

THE EFFECT OF FINANCIAL DEVELOPMENT AND INSTITUTIONAL QUALITY ON ECONOMIC GROWTH: A STUDY ON OIC COUNTRIES USING SEEMINGLY UNRELATED REGRESSION.

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ABSTRACT

This paper examines how financial development (FD), institutional quality (IQ), and economic growth are related in the selected OIC countries using the Seemingly Unrelated Regression (SUR) method. The findings show that the countries are highly heterogeneous. In Malaysia, FD and IQ make significant and positive contributions to growth, and, by implication, are complementary. Indonesia adheres to the FD-driven growth but there is a high negative level of IQ influence that indicates institutional weaknesses. In the case of Turkey and Saudi Arabia, FD shows a highly significant impact on growth but, in the case of IQ there is no significant impact whereas, in the case of Pakistan, FD and IQ do not have significant impact on growth. Total-effect estimations further show that complementarities between FD and IQ are the most pronounced where institutional frameworks are also favourable except for Indonesia where the negative effect of IQ is offset by the positive effect of interaction term. These results indicate the way in which financial deepening is not enough without the solidification of institutions. Policy implications point out that reforms of both financial sector efficiency and quality of governance are needed simultaneously and only integrated strategies can lead to long-range sustainable and inclusive growth.

Keywords: *Financial development, economic growth, institutional quality, seemingly unrelated regression, OIC countries.*

JEL Classification: O16,O43,E44,C33,G28

INTRODUCTION

Financial economics and development policy often look to whether financial development (FD) promotes economic growth as one of the major issues. Particularly in emerging and developing economies, the sustainable transformation is closely related to intermediation and governance. FD refers to the overall, long-term improvement in terms of depth, access, efficiency and stability of financial institutions and markets, plus the infrastructure that allows those functions to operate smoothly. Scholars have traced the history back to a statement by Schumpeter, 1911 that a successful banking system will also stimulate entrepreneurial innovation by turning savings into productive investment, thus creating more output and

boosting economic growth. Meanwhile, modern theory talks about information asymmetries, transaction costs and risk sharing. For instance, Avila and Jovanovic (1990) shows that intermediation promotes efficient allocation of capital through reduced information and monitoring costs; whilst King and Levine (1993) offer an early cross-country study indicating that financial system development predicts subsequent growth. Levine (1995) summarises the theoretical and empirical contributions by insisting that financial system improves growth through channeling funds to entrepreneurs efficiently, stock market regulation, spreading of risks and a higher level of saving.

The IQ indexes measures depth, access, and efficiency of financial and institutional markets, while governance indicators capture the rule of law, regulatory quality, government effectiveness, and control of corruption (Svirydzenka, 2016; Kaufmann, Kraay, & Mastruzzi, 2010). These developments suggest a research agenda to jointly model finance and institutions with appropriate measurement and design that acknowledges interdependence among countries.

This agenda is especially important for the members of the Organisation of Islamic Cooperation (OIC) which shared cultural and religious objectives, but IQ, financial system structures, and financial system depths have significant differences between them. Research on the OIC members has established that institutions are primary factors in the financial system development, inclusion finance links within better governance environments, and inclusion finance links become stronger, but there are also substantial differences across countries and over time (Abubakar & Kassim, 2018; Ali, Nazir, Hashmi, & Ullah, 2022). These insights, in conjunction with the finance–institutions literature, raise an important question. How does the institutional quality (IQ) of OIC member countries impact the relationship between FD and economic growth? Further, does the IQ framework account for the variation in economic growth over an extended period across these countries? Three gaps continue to limit the current understanding despite the progress that has been made. First, much of the empirical works either completely ignores or understudies the IQ of the moderation framework in settings with ample governance. Second, multiple studies use single equation panel estimators and ignore cross country macroeconomic shocks and policy spillover contemporaneity, which bias the inference country systems, and is intertwined. Third, evidence for OIC economies is often fragmented and either focuses on single countries or broad panels that obscure strategic differences. Such gaps constrains the ability for policymakers to align financial deepening and institutional reform to unlock the growth dividends for OIC members.

