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On The Relationship Between Financial Development and Trade Openness

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ABSTRACT

The aim of this paper is to evaluate the relationship, if any, between trade openness and the financial development in both, developed and developing countries. The relevance ofthe openness of the trade (TO) on the development of financial sector (FD) is explored in three panels. The first overall panel contains 64countries; the second contains 13 developed countries, while the third panel contains 51 developing countries over the period 1995-2016. Models are initially estimated using linear static and dynamic panel data estimators for balanced panel. Since N<T in the case of developed countries, there was a need to use PMG. Moreover, a Granger causality test that implements a vector autoregressive (VAR) framework within the panel setting is employed. Linear static panel data estimators indicate a significant positive impact of TO on FD for the overall sample of countries as well as for developed and developing countries. The findings of linear dynamic panel data estimators indicate a significant positive relationship between economic terms of interest for overall sample of countries as well as for developing. PMG framework reports a significant positive relationship only in the long-run. Granger causality test reveals a reverse causal relationship between trade openness and financial development in overall sample as well as in the case of both, developed and developing countries. Therefore, the overall conclusion states that in order to drive financial development, governments need to foster trade liberalization and to increase trade openness.

INTRODUCTION

Both, theoretical and empirical research highlights a strong and positive relationship between financial development and economic growth, i.e. financial development is found to be an important determinant of economic growth (Satrovic, 2017). This is due to the financial intermediary's role in reducing information asymmetry, diversifying risks and facilitating the mobilization of resources. Therefore, Kim et al. (2010) indicate that a well-developed financial system tends to improve the formation of capital and to increase the allocation of resources which consequently leads to long-run economic growth. Apart from the important role in driving economic growth, financial development has an important role in reducing poverty and inequality.

Previous paragraph indicates that, both economic terms of interest in this paper tend to have a positive impact on economic growth. In spite of the wave of liberalization undertaken during the last decades, the debate, among economists, on the direction of the links and causality between trade openness and financial development is still open. This is due to the fact that previous literature suggests a positive effect of financial sector development on trade since countries with a well-developed financial system appear to enjoy a comparative advantage and export relatively more in financially vulnerable sectors(Gächter and Gkrintzalis, 2017). Moreover, the authors indicate that financial development and better access to capital markets exercise a positive impact on the overall level of trade openness because external financing possibilities are generally necessary to develop export capacities.

On the other hand, outward-oriented economies consistently have higher growth rates than inward-oriented countries in terms of economic growth as well as financial development. Inbound capital tends to drive the financial development of the host country. Therefore, Becker et al. (2013) suggest that financial development is associated with more exports in industries in which fixed costs are high and also positively affects (high-cost) imports. In addition to the positive effect of exports on financial development, import also tends to drive the financial development due to the presence of foreign companies in the market.

In general, studies to date agree on the positive impact of trade openness on financial development. This is since the openness of trade uses to have an important role in stimulating the development of financial sector. Under these conditions, foreign competitors increase the level of the risk. In order to diversify the risk, financial institutions provide insurance policies and hence provide a necessary support (Al-Fayoumi and Abduzayed, 2014). Therefore, the positive impact is expected in this paper as well.

The rest of the paper proceeds as follows. In Section 2 author summarizes the literature on the relationship between financial development and trade openness. Section 3 gives a detailed description of data, variables as well as methodology. Section 4 summarizes the results of the empirical research on the matter. Finally, we conclude in Section 5.

1.Literature Review

Since the 1990s, the relationship between financial development and trade openness has been examined quite extensively by the researchers. This part of the paper summarizes results of the empirical studies on the matter.

Baltagi et al. (2009) has analyzed the relationship between the development of financial sector and the openness of the trade by employing dynamic panel techniques. The authors were interested to explore this relationship in both, industrialized and developing countries. The empirical results of this paper suggest a positive relationship between variables of interest. Hence, trade openness is considered to be a key determinant of the development of banking sector.

