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IMPACT OF LEGAL AND REGULATORY QUALITIES ON FDI INFLOW: A COMPARISON OF DEVELOPED AND DEVELOPING COUNTRIES

HUKUKİ VE YASAL DÜZENLEME NİTELİKLERİNİN DOĞRUDAN YATIRIMLARA ETKİSİ: GELİŞMİŞ VE GELİŞMEKTE OLAN ÜLKELERİN KARŞILAŞTIRILMASI

Güneş TOPÇU⁽¹⁾

Abstract: The objective of this research is to determine the impact of legal and regulatory qualities on foreign direct investment (FDI) inflows and explore its impact in developed and developing countries, comparatively. The sample comprises data on FDI inflows from 66 countries, spanning the period 2008 to 2021. To estimate the regression parameters, the quantile regression with fixed effects model proposed by Machado and Santos Silva (2019) was employed. Additionally, the regression results were supported using random effects and fixed effects models with Driscoll-Kraay (1998) standard errors. The results of the quantile regression analysis reveal that legal and regulatory qualities have a positively significant effect on FDI inflows. This impact is greater in developing countries than in developed countries, and the discrepancy increases with higher FDI levels. These findings hold important policy implications for decision-makers. To attract FDI, particularly in developing countries, it is crucial to strengthen legal systems by safeguarding property rights, establishing contractual certainty, and implementing effective dispute resolution mechanisms. More so, efforts should be taken to reduce rent-seeking behavior and prevent powerful groups from receiving unfair advantages. Failure to address these issues may increase the risks and impede a country's economic development in the long run.

Keywords: FDI, Rule of Law, Developed Country, Developing Country, Quantile Regression

JEL: C23, E22, F21, G11

Öz: Bu araştırmanın amacı, hukuki ve yasal düzenleme niteliklerinin doğrudan yabancı yatırım girişleri üzerindeki etkisini incelemek ve bu etkinin gelişmiş ve gelişmekte olan ülkeler arasında değişip değişmediğini araştırmaktır. Örneklem, 2008 ile 2021 yılları arasında 66 ülkenin doğrudan yabancı yatırım girişi verilerini içermektedir. Regresyon parametrelerini tahmin etmek için, Machado ve Santos Silva (2019) tarafından önerilen sabit etkiler kantil regresyon modeli kullanılmıştır. Ayrıca, regresyon sonuçları, Driscoll-Kraay (1998) standart hatalarıyla rassal etkiler ve sabit etkiler modelleri tahmin edilerek desteklenmiştir. Kantil regresyon analizi sonuçları, hukuki ve yasal düzenleme niteliklerinin doğrudan yabancı yatırım girişleri üzerinde önemli ve pozitif bir etkiye sahip olduğunu ortaya koymaktadır. Bu etki, gelişmekte olan ülkelerde gelişmiş ülkelere kıyasla daha yüksektir ve doğrudan yabancı yatırım düzeyi arttıkça bu fark daha da belirginleşmektedir. Bu bulgular, karar alıcılar için önemli politika önerileri sunmaktadır. Özellikle gelişmekte olan ülkelerde doğrudan yabancı yatırım girişlerini çekmek için mülkiyet haklarını koruma, sözleşme güvenliği sağlama ve etkili anlaşmazlık çözüm mekanizmalarını uygulama konularında hukuki sistemleri güçlendirmek son derece önemlidir. Ayrıca, rant arayışı davranışını azaltmak ve güçlü grupların haksız avantajlar elde etmesini

⁽¹⁾ Çanakkale Onsekiz Mart Üniversitesi, Siyasal Bilgiler Fakültesi, İşletme Bölümü; gunestopcu@comu.edu.tr, ORCID: 0000-0001-8810-8945

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engellemek için çaba sarf edilmelidir. Bu konuların ele alınmaması, uzun vadede ülkenin ekonomik gelişimini riske atabilir.