This study attempts to fill in the gaps by merging theory and measurement employing an estimation approach that specifically forecasts cross-country interdependencies. In theory, we integrate Schumpeterian finance led growth with institutional economics and information-based credit theory to argue that the quality of institutions and the level of finance developed together contribute to growth, and that this complementarity is stronger when finance is efficiently moderated. In practice, we utilize a cross-country Seemingly Unrelated Regressions framework to estimate growth equations for five strategically chosen OIC economies namely Malaysia, Indonesia, Pakistan, Saudi Arabia, and Turkey while permitting the cross-country correlation of errors and allowing the errors to be cross-country correlated. The SUR approach increases efficiency relative to single equation methods and is appropriate for systems in which unobserved shocks and policies are believed to cross the border and influence each other (Zellner, 1962). We combine a broad FD index that captures the depth, access, and efficiency of finance with a governance index that integrates the central institutional pillars of the literature. This design prescribes a direct examination of the institutional role of the OIC member countries and provides country-specific policy recommendations.

METHODOLOGY

Data and Variables

In this paper, real GDP growth (annual %) is the principal indicator of economic growth, as it summarizes the entire economic activity. FD (FD) is captured using a composite index that includes banking and capital market indicators to reflect the depth and efficiency of the financial system (Čihák et al., 2012; Svirydzienka, 2016). IQ is measured using six dimensions from the Worldwide Governance Indicators, including rule of law and control of corruption, to reflect governance strength (Kaufmann et al., 2011). Trade openness (TO) is measured by the trade-to-GDP ratio, indicating integration with global markets. Government expenditure (GE) is expressed as a percentage of GDP to show the size of government involvement in the economy. Population growth (PG) is measured by the annual growth rate of total population. Lastly, the interaction term $FD \times IQ$ captures how strong institutions can enhance the positive effect of FD on economic growth (Beck & Levine, 2004; Law & Azman-Saini, 2012).

In this study, secondary sources were used to acquire data between 1990 and 2020. The annual percentage growth rate of real Gross Domestic Product (GDP) is taken as a proxy to measure economic growth and is obtained from the World Development Indicators (WDI) database. FD is measured using the Financial Development Index (FD Index) from the International Monetary Fund (IMF), which captures the depth, access, and efficiency of financial institutions and markets. IQ is represented by a composite Institutional Quality Index (IQI), derived from the six Worldwide Governance Indicators (WGI): rule of law, control of corruption, regulatory quality, government effectiveness, voice and accountability, and political stability. They were prepared based on the World Bank data and complemented by policy research reports and academic publications. Table 1 summarize all variables used in this study.

Table 1: Data Specification

Variable		Definition, Measurement and Data Source	Previous Studies
Economic Growth (EG)		Definition: Net addition of domestic economic value produced over time; overall production growth trend of the economy. Measurement :Real GDP growth (annual %) as the dependent variable. Data Source :World Bank World Development Indicators (WDI): GDP growth (annual %).	Barro (1996); Levine & Zervos (1998); Sala-i-Martin, Doppelhofer & Miller (2004); Easterly & Levine (2001); Aghion, Howitt & Mayer-Foulkes (2005); Aghion & Howitt (1992).

