooled Data approach. All data are collected over the period 2000 - 2012.

The rest of the paper includes a discussion on the relationship between financial development and growth of real sectors (Section 2), an analysis of financial market, economic growth and asymmetric information (Section 3), specifying the model (Section 4), the empirical results (Section 5) and conclusion (Section 6).

## 2. The relationship between financial development and growth of real sectors

Real sector refers to the sector in which there are productions of goods and services through combined utilization of raw materials and other production factors such as labor force, land and capital or by means of production process and

financial sector is a category of stock containing firms that provide financial services to commercial and retail customers. This sector includes banks, investment funds, insurance companies and real estates. It injects cash flow, stocks, bonds and other means of capital and money markets into real market agents. Furthermore, it facilitates the real sectors activities by providing paying services, saving outfit, credit allocation and making required means to oppose commercial and production risks and finally price volatility. It can also send valuable information to real sector to provide facilities for making decision correctly.

Although at a neoclassical framework, financial system has no effect on economic growth, an efficient financial system can practically reduce external borrowing costs and increase savers' efficiency and ensure that savings allocate to the most productive projects. These issues can potentially influence economic growth. Indeed, there is a casual relationship between financial development level and capital formation.

A close mutual relationship exists between the financial sector and real economy. Capital can trigger economic growth. On the other hand, financial wealth cannot sustain itself indefinitely without an adequate real economy foundation.

Goldsmith (1969), King and Levine, (1993) (1993b), and Usai and Vannini, (1995), Gurley and Shaw (1955, 1967) have done some empirical studies which focus on the relationship between financial development and real sector growth. Also some studies focus on the development of stock market and economic growth like Atje and Jovanovich (1993), Demirgüç-Kunt and Levine (1995), Korajczyk (1996), Levine and Zervos (1993). Fama's finding (1990) is compatible with the study of Lee (1992), when stock return can be used to explain real activity. Bilson et al. (2001) and Samitas and Kenourgios (2007) compared the role of current macroeconomic variables in explaining the long-run and short-run stock returns in the new European Union members. Furthermore, their finding confirmed results of Fama who implies that an increase in economic activity may cause an increase in stock prices, or in the other words, the stock in the real sector may influence the performance of the financial sector.

Studying the linkage between the financial development and real sectors in an economy is so important when financial stability assessing and the economic performance determining. Since the emergence of endogenous growth theory, the importance of financial development

has been widely studied (King & Levin, 1993; Demetriades & Luinted, 1996; Denizer, Lyigun & Owen, 2002). All of them tried to demonstrate how financial sector determines economic performance and they showed that reforms in financial sector have important structural implications in the way financial sector variables affect the real economy.

Denizer et al. (2002) and Nidhiprabha (2011) did some attempts to examine the causality between financial development and real sector, but there is no clear evidence regarding the effect of the financial sector on the real sector or vice versa.

Financial system may reduce the cost of acquiring and processing information and thereby improve resources allocation (Boyd and Prescott, 1988). Without this system each investor would face the large cost associated with evaluating firms, managers and economic condition. Bhattacharya and Pfleiderer (1985), Ramakrishnan and Thakor (1984) have designed models where financial intermediaries arise to produce information on firms and sell this information to savers.

By improving information on firms, and economic condition, financial intermediaries can accelerate economic growth. Atje and Jovanovic (1990) developed a model to describe the dynamic interaction between finance and growth. Financial intermediaries produce better information; improve resource allocation and faster growth.

Based on Stiglitz and Weiss (1981), stock market may also stimulate the production of information about firms by becoming larger and expanding with larger and more liquid markets, it is easier for an agent who has acquired information to disguise this private information and make money by trading in the market. Hence, larger liquid will boast incentives to produce this valuable information with positive implications for capital allocation.

Financial system may mitigate the risks associated with the individual projects, firms, industries, regions, countries, etc. banks, mutual funds, and securities markets all provide vehicles for trading, pooling and diversifying risk. The financial system's ability on risk diversification services can affect long-run economic growth by attending resource allocation and saving rates.