Anahtar Kelimeler: *Doğrudan Yabancı Yatırım, Hukukun Üstünlüğü, Gelişmiş Ülke, Gelişmekte Olan Ülke, Kantil Regresyon*

1. Introduction

FDI inflow brings numerous benefits to developing countries. Although these countries have the power to mint their own domestic currencies, they lack the authority to generate reserve foreign currencies. This becomes crucial when trade transactions rely heavily on reserve currencies. The economic situation deteriorates when there is a shortage of reserve currency, coupled with a current account deficit and reliance on foreign debt to finance the deficit. FDI inflow becomes beneficial in such cases because it brings in foreign reserve currencies that facilitate trade with other countries, enabling governments to import goods and services that are needed by citizens and firms. Additionally, FDI brings forth supplementary benefits, one of which includes providing financial support to developing nations, especially those with insufficient domestic savings to bolster their investments (Demirhan and Masca, 2008). It also contributes to job creation, enhances trade openness, fosters a more competitive business environment, facilitates the transfer of cleaner technologies, and promotes enterprise development (OECD, 2002).

While most studies in the literature focus on FDI inflows in developing countries, it's important to note that developed countries also reap benefits from such inflows. These countries, however, may encounter financing challenges owing to significant levels of sovereign debt relative to GDP, budget deficits, and increasing public expenditures. Additionally, demographic issues like an aging population and a decline in the working-age population can lead to labor shortages and hinder economic growth. FDI can play a crucial role in addressing labor shortages by attracting skilled workers from overseas. Additionally, FDI can provide much-needed capital to support debt financing. As international competition intensifies and countries adopt conservative trade policies, companies may choose to relocate their production from low-cost and less democratic regions to more democratic regions with secure legal systems and strong regulatory frameworks. This shift occurs because the risks of operating in less secure environments become increasingly difficult to manage over time, and the divide between countries becomes more pronounced.

Given that FDIs are long-term investments, as opposed to portfolio investments, and are not motivated by speculation (Jensen, 2003), it becomes crucial to have reliable and efficient legal systems and regulatory frameworks in place. These factors play a vital role in attracting sustainable global investments. The rule of law is important in determining cross-border FDI flows. Legal frameworks are a significant factor in whether foreign investors choose to invest in a country. A well-established legal system provides foreign investors with more protection and predictability by safeguarding property rights, enforcing contracts between investors and local partners, offering ways to resolve disputes through courts or arbitration, reducing the risk of nationalization and expropriation, and creating stability, transparency, and certainty through clear and predictable business rules (Powell and Rickard, 2010; Hossain et al., 2018; Comi et al., 2021; Gizaw et al., 2022).

Attracting FDI requires not only a high-quality legal system but also a well-designed regulatory framework. A transparent regulatory environment that safeguards property

rights and intellectual property while also preventing unfair competition and the formation of monopolies and oligopolies is essential for creating a stable and predictable business environment. However, restrictive regulations can undermine a country's competitiveness in attracting FDI, imposing costs on the economy that may outweigh any potential benefits of discriminating against foreign investors (Kalinova et al., 2010).

The objective of this study is to assess how the quality of legal systems and regulatory frameworks affects FDI inflows in 66 developed and developing countries. To achieve this, annual panel data from 2008 to 2021 was analyzed using a quantile regression with fixed effects model. Furthermore, this study aims to examine whether the impact of these variables on FDI inflows differs between developed and developing nations. This analysis sheds light on the behavior of investment decision-makers who prioritize a secure business environment, even if it entails a potentially lower return on investment. Since FDI is partially irreversible (Asiedu, 2002), once an investment is made, there is a risk of legal issues such as expropriation, which can result in significant sunk costs.