Financial Development (FD / FD Index)	Definition :Enhancement of financial systems in depth and breadth, with efficient markets and stable institutions that mobilise and allocate resources and manage risk. Measurement :Composite FD Index capturing multiple dimensions (depth, access, efficiency), across institutions and markets. Data Source :IMF Financial Development Index framework; World Bank Global Financial Development Database (GFDD) indicators for benchmarking/construction.	Čihák et al. (2012); Svirydzenka (2016); Beck, Levine & Loayza (2000); Pradhan et al. (2014).
Institutional Quality (IQ / IQ Index)	Definition :Formal and informal governance structures shaping rights, enforcement, policy credibility and stability; supports development and growth. Measurement:Composite IQ index aggregated from WGI dimensions: voice & accountability, political stability/no violence, government effectiveness, regulatory quality, rule of law, control of corruption. Data Source:World Bank Worldwide Governance Indicators (WGI).	Kaufmann, Kraay & Mastruzzi (2011); Rodrik, Subramanian & Trebbi (2004); Acemoglu & Robinson (2012); La Porta et al. (1999); Glaeser et al. (2004).
Trade Openness (TO)	Definition:Degree of international trade participation and openness to global markets and competition. Measurement:Trade-to-GDP ratio: (Exports + Imports) / GDP, typically % of GDP. Data Source:World Bank WDI: Trade (% of GDP).	Edwards (1998); Frankel & Romer (1999); Yanikkaya (2003); Sachs & Warner (1995); Wacziarg & Welch (2008).
Government Expenditure (GE)	Definition:Total government spending on goods, services and transfers; reflects state involvement and fiscal stance. Measurement :Government expenditure as % of GDP (series must be chosen consistently, e.g.,	IMF (2018); Devarajan, Swaroop & Zou (1996); Kneller, Bleaney & Gemmell (1999); Barro (1991); Ram (1986); Landau (1983); Cooray (2009).

	general government final consumption % of GDP, or total government expenditure % of GDP).	
	Data Source: MF Government Finance Statistics (GFS) and/or World Bank WDI.	
Population Growth (PG)	Definition: Annual population increase affecting labour supply, dependency ratios, demand and resource pressures. Measurement: Population growth (annual %). Data Source : IMF Government Finance Statistics (GFS) and/or World Bank WDI	World Bank (2020); Bloom & Williamson (1998); Mankiw, Romer & Weil (1992); Kelley & Schmidt (1995); Simon (1981); Brander & Dowrick (1994).
Interaction term (FD × IQ)	Definition : Joint effect capturing how governance quality conditions the growth payoff of financial maturity; institutions moderate finance-led growth. Measurement : Interaction constructed from the finance index and the institutional index (common approach: multiplicative term after standardisation; your text also mentions a residual/factor-based approach). Data Source : Constructed from the study's computed FD Index and IQ Index series (no separate dataset beyond underlying indices).	Čihák et al. (2012); Kaufmann et al. (2011); Beck & Levine (2004); Law & Azman-Saini (2012); Acemoglu & Johnson (2005); Huang (2010); Demetriades & Law (2006).

Data Analysis

This study employs Seemingly Unrelated Regression (SUR) estimation. This approach allows all coefficients to differ across countries in distinct equations identified as:

$$EG_{i,t} = \beta_0 + \beta_1 FD_{i,t} + \beta_2 IQ_{i,t} + \beta_3 TO_{i,t} + \beta_4 GE_{i,t} + \beta_5 PG_{i,t} + \beta_6 FD * IQ_{i,t} + \varepsilon \quad [1]$$

where:

EG	=	Economic growth (percent)
FD	=	Financial development (point)
IQ	=	Institutional quality (point)
TO	=	Trade openness (percent)
GE	=	Government expenditure (percent)
PG	=	Population growth (percent)
β_j	=	Coefficient value for each variable, ($i = 0, 2, \dots, 5$)
ε	=	Error term.

The error in this model is considered as white – noise where the mean is equal zero and variance is constant, σ_ε^2 or $\varepsilon \sim iid(0, \sigma_\varepsilon^2)$.