Financial system may also improve inter-temporal risks sharing. In examining the connection between cross-sectional risk sharing and growth, theory has tended to focus on the role of market, rather than intermediaries. In addition, liquidity reflects the cost and speed

with agents can convert financial instruments into purchasing power at agreed price. Liquidity risk arises due to the uncertainties associated with converting assets into a medium of exchange. Informational asymmetries and transaction costs may inhibit liquidity and intensify risk. These functions create incentives for the emergence and development of financial markets and institutions that augment liquidity.

A financial system also facilitates transactions in an economy, both providing and improving the payment systems and by reducing transaction and information costs associated with financial transactions. Within a time path, production gets more specialized than before, technological innovation is pervasive, and finally high economic growth will be realized.

### 3. Financial Market, Economic Growth and Asymmetric Information

Financial market plays an essential role in each economy, because it conducts funds to those individuals or firms which have productive investment opportunities. If the financial system does not perform a role efficiently, the economic capacity will decrease and consequently economic growth will be barricaded. One of the main disturbing cases of efficient financial system is asymmetric information, a situation in which one party of a financial contract has more related information than the other one. For example, borrower who takes out loans usually has much better information about potential returns and risk associated with the investment projects they plan to undertake than lender do. Asymmetric information leads to two basic problems in the financial system: adverse selection and Moral hazard.

A large theoretical literature predicts that adverse selection and moral hazard may generate inefficient outcome in financial development and real markets due to asymmetric information (Arrow, 1963, Akerlof, 1970, Spence, 1973, Rothschild and Stiglitz, 1976, Wilson, 1977).

Adverse selection is an asymmetric information problem that before the transaction occurs when potential bad credit risks are the ones who most actively seek out a loan. Thus, the parties who are the most likely to produce an undesirable outcome are most likely to be selected. For example, those who want to take on big risks are likely to be the most eager to take out a loan because they know that they are unlikely to pay it back. Since adverse selection makes it more likely that loan might be made to bad credit risks, lenders may decide not to make

any loans even though there are good credit risks in the marketplace. This outcome is a feature of the classic "lemon problem" analysis first described by Akerlof (1970). Clearly, minimizing the adverse selection problem requires that lenders must screen out good from bad credit risks.

Moral hazard occurs because a borrower has incentives to invest in projects with high risk in which the borrower does well if the project succeeds but the lender bears most of the loss if the project fails. Also the borrower has incentives to misallocate funds for her own personal use to shirk and just not work very hard, or to undertake investment in unprofitable projects that increase her power or stature. The conflict of interest between the borrowers and lender stemming from moral hazard implies that many lenders will decide that they would rather not make loans, so that lending and investment will be at suboptimal levels. In order to minimize the moral hazard problem, lenders must impose restrictions (restrictive covenants) on borrowers so that borrowers do not engage in behavior that make it less likely that they can pay back the loan; then lender must monitor the borrowers' activities and enforce the restrictive covenants if the borrowers violates them (Mishkin, 1991).

One important feature of financial system explained by the asymmetric information framework is the prominent role played by banking institutions and other financial intermediaries that make private loans. These financial intermediaries play such an important role because they are well suited to reduce adverse selection and moral hazard problems in financial markets. They are not as subjected to free-rider problem and profit from the information they produce because they make private loans that are not traded. Because the loans of financial intermediaries are private, other investors cannot buy them. As a result, investors are less able to ride off financial intermediaries and bid up the prices of the loans which would present the intermediary from profiting from its information production activities. Similarly, it is hard to free ride off these financial intermediaries monitoring activities when they make private loans. Financial institutions making private loans thus receive the benefits of monitoring and so are better equipped to prevent moral hazard on the part of borrowers.