The relationship between financial market development and trade openness for 18 emerging economies over the period ranging from 1980 to 2011 is explored by Niroomand et al. (2014). For the purpose of the empirical research, they have explored a long-run and short-run relationship between economic terms of interest (a bounds testing approach and error correction modeling). The empirical findings reveal that there is a significant short-run effect of financial market development on trade openness and there is a strong link between trade openness and financial market development in all of 18 emerging economies.

There are a limited number scientific articles exploring the direct relationship between the variables of interest in this paper, they rather explore the triangle: financial development, trade openness and economic growth relationship. To mention one, Asghar and Hussain (2014) examine the casual relationship between the development of financial sector, openness of trade and economic activityin the period 1978-2012 in developing countries. The results of the study imply that there are strong evidences on long run relationship between these three variables during the period under the study. Moreover, the openness of trade is reported to be an importand determinant of the development of financial sector in all the countries in the study.

Using Granger causality approach over a period 1970- 2011, Rafindadi and Ozturk (2017) examine the relationship between financial development, trade openness and energy consumption in South Africa. The results of this study show that financial development induce energy demand and trade openness increases energy consumption.

Menyah et al. (2014) investigate the casual relationship between financial development, trade openness and economic growth for 21 African countries during the period 1965–2008. They develop an index of financial development. The empirical findings imply limited support for both finance-led growth and trade-led growth hypotheses. The results suggest no significant impacts.

However, it is important to emphasize that a few empirical studies provide empirical evidence on no significant relationships between variables of interest. Gries et al. (2009) examine the relationship between trade openness, financial deepening, and economic development for 16 SSA (sub- Saharan African) countries using Hsiao-Granger approach over a period 1960-2003. The results indicate that financial development and trade openness have insignificant impact on economic growth.

2.Data, Variables and Methodology

2.1.Data and Variables

To conduct an empirical investigation, there was a need to select appropriate proxy variables. The most appropriate measure of financial development reported in Desbordes and Wei (2017) is the domestic credit to private sector normalized by GDP (***FD***). This financial development measure reflects the actual use of external debt financing in the economy. It has been extensively used in the growth, finance, and international trade literature (Hatemi-J and Shamsuddin, 2016).In addition, the relevance of FD as a proxy variable of financial development is also recognized in Rafindadi and Ozturk (2017), Menyah et al. (2014) and Satrovic (2017). Therefore, this measure is considered relevant in this paper as well.

On the other hand Kar et al. (2014) emphasize that the appropriate proxy variable of trade openness is trade (% of GDP) - ***TR***. The database consists of 64 countries (13 developed and 51developing) in the time span covering 1995-2016. The list of countries is given in Appendix 1. The source of the data is World Bank (World Development Indicators, 2017). UN country classification is used to distinguish between developed and developing countries.

2.Methodology

The econometric methodology applied in thispaper follows four steps. First, the panel unit root is tested forthe variables. Furthermore, panel regression model is formed and estimated using linear static and dynamic panel data estimators.Since N<T in the case of developed countries, there was a need to use PMG.The Granger causality test is employed to explore the potential reverse causal relationship between variables of interest (Satrovic, 2018b).

Panel unit root test

The stationary properties have been tested using Fisher-type unit root test in this paper. A Fisher-type test of unit root combines the p-values from unit root tests for each cross-section *i* to test for unit root in panel data.

Linear static panel data estimators

Models will be initially estimated using linear static panel data estimators. Hausman test will be used to decide between fixed and random effects (Satrovic, 2018a).

Generalized method of moments

To incorporate dynamics into the model, model equation can be written as an AR (1) model in general form in the following (Sehic and Satrovic, 2014):

$$y_{it} = \alpha_t + (v+1)y_{it-1} + \beta x_{it} + u_i + \varepsilon_{it} \quad (1)$$

where y_{it} is the dependent variable, y_{it-1} is the lagged value of the dependent variable, x_{it} represents a vector of explanatory variables, u_i is individual effect, ε_{it} – error term while α_t represents the period specific intercept terms to capture changes common to all countries.
The coefficients in equation (1)can be derived using Arellano-Bover two-step GMM estimator (Satrovic, 2018a). Potential bias due to the endogeneity of some of the regressors and potential dynamics will be controlled. Diagnostic tests include: Sargan test of overall validity of instruments and the test of second order autocorrelation.

