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The Relationship among International Trade, Financial Development and Economic Growth: The Case of Pakistan

Korhan K. Gokmenoglu^{a*} Muhammad Yusuf Amin^a Nigar Taspinar^a^a*Eastern Mediterranean University; Department of Banking and Finance, Famagusta, North Cyprus*

Abstract

This study is conducted to investigate the relationship among international trade, financial development and economic growth in Pakistan. The ADF and PP tests are used to check the order of integration of the variables and Johansen co-integration methodology is employed to investigate the long run relationship among these variables. The direction of causality between variable is tested by Granger causality test. It is found that all of the variables are non-stationary and the analysis confirm for a long run relationship among international trade, financial development and economic growth. The results indicate that international trade and financial development spur economic growth in Pakistan.

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1. Introduction

GDP growth is one of the most important criteria to evaluate the performance of an economy. To identify the main drivers of economic growth and the potential sources of growth a large number of studies have been conducted. These studies indicate different drivers of growth including foreign direct investment, domestic

* Corresponding author.

E-mail address: korhan.gokmenoglu@emu.edu.tr

investment, financial development and export. This study aims to analyze the relationship among international trade, financial development and economic growth by employing time series analysis.

The relationship between economic growth and export which is an important component of international trade has taken the attention of many scholars. Most of the studies resulted that export has positive impact on economic growth (Ullah et al., 2009). Although export led growth empirically has been investigated intensively, the direction of causality is still under debate. In a developing economy, some manufacturing firms may undergo substantial changes as a result of learning, technical modernizations, experiences and technology allocation via foreign direct investment (FDI). Under these circumstances; even if there is no government policy that attempt to achieve development by encouraging free trade policies, it is possible to enhance output growth. If domestic demand does not increase as much as the output growth in these flourishing industries; manufacturers can export the surplus. Hence, export growth can be promoted by economic growth in a country. However, if domestic demand growth is higher than industrial production growth, this may lead to a decrease in export. As a result, the domestic demand induces an increase in domestic output which is accompanied by a decrease in export; so, productivity in growth can deteriorate the export performance to the country (Lee and Huang, 2002).

We have a vast literature regarding the relationship between financial development and economic growth. There is consensus in the literature that financial development assists economic growth through various channels, including export expansion (Shahbaz and Rahman, 2014). A well-functioning financial sector of a country can also have positive impact on export in addition to its influence on output growth (Hur and Riyanto, 2006; Shahbaz, 2009). So to have higher export shares in world trade it's important to have a well-developed financial system.

Yuan et al. (2014) state that the impact of international trade and financial development on growth has become an important research subject. According to the traditional theoretical framework of the factor endowment, enterprises can enhance their ability to overcome liquidity shortages with the help of financial development by encouraging exports of products with high dependence on external financing and advancing the scale and structure of trade production. Rajan and Zingales (1998) explore a relative beneficiary theory of financial development and claim that financial development helps enterprises to avoid moral hazard and adverse selection problems and to enhance export growth promoted by the external financing. Financial development represents certain degree of comparative advantage for those industries which have higher dependence on external financing. Such industries are likely to have greater growth rates and higher shares of exports and obtain more trade benefits in countries those have higher level of financial development.

Although there is a vast literature that investigates the relationship among GDP growth, export and financial development; literature on Pakistan is limited. This study aims to investigate the existence of the long run relationship between international trade, financial development and economic growth and, direction of causal relationship between these variables for Pakistan.

The article proceeds as follows: Section three defines data and methodology of the study. Section four provides results and discussions and the paper concludes with section five.

2. Literature Review

Financial sector development is considered as on one of the most important sources of comparative advantage. Beck (2003), Svaleryd and Vlachos (2005) investigate the relationship between financial development and trade from the economies of scale perspective. They find that trade has been affected by the financial sector. A more developed financial sector channel more saving to the private sector, facilitate enterprises with the use of external financing so that firms can overcome liquidity constraints. Zhang et al. (2012) conduct a study on relationship between financial development and economic growth in China and the results show that most indicators of financial development have positive relation with economic growth. Al-Yousif (2002) finds bidirectional causality between financial development and GDP growth for thirty developing countries for the period of 1970-1999. Emmanuel and Lartey (2010) study the effect of financial development on economic growth for a panel of 74 counties and find that financial development has a positive effect on economic growth which doesn't vary with the level of financial development.

Jenkins and Katircioglu (2008) investigate the long run relationship between financial development, international trade and economic growth for Cyprus. Results shows that international trade, financial development and economic

growth are co-integrated and the Granger causality test shows that real income contributes to the growth of financial development and international trade.