The role of asymmetric information in financial sector and its impact on economic growth have caused a great deal of attentions in recent years. A major tenet of this strand of

research holds a critical view on the presence of information asymmetry in general: various forms of informational imperfection disrupt the efficient flow of resources from creditors to debtors and hence hinder economic growth. For example, Tsiddon (1992) finds that the problem of moral hazard can be detrimental to long run growth, since it prohibits the first-best contracts in the loan market. Bencivenga and Smith (1993) argue that presence of adverse selection can lead to credit rationing and hence lower growth. Bose and Cothren (1996) obtain similar growth effects of asymmetric information in a richer framework that follows for the possibilities of either rationing or screening contracts.

However, the above discussion gives evidence that there is an adverse relationship between asymmetric information and economic growth.

#### 4- The Model

One of important segment of financial sector is stock market and this proxy can present the growth of this part of each economy. ST is stock traded and calculated as percentage of GDP.

Foreign Direct Investment (FDI) is a component of a country's national financial accounts. It is investment of foreign assets into domestic structures, equipment, and organizations. It does not include foreign investment into the stock markets. Foreign direct investment is thought to be more useful to a country than investments in the equity of its companies because equity investments are potentially "hot money" which can leave at the first sign of trouble, whereas FDI is durable and generally useful whether things go well or badly.

Asymmetric information is one of the main causes for a market failure. It occurs when one party in a transaction (either the buyer or the seller) has more or better information about the product than the other one. When this happens the market does not function properly and usually stops working altogether.

In this paper, for measuring symmetric information, some proxies are offered such as IT, ICT and the components of economic freedom of the world (EFW) index. Economic freedom is a proper index to present symmetric information. More economic freedom leads to high level of symmetric information. Since its components reveal more facts about this issue, all relevant indicators will be introduced and described their relationship with symmetric information.

Countries with low level of government

spending as a share of the total, a smaller government enterprise sector, and lower marginal tax rates earn the highest rating in this area. The smaller size of government and the bigger private sector make the more symmetric information.

The size of government indicates the extent which countries rely on the political process to allocate resources and goods and services. Countries with low level of government spending as a share of the total, a smaller government enterprise sector, and lower marginal tax rates earn the highest rating in this area. The smaller size of government and the bigger private sector make the more symmetric information.

Protection of persons and their acquired property is a central element of economic freedom and a civil society. Indeed, it is the most important function of government. The key ingredients if a legal system consistent with economic freedom are rule of law, security of property right, an independent and unbiased judiciary, and impartial and effective enforcement of the law.

The countries with efficient legal system where support property rights, and hence the level of information symmetry will increases.

High rate of monetary growth invariably leads to inflation. Similarly, when the rate of inflation increases, it also tends to become more volatile. Volatile rates of inflation distort relative prices, alter the fundamental term of long-term contract, and make it virtually impossible for individual and business to plan sensibly for the future. Sound money is essential to protect property rights and, thus, economic freedom.

The components of sound money like as inflation, etc. can cause to expand information symmetry, especially sound money are determinant to make information symmetry in financial sector.

In our modern world of high technology and low costs for communication and transportation, freedom of exchange across national boundaries is a key ingredient of economic freedom and trade openness. The components in this area are designed to measure a wide variety of restraints that affect international trade: tariffs, quotas, hidden administrative restraints, and control on exchange rates and capital. In order to get a high rating in this area, a country must have low tariffs, easy clearance and efficient administration of customs, a freely convertible currency, and few controls on the movement of physical and human capital. The greater this index, the more competitive become the world

market and competitiveness is evidence of information symmetry.

When regulation restricts entry into markets and interfere with the freedom to engage in voluntary exchange, they reduce economic freedom. Few components of the index focus on regulatory restraints that limit the freedom of exchange in credit, labor, and product market. The first component reflects conditions in the domestic credit market. The second is designed to measure the extent to which these restraints upon economic freedom are present. The third one is also designed to identify the extent to which regulation and bureaucratic procedures restrain entry and reduce competition.

Thus, efficient regulation system provides the field of realizing information symmetry. One of the other indexes to measure information symmetry is IT which is composed of three indicators:

- Mobile cellular subscriptions (per 100 people)
- Telephone lines (per 100 people)
- Internet users (per 100 people)

All components of this index provide fields to expand information in society, thus they help to increase symmetric information.