Zellner (1962) proposed this estimation, which is favoured in panel analysis due to its consideration of the correlation of disturbances across individual equations, hence enhancing the efficiency of the coefficients. Assume that the error term of nation k is associated with the error term of country j , as demonstrated as $cov(\varepsilon_{k,t}, \varepsilon_{j,t}) = \sigma_{k,j}$ $\sigma_{k,j} \neq 0$. This kind of correlation is called contemporaneous correlation. The coefficient of $\varepsilon_{k,t}$ and $\varepsilon_{j,t}$ might be correlated in this equation. SUR will estimate N , individual country equations jointly for the fact that variances of error terms are different for each N equation and accounting for contemporaneous correlation between errors of N equations (Hill, et al. 2012). The SUR model can be shown in the following procedures. Suppose Equation of cov is stacked based on N , individual country into matrix form system which can be seen in following equation [1]

$$Y = \begin{bmatrix} X_1 & & & \\ 0 & X_2 & & \\ & & \ddots & \\ & & & X_N \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_N \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_N \end{bmatrix} = X\beta + \varepsilon \quad [2]$$

where matrices of Y_i , X_i , β_i and ε_i are $(T \times 1)$, $(T \times K_i)$, $(1 \times K_i)$, and $(T \times 1)$ dimensions, respectively. Although each country in the above equation might seem unrelated (for instances, each has potentially distinct coefficient vectors, dependent variables and explanatory), the equations are linked through their mean – zero error structure which is written in Equation [3].

$$E(\varepsilon\varepsilon') = \Omega = \Sigma \otimes I_T = \begin{bmatrix} \sigma_{11}I_T & \sigma_{12}I_T & \dots & \sigma_{1N}I_T \\ \sigma_{21}I_T & \sigma_{22}I_T & \dots & \sigma_{2N}I_T \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{N1}I_T & \sigma_{N2}I_T & \dots & \sigma_{NN}I_T \end{bmatrix} \quad [3]$$

where,

$$\Sigma = \begin{bmatrix} \sigma_{11} & \sigma_{12} & \dots & \sigma_{1N} \\ \sigma_{21} & \sigma_{22} & \dots & \sigma_{2N} \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{N1} & \sigma_{N2} & \dots & \sigma_{NN} \end{bmatrix} \quad [4]$$

is variance – covariance matrix for each $t = 1, \dots, T$ error term. Feasible Generalized least square (FGLS) estimator is utilized to estimate N equations of SUR model. The estimator is shown as Equation [4]: $\hat{\beta} = (X'\hat{\Omega}^{-1}X)^{-1}(X'\hat{\Omega}^{-1}Y) = [X'(\hat{\Sigma}^{-1} \otimes I)]^{-1}[X'(\hat{\Sigma}^{-1} \otimes I)Y]$. Assuming the consistent of Σ in Equation [3.12] available, the FGLS will be a consistent estimator of β . However, Σ is unknown. The typical estimator of Σ is derived from Equation [5].

$$\hat{\Sigma} = \begin{bmatrix} \hat{\sigma}_{11} & \hat{\sigma}_{12} & \dots & \hat{\sigma}_{1N} \\ \hat{\sigma}_{21} & \hat{\sigma}_{22} & \dots & \hat{\sigma}_{2N} \\ \vdots & \vdots & \ddots & \vdots \\ \hat{\sigma}_{N1} & \hat{\sigma}_{N2} & \dots & \hat{\sigma}_{NN} \end{bmatrix} = \begin{bmatrix} \frac{1}{T}\varepsilon_1'\varepsilon_1 & \frac{1}{T}\varepsilon_1'\varepsilon_2 & \dots & \frac{1}{T}\varepsilon_1'\varepsilon_N \\ \frac{1}{T}\varepsilon_2'\varepsilon_1 & \frac{1}{T}\varepsilon_2'\varepsilon_2 & \dots & \frac{1}{T}\varepsilon_2'\varepsilon_N \\ \vdots & \vdots & \ddots & \vdots \\ \frac{1}{T}\varepsilon_N'\varepsilon_1 & \frac{1}{T}\varepsilon_N'\varepsilon_2 & \dots & \frac{1}{T}\varepsilon_N'\varepsilon_N \end{bmatrix} \quad [5]$$