A lot of studies have been conducted to investigate the effect of export on economic growth and positive impact of export on economic growth has been confirmed by several scholars (among others see; Ullah et al., 2009; Jordaan and Eita, 2007). However, Pazim (2009) investigates the validity of export-led growth theory for Indonesia, Malaysia and Philippines by employing panel data analysis and find no significant relationship between export and output growth. The existence of export-led growth is also analyzed for Pakistan by Shahbaz et al. (2011) who validate export-led growth hypothesis. Shahbaz and Rahman (2014) explore the relationship among exports, financial development and GDP growth in Pakistan by employing the Bounds testing approach to cointegration and the vector error correction model (VECM) Granger causality test. Co-integration analysis confirms the long run relationship. The literature on the relationship between export and economic growth is far from consensus. The findings depend on the characteristics of the country. Types of variables that are used in the study and the conducted methodology are also important.

3. Methodology

3.1. Data

Data used in this research are the annual figures of 1967-2013 containing variables, gross domestic product (GDP), exports (X), imports (I), domestic credit to private sector by banks (M1), money and quasi money (M2), and domestic credit to private sector (M3). Money and quasi money includes demand deposits except central government, currency outside the banks and the time, saving and foreign currency other than central government. M3 refers to financial resources provided to private sector by financial corporations, such as account receivable, trade credit and other loans that establish a claim for repayment. Financial companies include finance and leasing companies, monetary authorities and deposit money banking, money lenders, insurance corporations, pension funds and foreign exchange companies. GDP figures are in constant 2005 US\$ and export, import and three indicators for financial development are in % of GDP. All the data is collected from the World Bank data base (2014). The data is transformed into natural logarithmic form in order to capture growth effects.

3.2. Econometric analysis

This study investigates the relationship among international trade, financial development and economic growth by using time series econometrics methodology. To this aim, first of all, Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) unit root tests are used to test whether variables are stationary. Then, Johansen and Juselius (1990) co-integration test is undertaken to examine the cointegration relationship between GDP and the explanatory variables. Finally, Granger-causality test are employed to determine the direction of causality between variables.

In our empirical work log-linear specifications of the variables are used and the following equation is estimated:

$$\ln G_t = \beta_0 + \beta_1 \ln X_t + \beta_2 \ln I_t + \beta_3 \ln M1_t + \beta_4 \ln M2_t + \beta_5 \ln M3_t + \varepsilon_t \quad (1)$$

Where $G_t, X_t, I_t, M1_t, M2_t$ & $M3_t$ represent economic growth, export, import, domestic credit to private sector by banks, money and queasy money, domestic credit to private sector respectively. $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 give the elasticity of the explanatory variables.

3.2.1 Unit Root Test

Prior to any empirical analysis first the order of integration of the variables has to be investigated. In our study, ADF and PP unit root tests are used to test whether series are stationary. The null hypothesis for ADF and PP tests is

that series has unit root. If the series is non-stationary at level, first differences of the series should be taken in order to make the series stationary. Stationary series at level is denoted by I (0) and unit root is denoted by I (1).

Enders (1995) suggests that testing unit roots should be started from the most general model which includes trend and intercept. The model can be written as follows;

$$\Delta y_{t-1} = a_0 + \lambda y_{t-1} + a_2 t + \sum_{i=2}^p \beta_j \Delta y_{t-1+i} + \epsilon_t \tag{2}$$

Where y is the dependent variable, t is the trend, a is the intercept, ϵ_t is Gaussian white noise and p is the lag level.

3.2.2. Co-Integration Test

If all variables have the same order of integration, the next step is to use co-integration analysis to investigate the long run equilibrium relationship between variables. Johansen approach is employed to test the co-integration. Johansen test helps to identify the long run relationship among variables; there should be at least one co-integrating vector in order to have co-integration among variables (Johansen, 1988).

The Johansen methodology can be written as follows;

$$X_t = \Pi_1 X_{t-1} + \dots + \Pi_k X_{t-k} + \mu + e_t \quad (\text{for } t = 1, \dots, T) \tag{3}$$

Where X_t, X_{t-1}, X_{t-k} are vectors of level and lagged values of the variables respectively which are integrated of order one; Π_1, \dots, Π_k are coefficient matrices with (PXP) dimensions; μ is intercept vector; and e_t is a vector of random errors (Katircioğlu et al., 2007).

3.2.3. Granger Causality Test

In third step, Granger causality test should be applied to find the direction of long run relationship among variables. Granger causality tests are run by retaining the Vector Error Correction (VEC) framework when there is co-integration relationship (Katircioğlu et al., 2007). When there is co-integrating vector in the model, the simple Granger’s causality tests under the VAR approach cannot be undertaken. The relationship between Co-integration and Granger causality is discussed by Granger (1988).