ICT is another important index of information symmetry, which is presented as net export of ICT goods and services (% of total net export). ICT is defined as a summation of newspaper, radio and television. All items help to distribute information in society and finally increasing information symmetry.

According to the main determinants of economic growth discussed already, a functional form of economic growth for each OECD country ( $i$ ) at time  $t$  is specified as:

$$GGDP_{it} = f(GST_{it}, ICT_{it}, PR_{it}, R_{it}, SM_{it}, FDI_{it}, FT_{it}, SG_{it}) \quad (1)$$

The variables of the model are defined as follows:

*GGDP*: growth of gross domestic product

*GST*: growth of stock traded

*ICT*: net export of ICT goods and services

*IT*: summation of mobile cellular subscriptions, telephone lines and internet users (per 100 people)

*PR*: legal system and property right

*R*: regulation

*SM*: sound money

*FDI*: foreign direct investment

*FT*: freedom of trade internationally

*SG*: Size of government

For evaluating the effects of financial sector growth and information symmetry on economic

growth for the selected European Union members separately, pooled data model is applied. Since the limitation of available observations for whole variables during 2000 - 2012 and the quantity of variables, pooled data model was the method to estimate Equation (1) separately for each OECD country.

### 5. Empirical Results:

Given the introduced variables above, the specified and estimated equation per country is as follows:

Belgium:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & + 0.12\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Bulgaria:

$$\begin{aligned} \text{GGDP}_t = & 29.01 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & - 3.34\text{R}_t + 0.5\text{SM}_t \\ & + 0.28\text{FDI}_t - 0.36\text{FT}_t + e_t \end{aligned}$$

Cyprus

$$\begin{aligned} \text{GGDP}_t = & -66.87 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 11.14\text{PR}_t \\ & + 1.21\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t - 0.92\text{FT}_t + e_t \end{aligned}$$

Czech Rep:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 2.43\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Denmark:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.32\text{GST}_t + 0.03\text{ICT}_t \\ & - 0.003\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Austria:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 8.11\text{PR}_t \\ & + 5.59\text{R}_t - 1.39\text{SG}_t \\ & + 0.17\text{SM}_t - 0.05\text{FDI}_t \\ & + 5.48\text{FT}_t + e_t \end{aligned}$$

Finland:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.146\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.89\text{SG}_t \\ & + 0.73\text{SM}_t + 0.51\text{FDI}_t \\ & + 5.48\text{FT}_t + e_t \end{aligned}$$

France:

$$\begin{aligned} \text{GGDP}_t = & -13.76 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 2.08\text{FT}_t + e_t \end{aligned}$$

Germany:

$$\begin{aligned} \text{GGDP}_t = & -112.61 + 0.11\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 2.91\text{FT}_t + e_t \end{aligned}$$

Greece:

$$\begin{aligned} \text{GGDP}_t = & -118.22 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 3.44\text{PR}_t \\ & + 1.94\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Hungary:

$$\begin{aligned} \text{GGDP}_t = & -45.34 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & - 0.144\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.31\text{SM}_t \\ & + 0.09\text{FDI}_t - 2.58\text{FT}_t + e_t \end{aligned}$$

Ireland:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.087\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 0.5\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 10.23\text{FT}_t + e_t \end{aligned}$$

Italy:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.061\text{IT}_t + 0.64\text{PR}_t \\ & + 2.21\text{R}_t - 1.28\text{SM}_t \\ & - 1.5\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Latvia:

$$\begin{aligned} \text{GGDP}_t = & -90.5 + 5.85\text{GST}_t + 3.18\text{ICT}_t \\ & + 0.016\text{IT}_t + 2.75\text{PR}_t \\ & - 17.16\text{R}_t + 14.9\text{SG}_t \\ & + 2.25\text{SM}_t + 2.03\text{FDI}_t \\ & + 5.48\text{FT}_t + e_t \end{aligned}$$