Contribution of this study is threefold. First, it provides evidence that a higher quality legal system and regulatory framework are associated with a higher level of FDI inflow. Second, based on separate regression analyses, results indicate that the impacts of the legal and regulatory quality on FDI inflow are greater in developing countries compared to developed countries. Most prior studies in the literature tend to investigate this impact separately for each group of countries, while this study collectively examines both developed and developing countries, shedding light on the behavior of investment decision-makers who prioritize safe and secure business environments. In doing so, this study distinguishes itself from existing research. Third, this study employs quantile regression to handle the non-normal distribution and outliers in the FDI inflow dataset, enhancing the robustness of its results compared to previous academic research, relying on conventional regression methods.

The structure of the paper is as follows: Section 2 offers a concise review of previous studies. Section 3 provides a detailed description of the variables, data sources, and methodology used in this research. Section 4 presents the empirical results. Lastly, Section 5 discusses the implications and draws conclusions.

2. Literature Review

In this section, prior research on the impact of legal and regulatory characteristics on FDI inflows is first reviewed, and hypotheses are then developed.

2.1 Impact of Legal Quality on FDI Inflows

Existing literature studies have predominantly demonstrated a positive correlation between legal quality and the influx of FDI (Jensen, 2003; Asiedu 2006; Mengistu and Adhikary, 2011; Staats and Biglaiser, 2012; Lee et al., 2014). Lee et al. (2014) delved deeper into this relationship and discovered that developing countries that have a common law legal system tend to attract more FDI compared to countries with civil law or Islamic legal systems. Staats and Biglaiser (2012) found that in Latin America, countries with greater judicial strength and rule of law tend to attract higher levels of FDI, and based on their CEO survey results, they found that firms consider judicial strength and rule of law when making investment decisions.

Bénassy-Quéré et al. (2007) analyzed the impact of government infrastructure on FDI inflow and outflow using a dataset of 52 countries. They found that tax systems, transparency, ease of company establishment, lack of corruption, security of property rights, efficiency of justice, and prudential standards, which can be classified as elements of public efficiency, are important determinants of FDI inflow. Lorenzani and Lucidi (2014) investigated the role of efficiency in justice systems on selected economic outcomes such as FDI. The study's findings indicate that judicial reforms aim to achieve several objectives. These include increasing the average size of courts, promoting investment in information and communication technologies, and providing incentives to reduce excessive litigation rates by encouraging the use of alternative dispute resolution methods. Ultimately, these reforms seek to enhance the overall efficiency of the justice system. As a result, these reforms contribute to the inflow of FDI.

The effectiveness of a legal system on FDI flows is theoretically argued to be related to transaction costs. These costs encompass search and information costs, bargaining costs, and enforcement costs (Perry, 2000). Coase (1960) argues that in situations where transaction costs are low, individuals can discover the most cost-effective and efficient methods to resolve issues without government or institutional involvement. The purpose of legal systems and laws, as Perry (2000) explains, is to minimize transaction costs, thereby enhancing the effectiveness of the legal system.

In the literature, two main indicators are widely used to measure the rule of law: the Worldwide Governance Indicators' (WGI) Rule of Law measure, and the International Country Risk Guide's (ICRG) Law and Order Index (Alexander, 2014). The WGI data is based on perception and consists of 31 distinct data sources. These sources were combined to form six aggregate indicators, which include Rule of Law and Regulatory Quality (Kaufman et al., 2010). The Rule of Law indicator measures citizens' trust in and adherence to the rules of society, specifically "the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." (Kaufman et al., 2010: 4). Its estimate value ranges from -2.5 to 2.5. A higher value indicates higher legal quality. ICRG has a composite score, and its methodology assesses, ranks, and assigns scores to each country individually based on various political, economic, and financial risks (Howell, 2013). The Law and Order Index falls under the category of political risk components and is assigned a value of 6 points. A higher point value indicates a lower level of risk.

Rizos and Kapopoulos (2021) investigated the effect of judicial efficiency on economic growth of European Union Economies using a new proxy for judicial efficiency based on a dataset compiled by the EU Justice Scoreboard. The European Union employs this tool to assess the efficiency, quality, and independence of justice in each EU country (European Commission, 2022). According to this study, it was discovered that inefficiencies in judicial systems have a negative impact on economic growth. However, countries that implement judicial reforms aimed at improving private contract enforcement can stimulate both domestic and foreign investments, ultimately leading to economic growth.