In this model, a block – diagonal Ω in Equation [3] implies that Generalized Least Square on the whole system can be reinterpreted as Generalized Least Square on each equation independently. Similar to the

single equation case, if $N, T \rightarrow \infty$, the within estimator of this system is asymptotically efficient and has the same asymptotic variance – covariance matrix as the GLS estimator. The exact values of interaction variables, namely $FD \cdot IQ$, are estimated using the equation of them. The first step in the estimation process is to estimate Equation [6]

$$FD_{i,t} \cdot IQ_{i,t} = \gamma_0 + \gamma_1 FD_{i,t} + \gamma_2 IQ_{i,t} + \varepsilon_{i,t} \quad [6]$$

here, $FD_{i,t}$ is the FD of country i at time t and $IQ_{i,t}$ is the IQ at time t . The coefficient value of each variable in the gamma term and the error term in ε is denoted by the term γ . According to this, the residual series is created through estimation and it is substituted. Equations [7-8] show that by using partial derivative, total effect of FD and IQ with interaction variables is measured.

$$FD_{i,t} = \psi_2 + \psi_4 IQ_{i,t} \quad [7]$$

$$\text{and } IQ_{i,t} = X_2 + X_4 FD_{i,t} \quad [8]$$

Where FD and IQ are the financial development and institutional quality for country i at time t , respectively. Also, ψ and X are the coefficient value.

RESULTS

This section provides the discussion pertaining to the SUR estimation results which mainly focus on the explanation pertaining to the effects of FD and IQ by considering the total effects based on the interaction term of $FD \cdot IQ$. Through the SUR, the contemporaneous correlation proposed by Zellner (1962) is considered to capture the correlation of the disturbances across the equations.

Before running the SUR, the Breusch-Pagan Lagrange Multiplier (LM) test was run on the residuals of the country-specific OLS estimators. This test is used to test whether there is contemporaneous correlation in the country-level regressions. Such diagnostic is important in justifying the application of SUR whereby, the error terms in multiple regression equations are allowed to be correlated so that estimation will be more efficient than independent OLS (Zellner, 1962). Table 1 reports the LM Test results. Here, the economic growth among the countries was regressed with a common set of explanatory variables. The results of these regressions were retrieved and paired correlation coefficients between countries were calculated as $LM_{ij} = T \cdot \rho_{ij}^2$ where T is the number of time-series observations, and ρ_{ij} is the sample correlation coefficient between residuals of countries i and j . The sum of the individual pairwise LM values was taken as the total LM value.

Table 1: LM Test Result

Country	Indonesia	Malaysia	Pakistan	Saudi Arabia	Turkey
Indonesia	1.00 0.199				
Malaysia		1.00 0.214			
Pakistan			1.00 -0.011		
Saudi Arabia				1.00	

	0.196	-0.162	0.110	-0.387	1.00
Turkey					
Total LM statistic = 17.06					

Note: Chi-square critical value at 10 percent confidence level is 15.99.

Based on Table 1, countries' correlation moderate to strong correlation in the residuals from their respective growth equations were exhibited. The computed total *LM* statistic is 17.06, which exceeds the chi-square critical value of 15.99 at the 10 percent significance level (with 10 degrees of freedom). Thus, the null hypothesis of no correlation between residuals across countries can be rejected at the 10 percent level, which demonstrates the presence of contemporaneous correlation. In turn, the assumption of separately estimated equations is no longer relevant and the application of the SUR model is considered more suitable to the data due to consideration of the identified interdependencies among errors. Results of SUR are presented in Table 2.