PMG approach

Taking into account the estimation issues connected to the application of GMM in the case when N<T, there is a need to estimate the relationship between variables of interest in the case of developed countries by employing PMG approach, as introduced by Pesaran et al. (1999). It is considered appropriate since it enables the estimation in the long-run (the order of integration of other variables is not taken into consideration).Attaoui et al. (2017) formalizes the model as follows:

$$\Delta Y_{1,it} = \alpha_{li} + \gamma_{li} Y_{1,it-1} + \sum_{l=2}^{k} \gamma_{li} X_{1,it-1} + \sum_{j=1}^{p-1} \delta_{lij} \Delta Y_{1,it-j} + \sum_{j=0}^{q-1} \sum_{l=2}^{k} \delta_{lij} \Delta X_{1,it-j} + \varepsilon_{1,it} \quad (2)$$

where Y is the outcome variable and X is the regressor with $l = 1,2,3,4$. ε_{it} denotes the error term while the first difference operator is denoted by Δ.

Granger causality

The focus of this research is to support the empirical literature on the causal relationship between TO and FD using panel causality techniques. For this purpose Dumitrescu-Hurlin (DH) test is used (Satrovic, 2018b). Lopez and Weber (2017) summarize the regression as follows:

$$y_{i.t} = \alpha_i + \sum_{k=1}^{K} \beta_{ik} y_{i,t-k} + \sum_{k=1}^{K} \mu_{ik} x_{i,t-k} + \varepsilon_{i.t}. \quad (3)$$

The explanation of the variables is given above.

RESULTS OF THE RESEARCH

The results of research section starts by summarizing the most important measures of summary statistics (Table 1).

Table 1: Descriptive Statistics

	All countries		Developed countries		Developing countries	
Statistics	**FD**	**TO**	**FD**	**TO**	**FD**	**TO**
mean	84.388	52.860	75.726	95.029	86.596	42.110
sd	59.641	47.400	35.624	62.270	64.171	35.565
max	442.620	312.118	171.566	312.118	442.620	233.211
min	15.636	0.001	16.680	7.090	15.636	0.001
skewness	3.127	1.594	0.509	0.478	3.058	1.822
kurtosis	15.904	5.199	2.886	2.223	14.402	6.769
countries	64		13		51	

Source: Authors

Average domestic credit to private sector as a percentage of GDP equals 84.388% for 64 observed countries. The highest reported value of FD equals 442.62% while the lowest equals 15.636%. When it comes to developed and developing countries, higher average FD is reported for developing countries. When it comes to trade openness proxy variable, average trade (% GDP) equals 52.86% for the overall sample. The highest TO value reported is 312.12% while the lowest equals 0.001%. Higher average TOis reported for developed (95.029%) compared to developing countries (42.11%). All variables are expressed in percentage which eases the interpretation.

Table 2 suggests that there is no evidence on the stationary properties of the variablesfor all variables in terms of 64 observed countries as well as for developed and developing countries (for 1% level of significance).