Based on the findings in the literature and the theory with transaction costs, the following hypotheses are formulated:

Hypothesis 1. The quality of the legal system increases FDI inflows.

Hypothesis 2. The impact of the quality of the legal system on FDI inflows differs between developed countries and developing countries.

2.2. Impact of Regulations on FDI Inflows

Regulations play a crucial role in supporting the rule of law by establishing a conducive business environment for FDI and fostering new investments. To be effective, regulations must find a balance between competitiveness and optimization. They should safeguard investors against risks like expropriation and nationalization, promote cross-border competition among companies (Zongo, 2020), prevent monopolies and market failures that can lead to social welfare loss, and protect labor rights. The results of the studies show that in general, regulations that facilitate the ease of starting businesses have a positive impact on FDI inflows (Kaushal 2021; Hossain et al., 2018; Contractor et al., 2020; Grosse and Trevino, 2005).

Specifically, countries with stronger contract enforcement and more efficient international trade regulations bring in more FDI inflow (Contractor et al., 2020). Acemoglu and Johnson (2005) conducted a study that revealed countries which restrict politicians and elites, while safeguarding property rights from expropriation, witness notable improvements in income per capita, investment rates, credit allocation to the private sector as a percentage of GDP, and the development of stock markets. However, their research also showed that contractual institutions, which establish consistent and predictable regulations for transactions between private entities (e.g., debtors and creditors), do not have a significant impact on income per capita, the investment to GDP ratio, or the private credit to GDP ratio, when accounting for the influence of property rights institutions.

Although FDI inflow is essential for economic development for many countries, there may be concerns about their potential impact on security or public order. Consequently, several restrictions, such as limitations on foreign ownership, screening or notification processes, management constraints, and operational restrictions (United Nations, 2006), may result in a decline in FDI inflow. Empirical studies in the literature also provide evidence supporting the negative impact of restrictions on FDI inflow (Zongo, 2020; Nicoletti et al., 2003; Ghosh, 2012). While these restrictions on FDI inflow are lower in Latin America and in transition economies, they are higher in East Asia and the Middle East (United Nations, 2006). Another study states that Finland has fewer restrictions compared to other Nordic-Baltic countries (OECD, 2021). On March 19, 2019, the European Parliament and Council established a framework to screen FDI into Member States by adopting the Investment Screening Regulation (Regulation (EU) 2019/452), which became applicable on October 11, 2020 (European Union, 2019). The regulation's goal is to ensure that the EU can effectively monitor and scrutinize foreign investments in sensitive sectors like critical infrastructure, advanced technologies, and strategic assets to protect the EU's security, public order, and strategic interests.

The existing literature on the influence of legal standards on FDI inflows provides conflicting findings. Nevertheless, the majority of studies indicate that higher quality legal standards have a positive effect on attracting FDI. It is important to acknowledge, though, that the impact of regulatory quality on FDI inflows differs depending on the country's status. Therefore, the following hypotheses are formulated:

Hypothesis 3. The quality of the regulatory system increases FDI inflow.

Hypothesis 4. The impact of the quality of the regulatory system differs between developed countries and developing countries.

In the literature, the effectiveness of regulations is commonly evaluated by utilizing the Regulatory Quality indicator of the WGI. The Regulatory Quality indicator is perception-based and assesses a government's ability to carry out effective regulations and policies that promote private sector development (Kaufman et al., 2010). Its values range from -2.5 to 2.5, like that of the Rule of Law Index, with higher values indicating better regulatory quality. OECD developed an FDI restrictiveness index to evaluate FDI restrictions in various sectors across OECD countries, European Union member states, the Euro Area, G7, and G20 countries. This index measures a country's level of FDI restrictiveness based on four criteria: foreign equity restrictions, discriminatory screening or approval mechanisms, limitations on key foreign personnel, and operational restrictions (OECD, 2023).