Table 2: The Estimation Result of Seemingly Unrelated Regression

Variables	Country				
	Malaysia	Indonesia	Turkey	Saudi Arabia	Pakistan
Constant	-2.980*** (0.678)	5.829*** (1.354)	2.733*** (0.845)	2.017 (2.601)	2.732*** (0.844)
LFD	0.825* (0.441)	0.726* (0.372)	3.194*** (0.146)	2.665*** (0.414)	-0.193 (0.445)
LIQ	1.113*** (0.267)	-2.035*** (0.603)	-0.86 (0.569)	0.828 (1.388)	-0.860 (0.569)
LTO	0.01 (0.226)	-1.408*** (0.306)	-0.461 (0.387)	-0.741* (0.377)	-0.461 (0.387)
LGE	1.385*** (0.474)	0.971*** (0.337)	0.092 (0.460)	-1.870*** (0.618)	0.092 (0.459)
LPG	-0.113 (0.241)	-1.040*** (0.327)	-1.297*** (0.307)	-0.222 (0.133)	-1.296*** (0.306)
LFD*LIQ	0.133*** (0.005)	0.157*** (0.024)	-0.001 (0.043)	0.126** (0.055)	-0.001 (0.004)
Adjusted R-Square	0.9518	0.9715	0.9519	0.830	0.771

Note: Figure in parenthesis is the standard error and ***, ** and * indicates significance at 1%, 5 and 10 levels, respectively Dependent variable: is the economic growth (EG).

The estimation outcomes emphasize the important but various functions of FD and IQ in determining economic growth in OIC countries. FD is characterised by high statistical significance in most instances by showing a positive relation to the growth. This observation supports the traditional explanation that more and better developed financial system facilitates mobilization of resources, allocates better capital and completely offers enhanced intermediation efficiency that contributes towards sustained economic performance (Levine, Loayza, & Beck, 2000; Beck, Levine, & Loayza, 2000). This financial-led growth story is reflected in the evidence in Turkey and Saudi Arabia, whereby FD has been shown to be the strongest driver of growth. In economies, where institutional dynamics differ, like the Malaysian and the Indonesian economies, FD continues to play an important growth-enhancing role, implying that the financial

deepening process presents real economic payoffs, though to various levels that could be influenced by the institutional contexts under which it occurs (Hassan, Sanchez, & Yu, 2011; Ibrahim & Alagidede, 2018).

Given these, the positive effect of FD in these countries also lies in the role of the financial sector in furthering savings mobilization and attraction of foreign capital, which is especially important in developing region that are characterized with large infrastructure deficits. For instance, in Malaysia, it helped spur the private sector activity and export diversification, in Turkey and Saudi Arabia, it assisted structural reforms and market liberalization. Such cases indicate the role of FD as a channel of transmission between productivity growth and capital accumulation causing multiplier effects among sectors. Critically, increasing credit by FD is a quantitative addition to financial deepening; however, it also positively changes the qualitative aspects, including, but not restricted to, well-organized banking, deep financial markets, and financial inclusion (Hassan, Sanchez, & Yu, 2011).

On the other hand, IQ is in turn, with a more multi-faceted and contextual relationship with growth. In Malaysia, IQ has a potent effect that is positive and consistent with the effect of finance and this affirms the argument that, effective institutional set up enhances the extent of development that financial systems create (Ang & McKibbin, 2007). The fact that the effects are not significant in Turkey, Saudi Arabia, and Pakistan adds to the findings that show that in underdeveloped or inefficient cases institutions may not facilitate or constrain growth directly and directly but that they may weaken the potential positive role of finance to be transformative (Demetriades & Law, 2006).

Nevertheless, in a different setting, as in the case of Indonesia, IQ exhibits a sharp adverse impact and the perspective of weak or poorly implemented institutions produces rigidities or raises costs of compliance or distorts incentives, thus curbing overall growth (Rodrik, Subramanian, & Trebbi, 2004;). Also, this adverse and robust impact of IQ on economic growth in Indonesia can be explained by the obstinate problem of corruption, poor governance and fragmentation of regulations. Direct evidence indicates that corruption functions as an investment tax, and Indonesian province-level evidence indicates that corruption cuts growth more rapidly as the levels of corruption exceed a threshold level (Kuncoro, 2004). The results given by Reinikka and Svensson (2004) on public funds leakage would further serve as an eye opener to how weak oversights would translate into inefficiencies and consequently affecting service provision and long term growth.