Table 2: Fisher-Type Unit Root Test

	All countries			Developed countries			Developing countries		
		Statistic	p-value		Statistic	p-value		Statistic	p-value
FD	P	414.1367	0.000	P	78.021	0.000	P	303.3337	0.000
	Z	-12.5679	0.000	Z	-5.3751	0.000	Z	-9.9246	0.000
	L*	-13.4687	0.000	L*	-5.6179	0.000	L*	-10.6921	0.000
	Pm	17.8835	0.000	Pm	7.214	0.000	Pm	14.0962	0.000
TO	P	311.7782	0.000	P	54.2551	0.001	P	268.5226	0.000
	Z	-9.7552	0.000	Z	-3.829	0.000	Z	-9.5435	0.000
	L*	-9.7202	0.000	L*	-3.7394	0.000	L*	-9.6246	0.000
	Pm	11.4861	0.000	Pm	3.9183	0.000	Pm	11.6589	0.000

Source: Authors

Since Fisher unit root tests confirm the rejection of the null hypothesis on the existence of unit root for all variables in terms of 64 observed countries as well as for developed and developing countries (for 1% level of significance), a panel regression model is formed and estimated. Results of Hausman test suggest random effects in terms of overall sample while fixed effects are suggested in terms of developed and developing countries. Coefficients with trade openness (Table 3) are reported to be significant and positive. The strongest impact is reported for developed countries.

Table 3: Linear Static Panel Data Estimators

VARIABLES	(1) All countries - RE	(2) Developed countries - FE	(3) Developing countries - FE
TO	0.1828*** (0.0265)	0.4274*** (0.1061)	0.1619*** (0.0222)
Constant	37.4331*** (5.8406)	62.6672*** (8.1836)	28.0917*** (4.1001)
Hausmantest p value Observations	0.18 0.6710 1408	32.05 0.0000 286	12.11 0.0005 1122

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors

However, the robustness tests indicate that the assumptions on no-autocorrelation and homoscedasticity are not satisfied. In addition, the dynamic trend is expected in the observed variables. Therefore, system GMM two step estimator is suggested to deal with the aforementioned estimation issues. Table 4 summarizes the obtained results. Results of system GMM two step estimator indicate a significant positive impact of TO on FD for overall sample. The obtained coefficients are much smaller comparing to the results of linear static panel data estimators. Therefore, the presence of potential dynamics and endogeneity that is not controlled tends to overestimate the impact of TO on FD.

Table 4: Linear Dynamic Panel Data Estimators

VARIABLES	(1) All countries - GMM	(2) Developing countries - GMM
L1.FD	0.9514*** (0.0017)	0.9759*** (0.0018)
TO	0.0148*** (0.0023)	0.0225*** (0.0013)
Constant	2.4358*** (0.2196)	0.1536 (0.1005)
Observations Sargan test p value AR(II) p value	1344 1.000 0.1626	1071 1.000 0.1553

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors

Table 5: PMG Long-Run and ECM Estimation

			Coef.	St. Error	z	P>z	95% Conf. Interval	
Developed countries	ECT	TO	0.892	0.140	6.350	0.000	0.617	1.167
	SR							
		ECT	-0.137	0.036	-3.770	0.000	-0.209	-0.066
		TO D1.	-0.139	0.154	-0.910	0.364	-0.440	0.162
		_cons	5.540	4.051	1.370	0.172	-2.401	13.480

Source: Authors

Table 6: DH Granger Non-Causality Test Results

	Dependent variable	Independent variable	W-bar	Z-bar	Z-bar tilde	Decision
All countries	**FD**	**TO**	3.3529	5.4115 (0.0000)*	3.1028 (0.0019)*	TO Granger causes FD.
	TO	**FD**	5.3845	13.5379 (0.0000)*	9.1339 (0.0000)*	FD Granger causes TO.
Developed countries	**FD**	**TO**	3.2968	5.8558 (0.000)*	4.4665 (0.000)*	TO Granger causesFD.
	TO	**FD**	2.3695	3.4915 (0.0005)*	2.5594 (0.0105)*	FD Granger causes TO.
Developing countries	**FD**	**TO**	3.6567	13.4156 (0.0000)*	10.3126 (0.0000)*	TO Granger causes FD.
	TO	**FD**	2.6642	8.4036 (0.0000)*	6.2696 (0.0000)*	FD Granger causes TO.

Note: * - p value
Source: Authors

Moreover, we have used PMG framework to estimate the model in terms of developed countries.