Granger (1988) suggests the following causality model;

$$Z_t = \sum_{j=1}^m a_j Z_{t-j} + \sum_{j=1}^m b_j Y_{t-j} + \epsilon_t \tag{4}$$

$$Y_t = \sum_{j=1}^m c_j Z_{t-j} + \sum_{j=1}^m d_j Y_{t-j} + \eta_t \tag{5}$$

If b_j is statistically significant; Y_t Granger causes Z_t . On the other hand, if c_j is different than zero; Z_t Granger causes Y_t .

4. Empirical Findings

4.1. Unit Root Test for Stationarity

Stationary natures of the variables are investigated by ADF and PP unit root tests. Table 4.1 shows the results for ADF and PP tests. Both tests indicate that all variables are non-stationary at their level form and stationary at their first difference form which means all variables are integrated of order one; I (1).

Table 4.1 Results for ADF and PP unit root tests

Statistics (Level)	ln G	Lag	ln X	Lag	ln I	Lag	ln M1	Lag	ln M2	Lag	ln M3	Lag
τ_T (ADF)	-0.54	(0)	-2.32	(0)	-2.59	(0)	-1.33	(0)	-3.12	(0)	-1.54	(0)
τ_μ (ADF)	-2.27	(0)	-2.17	(0)	-2.60	(0)	-2.33	(1)	-3.15	(0)	-1.35	(0)
τ (ADF)	4.63	(1)	0.26	(0)	-0.01	(0)	-0.84	(0)	-0.15	(0)	-0.87	(0)
τ_T (PP)	-0.81	(3)	-2.12	(5)	-2.54	(2)	-1.33	(0)	-2.93	(5)	-1.54	(0)
τ_μ (PP)	-1.99	(3)	-1.95	(5)	-2.55	(2)	-1.69	(1)	-2.97	(5)	-1.35	(0)
τ (PP)	10.41	(4)	0.49	(5)	0.02	(2)	-0.78	(1)	-0.16	(5)	-0.83	(2)
Statistics (First Differences)	Δ ln G	Lag	Δ ln X	Lag	Δ ln I	Lag	Δ ln M1	Lag	Δ ln M2	Lag	Δ ln M3	Lag
τ_T (ADF)	-5.73*	(0)	-6.13*	(0)	-8.55*	(0)	-5.29*	(0)	-5.56*	(0)	-5.68*	(0)
τ_μ (ADF)	-5.39*	(0)	-6.14*	(0)	-8.63*	(0)	-5.24*	(0)	-5.63*	(0)	-5.62*	(0)
τ (ADF)	-1.28	(1)	-6.19*	(0)	-8.70*	(0)	-5.24*	(0)	-5.70*	(0)	-5.62*	(0)
τ_T (PP)	-5.78*	(3)	-6.57*	(5)	-8.94*	(4)	-5.20*	(4)	-5.66*	(5)	-5.60*	(5)
τ_μ (PP)	-5.44*	(3)	-6.43*	(5)	-8.82*	(3)	-5.16*	(4)	-5.77*	(5)	-5.56*	(4)
τ (PP)	-1.68***	(3)	-6.44*	(5)	-8.88*	(3)	-5.18*	(3)	-5.86*	(5)	-5.56*	(4)

Note: G represents real gross Domestic Product; X is export of good and services; I is imports of goods and services; M1 is domestic credit to private sector by banking; M2 is money and quasi money; and finally M3 is domestic credit to private sector. τ_T tests equation with a drift and trend; τ_μ is with a drift and without trend; τ is without a drift and trend. Numbers in brackets represent lag lengths used in ADF test used to remove serial correlation in the residuals. Number in brackets represents Newey-west bandwidth used in PP test. *, ** and *** denote rejection of the null hypothesis at the 1%, 5% and 10% levels respectively.

4.2. Co-Integration Analysis

Johansen co-integration test is used in order to investigate the long run equilibrium relationship among variables. All of the six variables; which are GDP, exports, and imports and 3 financial development indicators are integrated of the same order. In our proposed model, economic growth (GDP) is a dependent variable while international trade and financial development are explanatory variables. Table 4.2 shows the results for co-integration analysis.

According to the table 4.2, the null hypothesis of there is no co-integrating vector in the proposed model can be rejected at 1% level which suggests that there is only one co-integrating vector in the model. Results reveal that there is a long run equilibrium relationship between international trade, financial development and economic growth.

Table 4.2 Co-integration analysis

Hypothesized	Trace	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value
None **	0.650891	111.5533	94.15
At most 1	0.472994	65.24898	68.52
At most 2	0.340187	37.06508	47.21

Note: Trace test indicates 1 co-integrating equation(s) at both 5% and 1% levels, *(**) denotes rejection of the hypothesis at the 5%(1%) level.