Regulatory gaps and local government capacities that have not witnessed improvements despite the increased spending are also characteristics of post-decentralization era in Indonesia where there is regulation fragmentation and lack of aligned local governments (World Bank, 2018). Besides, the uncertainties about the policies and lax enforcement of regulations have undermined the volume of investments into the production and construction industries, as well as the overall performance of the economy (World Bank, 2020). According to the World Bank Enterprise Survey (2023), corruption, problems with licensing and paying bribes are also cited by Indonesian firms as important barriers to productivity and growth. Taken together, these results imply that institutional shortcomings have a significant compliance cost, that they misalign incentives, and ultimately limit growth, which helps explain why SUR estimation of IQ is strongly negative in Indonesia. The following Table 2 then explain the total effect of LFD and LIQ by considering the total effect via the interaction term of LFD*LIQ. The results are show in Table 3.

Table 3 :Total Effect of Financial Development and Institutional Quality

Total Effect of Financial Development (FD)	
<i>Country</i>	<i>Total effect equation</i>
Malaysia	0.825+0.133(LIQ)
Indonesia	0.726+0.157(LIQ)
Turkey	3.194-0.001(LIQ)
Saudi Arabia	2.665+0.126(LIQ)
Pakistan	-0.193-0.001(LIQ)
Total Effect of Institutional Quality (IQ)	
<i>Country</i>	<i>Total effect equation</i>
Malaysia	1.113 + 0.133(LFD)
Indonesia	-2.035 + 0.157 (LFD)
Turkey	-0.86 - 0.001 (LFD)
Saudi Arabia	0.828 + 0.126 (LFD)
Pakistan	-0.860 - 0.001 (LFD)

In Malaysia, the positive and reinforcing total effects can be linked to decades of evidence showing that growth accelerated when financial reforms and market development were complemented by stronger macroprudential and institutional frameworks (Ang & McKibbin, 2007). Similar complementarities are evident in Saudi Arabia where the FD is the major driver of growth, but IQ have a relatively positive role, as they complement finance-led growth as a multiplier. Financial sector then becomes a key determinant of economic performance although IQ should just act as a complement rather than a direct determinant itself, more so in strengthening FD. These findings support previous evidence that financial deepening contributes to growth by enhancing capital allocation, expanding credit supply, and strengthening intermediation efficiency (Beck, Levine, & Loayza, 2000; Hassan, Sanchez, & Yu, 2011). Turkey and Pakistan exhibit weaker or even negative institutional influences, with the FD effect and the IQ effect having no significant interaction—a situation mirroring as in Table 1 the predominance of the effects of FD and IQ separately.

Interestingly, the total-effect estimation of Indonesia expressed as $-2.035 + 0.157(\text{LFD})$ means that the detrimental effects of poor institutions on economic growth can be alleviated by increased dimensions of FD. Despite compliance costs, perverse incentives, and inefficiency, institutional fragility has some counterweight in financial deepening through better allocation of credit, the mobilization of savings, and increased investment capacity. This result helps to answer the question on whether finance can substitute IQ in the growth process or not. Results presented here echo the finance as a compensator theory, which posits that inadequate IQ can be temporarily mitigated by the presence of deep financial systems that can provide a temporary boost to growth even in systems with weak governance (Rajan & Zingales, 1998; Demetriades & Law, 2006). Again, as Law and Singh (2014) postulate, the role played by finance as the compensator is not likely to be permanent because the failure to strengthen the institutions will ultimately limit the capacity of the finance to facilitate the flow of resources to areas of productive use. The Indonesian case then offers empirical confirmation of a more subtle position where finance and institutions are both complements and, in weak governance conditions, finance can act as short-run compensation, dampening the long-run adverse drag of IQ on economic growth. Such a view has significant policy implications in emerging economies where financial sector reforms can bring immediate growth outcomes, but without institutional accompaniment reflecting long-term growth is not likely to occur.