Table 5 summarizes the results of long-term and short-term relationship between trade openness and domestic credit to private sector (% GDP). The error correction is significant (for 1% level of significance). The study reveals a positive and significant relationship between FD and TO in the long-run for developed countries. Wald statistics test is employed to explore the potential reverse causal relationship between variables of interest. Table 6 summarizes the obtained results.

The bidirectional causal relationship betweendomestic credit to private sector (% GDP)andtrade openness (% GDP) is reported for the 64 observed countries as well as for developed and developing, implying that trade liberalization tends to drive the financial development. Moreover, the obtained results indicate that financial development tends to drive trade liberalization too.

CONCLUSION

The level of financial development and trade liberalization are considered to be one of the most important determinants of economic growth. Therefore, their role in contributing economic growth has been explored quite extensively in up-to-date theoretical and empirical studies.However, the role of trade openness in financial development has not received too much attention among academic community. Hence, this research aims to provide empirical evidence and fill in the gap in literature to date.

Models are initially estimated using linear static panel data estimators. Results of Hausman test suggest random effects in terms of overall sample while fixed effects are suggested in terms of developed and developing countries. Coefficients with trade openness are reported to be significant and positive. The strongest impact is reported for developed countries. These results confirm that trade openness tends to drive the financial development. However, the robustness tests indicate that the assumptions on no-autocorrelation and homoscedasticity are not satisfied.

In order to deal with the potential estimation issues connected with linear static panel data estimators and in order to control for potential endogeneity and dynamics, we have suggest two step system GMM estimator in terms of overall sample of countries and developing. Results of system GMM two step estimator indicate a significant positive impact of TO on FD for overall sample. The obtained coefficients are much smaller comparing to the results of linear static panel data estimators. Therefore, the presence of potential dynamics and endogeneity that is not controlled tends to overestimate the impact of TO on FD.

Moreover, we have used PMG framework to estimate the model in terms of developed countries.

The error correction is reported to be significant (for 1% level of significance). The empirical findings suggest a positive relationship between variables of interest in developing countries in the long-term. Taking into account the fact that different estimators are used while calculating the coefficients in terms of developed and developing countries, there is no sense to compare the size of the impact. However, it is worthwhile noticing that the significance and the size of coefficients do not differ. Therefore, we can emphasize the positive impact of TO on FD for overall sample of countries as well for developed and developing countries.

Lastly we have applied Granger causality test. The bidirectional causal relationship between domestic credit to private sector (% GDP) and trade openness (% GDP) is reported for the 64 observed countries as well as for developed and developing, implying that trade liberalization tends to drive the financial development. Moreover, the obtained results indicate that financial development tends to drive trade liberalization too.

The policy implications of the general results of this paper point out that trade openness appeared as the policy variable for accelerating financial development in both, developed and developing countries. For maintaining financial development, government has to deepen the trade liberalization and undertake essential measures in strengthening the long-run relationship between trade openness and financial development.

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APPENDIX 1

Algeria
Argentina
Armenia
Australia*
Azerbaijan
Bahrain
Bangladesh
Belarus
Bolivia
Botswana
Brazil
Bulgaria*
Cameroon
Chile
China
Colombia
Costa Rica
Cote d'Ivoire
Croatia*
Czech Republic*
Ecuador
Egypt
Fiji
Georgia
Ghana
Haiti
Honduras
Hong Kong
Hungary*
Iceland*
India
Indonesia
Japan*
Kazakhstan
Kenya
Kyrgyz Rep.
Macedonia
Malaysia
Mexico
Mongolia
Morocco
Nepal
Norway*
Oman
Pakistan
Panama
Paraguay
Peru
Philippines
Poland*

Qatar
Romania*
Saudi Arabia
Senegal
Singapore
Switzerland*
Thailand
Tunisia
Turkey
Uganda
Ukraine
United Kingdom*
United States*
Uruguay

Note: * denotes developed countries. The rest are developing countries.