Luxemburg:

$$\begin{aligned} \text{GGDP}_t = & 134.2 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Malta:

$$\begin{aligned} \text{GGDP}_t = & -9.62 + 1.05\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 3.81\text{PR}_t \\ & - 3.71\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 1.12\text{FT}_t + e_t \end{aligned}$$

Netherlands:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.73\text{FT}_t + e_t \end{aligned}$$

Poland:

$$\begin{aligned} \text{GGDP}_t = & -46.62 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.94\text{SM}_t \\ & + 0.72\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Portugal:

$$\begin{aligned} \text{GGDP}_t = & -71.51 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 8.16\text{PR}_t \\ & + 1.45\text{R}_t - 5.88\text{SG}_t \\ & + 0.17\text{SM}_t - 0.05\text{FDI}_t \\ & - 4.07\text{FT}_t + e_t \end{aligned}$$

Romania:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 2.18\text{GST}_t + 4.79\text{ICT}_t \\ & - 0.284\text{IT}_t - 11.11\text{PR}_t \\ & + 10.96\text{R}_t + 1.195\text{SM}_t \\ & + 0.98\text{FDI}_t + 28.56\text{FT}_t + e_t \end{aligned}$$

Slovak:

$$\begin{aligned} \text{GGDP}_t = & -69.81 + 0.02\text{GST}_t - 1.1\text{ICT}_t \\ & + 0.216\text{IT}_t + 9.57\text{PR}_t \\ & - 4.9\text{R}_t + 0.17\text{SM}_t \\ & + 0.52\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Slovenia:

$$\begin{aligned} \text{GGDP}_t = & -11.33 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & - 10.874\text{IT}_t - 2.09\text{PR}_t \\ & + 1.61\text{R}_t + 0.74\text{SM}_t \\ & + 1.04\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Spain:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 0.71\text{PR}_t \\ & + 5.59\text{R}_t + 1.26\text{SM}_t \\ & - 0.05\text{FDI}_t + 3.77\text{FT}_t + e_t \end{aligned}$$

Sweden:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 6.12\text{FT}_t + e_t \end{aligned}$$

Croatia:

$$\begin{aligned} \text{GGDP}_t = & 19.7 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t - 6.91\text{SG}_t \\ & + 0.17\text{SM}_t - 0.05\text{FDI}_t \\ & + 0.13\text{FT}_t + e_t \end{aligned}$$

England:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t - 2.09\text{PR}_t \\ & + 5.59\text{R}_t + 0.17\text{SM}_t \\ & - 0.05\text{FDI}_t + 5.48\text{FT}_t + e_t \end{aligned}$$

Estonia:

$$\begin{aligned} \text{GGDP}_t = & -145.99 + 0.96\text{GST}_t + 1.43\text{ICT}_t \\ & + 0.016\text{IT}_t + 14.23\text{PR}_t \\ & + 5.59\text{R}_t + 3.61\text{SG}_t \\ & - 0.69\text{SM}_t - 0.91\text{FDI}_t \\ & + 5.48\text{FT}_t + e_t \end{aligned}$$

Lithuania:

$$\begin{aligned} \text{GGDP}_t = & -46.23 + 0.02\text{GST}_t + 0.03\text{ICT}_t \\ & + 0.016\text{IT}_t + 2.31\text{PR}_t \\ & + 5.59\text{R}_t + 5.91\text{SG}_t \\ & + 0.17\text{SM}_t - 0.05\text{FDI}_t \\ & + 5.48\text{FT}_t + e_t \end{aligned}$$

Due to large difference among the size of coefficients of some countries like Latvia, Malta, Romania, and Estonia, the results can not indicate the realities about the effects of financial growth on real growth in these countries, but the clear fact is that the effect of financial sector growth on economic growth is greater in some less developed European Union members than that of others. It is said that in the

economies with primary levels of growth, the effects of financial sector growth is greater than those of developed ones.

The results also indicate the effect of financial development on economic growth is the same. This effect is a little bit larger in Germany, Ireland, and Denmark than the others.