4.3. Granger Causality Test

Following co-integration analysis the next step is to analyze the direction of the long run relationship between variables by Granger Causality test. Table 4.3 shows the results for Granger Causality test. The null hypothesis of the model is the non-causality between variables. If the null hypothesis of the model is rejected that means independent variable Granger-Causes the dependent variable.

Table 4.3: Granger causality test

Null hypothesis	F-statistic	Prob.
LNX does not Granger Cause LNG	1.86973	0.1284
LNG does not Granger Cause LNX	1.00812	0.4295
LNI does not Granger Cause LNG	0.26347	0.9296
LNG does not Granger Cause LNI	3.27205	0.0174
LNM1 does not Granger Cause LNG	1.36328	0.2649
LNG does not Granger Cause LNM1	1.19251	0.3356
LNM2 does not Granger Cause LNG	2.36108	0.0631
LNG does not Granger Cause LNM2	2.15771	0.0846
LNM3 does not Granger Cause LNG	1.09962	0.3805
LNG does not Granger Cause LNM3	1.62570	0.1825
LNI does not Granger Cause LNX	3.55754	0.0117
LNX does not Granger Cause LNI	1.71305	0.1610
LNM1 does not Granger Cause LNX	0.40960	0.8384
LNX does not Granger Cause LNM1	0.84515	0.5284
LNM2 does not Granger Cause LNX	1.76721	0.1489
LNX does not Granger Cause LNM2	1.23910	0.3148
LNM3 does not Granger Cause LNX	0.18454	0.9663
LNX does not Granger Cause LNM3	0.76201	0.5841
LNM1 does not Granger Cause LNI	1.68573	0.1674
LNI does not Granger Cause LNM1	1.85893	0.1304
LNM2 does not Granger Cause LNI	3.35712	0.0154
LNI does not Granger Cause LNM2	0.77081	0.5780
LNM3 does not Granger Cause LNI	1.41711	0.2456
LNI does not Granger Cause LNM3	1.83948	0.1341
LNM2 does not Granger Cause LNM1	1.62567	0.1825
LNM1 does not Granger Cause LNM2	0.23673	0.9433
LNM3 does not Granger Cause LNM1	0.60834	0.6941
LNM1 does not Granger Cause LNM3	0.71496	0.6170
LNM3 does not Granger Cause LNM2	0.50686	0.7688
LNM2 does not Granger Cause LNM3	1.73717	0.1555

Table 4.3 indicates that there is a uni-directional relationship between GDP and import, import and export, quasi money and import. On the other hand, there is a bi-directional relationship between quasi money and GDP. Results also reveal that causality is running from GDP; which is a proxy for economic growth, to imports, from imports to exports, from quasi money; which is used as a proxy for financial development, to imports and finally from quasi money to GDP and vice versa. According to Granger causality results, economic growth is financial development driven and financial development is economic growth driven in Pakistan. In addition, imports are GDP growth and financial development driven in Pakistan. From above results, it can be concluded that for Pakistan a change occurs in the economic growth will have an impact on import, which will further affect the exports of the country. Furthermore the bi-directional result between economic growth and quasi money acknowledges that financial development stimulates growth, then economic growth may stimulate financial development, which is important to maintain a sustainable economic growth for Pakistan. So to promote the economic growth of a country it's important to have a well functioned financial sector.

4. Conclusion

The study is conducted to evaluate the long run equilibrium relationship and the direction of causality between economic growth, international trade and financial development. To this aim, first unit root tests are applied and the null hypothesis cannot be rejected which means that the variables are not stationary. However, first difference of the series are found to be stationary; all variables at their level forms have one unit root. After that step co-integration relationship is analyzed by employing Johansen Test and found that there is a long run equilibrium relationship between international trade, financial development and economic growth. The direction of causal relationship is evaluated by Granger Causality approach. Granger causality test results show that a change in economic growth and financial development precede a change in import, a change in financial development precedes a change in economic growth and vice-versa.

Above empirical findings indicate that the Government of Pakistan should try to support the financial development in order to accelerate the economic growth and to have a better financial system will be helpful to have stable economic growth. To this aim a developed infrastructure, good macroeconomic environment and elimination of all sorts of trade barriers is needed. The government should also encourage the private sector by providing different incentives so that they can take more active part in the development efforts of the country. For a better financial system cooperation of the Government and State Bank of Pakistan is important. In return a better financial system will promote international trade and economic growth. With the help of this environment, production of the country will be increased which will promote international trade, competition and efficiency in the economy.

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