Thus, the contribution of FD is not unconditional as heterogeneous impacts are revealed across the OIC countries. Its performance is determined by the strength of macroeconomic stability, institutional design and governance. In those countries with sufficiently strong institutions, FD encourages innovation and entrepreneurship by offering them stability in financing and protecting investor confidence. On the other hand, in environments of weak institutions, the money supply can be shifted towards speculative or rent-seeking ventures, hence destroying their ability to lead to the real growth in the economy (Demetriades & Law, 2006). This is why, although country specific coefficients of growth elasticity of FD are significant and positive in many countries, the elasticity variability across the countries is substantial.

In addition, based on the Table 1, trade openness (TO) has had mixed results with Indonesia and Saudi Arabia having relatively large negative coefficients and indicates that TO intensified their exposure to exogenous impulses and structural rigidity in their exports to rely on handful of products. These are comparable to the results of Sachs and Warner (2001), who suggest that resource-driven economies tend to exhibit the so-called Dutch disease effect when openness erodes the competitive position of manufacturing and other tradeable industries. By contrast, trade openness in Malaysia and Turkey also shows no sign of profound impact, which lends credence to the suggestion that trade openness alone does not yield growth benefits unless well complemented by stronger institutions and more competitive export structures as made by Chang, Kaltani, and Loayza (2009).

Even greater heterogeneity is displayed by government expenditure (GE) in Malaysia and Indonesia, it drives up growth with real effects that are very highly positive, as the Keynesian theory suggests, government expenditure on infrastructure, education and health, generates demand and increases productive capacity (Keynes, 1936; Barro, 1990). Nevertheless, the adverse impact shows that expenditure at such high levels has not been effectively distributed which is indicative of the risks of the rent seeking issues and the reliance on oil income. This observation is consistent with the findings of Barro (1991) who also believed that inefficient government expenditures have the potential of driving away investment by others in the economy. Also, strong demographic pressures in the form of population growth (PG) also appear to be important determinants with evidence in Indonesia, Pakistan, and Turkey suggesting that rapid demographic expansion exerts strains on resources and curtails per capita growth when not offset by equivalent changes in productivity and investment in human capital.

CONCLUSION, POLICY IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH.

This paper examined the importance of both the direct and interactive effects of FD and IQ on economic growth across a sample of countries. There is significant cross country heterogeneity in the finance-growth-institution nexus as per the empirical evidence. The positive and significant source of reinforcement of growth between FD and IQ is an indication of financial deepening fostered by good institutions in Malaysia. In contrast, Indonesia shows another pattern, that is FD has a positive impact on growth but the impact of IQ is quite strong, indicating that institutional shortcomings skew the financial system and limit overall growth. However, as the interaction term of $FD \cdot IQ$ is considered, then the negative effect of IQ can be offset by stimulating the FD.

In both Turkey and Saudi Arabia, FD rises as the strongest growth indicator with IQ playing a non-significant role; however, the complementarities indicate that institutional reforms would boost the power of finance in Saudi Arabia. There is also a stark difference in Pakistan in which FD and IQ are weak predictors in the growth process as its financial system and institutional structure are weak.

In sum, this evidence indicates that developing countries should not move ahead with FD reforms unless accompanied by parallel institutional strengthening, especially where governance deficiencies, ineffective patterns of expenditure, or ineffective regulations are in place. Combined policies referring to the FD, institutional reforms, trade diversification, and the efficient public spending are the most likely to achieve a long-term growth. Lastly, In OIC economies the rule of law, regulatory systems, anti-corruption and governance transparency must be strengthened to make sure that the FD is paid off as true economic growth.

Future work may extend the sample to non-OIC countries or groupings, use disaggregated measures such as sectoral finance and government expenditure, use dynamic panel estimation or machine learning to capture non-linearities and establish a better understanding of whether Islamic finance interacts with institutions dissimilarly to foster growth.

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