The results revealed the effect of *ICT* on *GDP* growth due to large difference among coefficients, while this is larger for some countries like Estonia, Slovak, Romania, and Latvia than the others. It can be ascribed to this fact that these countries are less developed than the other European ones. More *ICT* leads to distribute information symmetrically and finally provide areas to more growth in real sector of economy. For Slovak, the effect is negative; i.e. more *ICT* leads to less *GDP* growth. It can be ascribed to media quality due to remain the communism governance in Slovak.

After deleting the outlier of *IT* coefficients, it is seen that this estimated coefficient is the same as most European Union members. More *IT* leads to more symmetric information, and finally more *GDP* growth which has occurred for most countries, but this effect for some countries is vice versa like Slovenia, Romania, Hungary, and Denmark.

For remarkable numbers of European Union members, the effect of variable of legal structure and property right on *GDP* growth is negative, while this effect for others is positive and for some ones such as Estonia, Slovak, Cyprus, Portugal is larger than the others.

Legal structure and property right in developed European Union members is internalized after the long-term and lately is made ineffective. So this cannot be used as control variable.

Regulation is considered as a proxy for symmetric information and its effect on *GDP* growth for all countries except Slovak, Malta, and Latvia is positive. It means that an increase in regulation causes to an increase in real sector growth.

*SG* is the size of government and has been considered as a proxy for economic freedom in order to explain symmetric information. The reason is that larger size of government makes information to rent-seeking sectors, and thus distributes information asymmetrically and finally leads *GDP* growth to lessen. The empirical results obtained indicate that this effect for some OECD countries is not significant, while for Croatia, Portugal, and Austria is negative and for Lithuania, Estonia, Latvia, Finland is positive.

*SM* presents sound money, being considered

as a proxy of economic freedom and an element of symmetric information in this study. Its components is money growth, standard deviation of inflation, inflation most recent year, and freedom to own foreign currency bank accounts. According to the results obtained, the effect of sound money (*SM*) on *GDP* growth is significantly positive among the OECD countries except for Italy and Estonia. The coefficient *SM* value is obtained bigger for Spain, Slovenia, Romania, Poland, and Latvia, while lower for other members.

Given the sound money components, *SM* is a proxy to present financial sector. Any improvement in *SM* via efficient financial market transfers to real sector and finally higher economic growth rate.

*FT* represents freedom to international trade as a proxy of symmetric information and must be positive effect on real sector growth which is realized for whole countries except for Portugal and Hungary.

In most countries, *FDI* affects *GDP* growth negatively, because in developed countries, *FDI* inflows are negative and these countries invest in developing countries. In Italy and Estonia is more negative than the others, due to financial circumstances of those of other these countries, capital flows outside, while for some countries like Slovenia, Slovak, Romania, Latvia, Finland, Bulgaria, and Belgium, this is positive which is expected because developed countries tend to invest in such countries due to appropriate infrastructure.

## 6. Conclusion

Given the economic theoretical basis, financial sector growth leads to real one growth which this paper result affirmed it similarly. Both *ICT* and *IT* are involved as symmetric information which can boost *GDP* growth and it is evident clearly by the obtained results except for especial ones.

Arising from the results, it is implied that the whole economic freedom components would have positive effect on real economy growth.

In addition, *FDI* supports real economy growth; it means *FDI* increase makes more *GDP* growth, while the results show that for most countries, this is negative, except for some countries.

Generally, a clear fact revealed by these results is that some countries such as Estonia, Slovak, Romania, Latvia, Malta, Finland, Portugal, Croatia and Bulgaria behave differently. The coefficients of these countries are often larger than those of others; it means a small change of each variable in the model can

leads to large reaction of *GDP* growth. Therefore, investing each variable provides condition to improve economic growth due to existence of the necessary infrastructure. Thus, we can classify all European Union members into two categories: less and more developed countries. The results confirm that less developed countries are often located on north-east Europe continent which can compose a region and more developed ones where are located west Europe continent also can make the other region.

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