3. Data and Methodology

In this section, the variables employed in the regressions as well as the empirical methodology are described.

3.1 Data and Variables

To examine the impacts of legal quality and regulatory quality on FDI inflow, separate regression analyses were conducted. The panel data analyzed is unbalanced and spans 14 years (2008-2021) across 66 countries, comprising 30 developed and 36 developing countries. WGI's "Rule of Law: Estimate" (RL) and "Regulatory Quality: Estimate" (RQ) were used as proxies for independent variables for each regression. In addition, for each regression, an interaction variable was used, represented as DEVRL and DEVREG, which were calculated by multiplying the independent variables by the "developed" variable. This interaction variable provides insights into the differing effects of the aforementioned independent variables on FDI inflows between developed and developing countries. "Developed" is a binary variable that takes on the value of 1 if the country is a developed country and 0 if it is a developing country.

The control variables are uncertainty, corporate tax, market size, openness, economic growth, and infrastructure. The proxies for control variables were selected based on the literature on this topic (Chakrabarti, 2001; Asiedu, 2002; Demirhan and Masca, 2008). Table 1 presents the proxy, notation, and data source for each variable.

Table 2 reports descriptive statistics. The numerical results suggest that the variable series are not geometrically distributed, confirming the variable forms' suitability for analysis. The analysis of the sample data shows that all variables exhibit non-zero skewness, indicating asymmetry in their distributions. Out of the 11 variables, five have kurtosis values exceeding three, suggesting a leptokurtic distribution and the presence of outliers. In particular, the dependent variable FDI demonstrates a left-skewed and leptokurtic distribution.

Table 1. Description of Variables

Variable Name	Proxy	Notation	Data Source
FDI Inflow	Logarithm of FDI, net inflows (% of GDP)	FDI	The World Bank website
Legal Quality	Rule of Law: Estimate	RL	The World Bank website
Interaction Variable (1)	Developed x RL	DEVRL	Author's own calculations & The World Bank website
Regulatory Quality	Regulatory Quality: Estimate	RQ	The World Bank website
Interaction Variable (2)	Developed x RQ	DEVQR	Author's own calculations & The World Bank website
Uncertainty	World uncertainty index	WUI	The World Uncertainty Index website
Corporate tax	Corporate tax (annual %)	CT	Tax Foundation website
Market size	Logarithm of GDP per capita	MS	The World Bank website
Openness	$[(\text{import} + \text{export of goods and services (current \$)})/\text{GDP (current \$)}] \times 100$	OP	The World Bank website
Infrastructure	Gross fixed capital formation (% of GDP)	IS	The World Bank website
Workforce	Employment to population ratio, ages 15-24, total (%)	EMP	The World Bank website

Table 2. Descriptive Statistics

Variables	Obs	Mean	Median	Std	Min	Max	Skewness	Kurtosis
FDI	852	0.987	1.015	1.191	-6.394	4.692	-0.426	6.940
RL	924	0.486	0.457	0.969	-1.379	2.125	0.016	1.713
DEVRL	924	0.638	0.000	0.773	0.000	2.125	0.594	1.629
RQ	924	0.629	0.601	0.848	-1.324	2.255	-0.119	2.083
DEVQR	924	0.634	0.000	0.753	0.000	2.255	0.565	1.659
WUI	924	0.220	0.188	0.170	0.000	1.343	1.917	9.807
CT	924	24.461	25.000	6.644	9.000	39.540	-0.261	2.632
MS	924	1.510	1.760	3.986	-19.127	23.201	-0.660	6.251
OP	924	0.915	0.758	0.641	0.164	4.426	2.726	12.649
IS	923	23.102	22.313	5.760	10.687	54.304	1.192	5.790
EMP	924	36.003	35.874	12.577	10.560	65.298	0.212	2.217

3.2 Empirical Specification

Before proceeding to the analysis section, it is beneficial to restate the hypotheses in their entirety, which were previously delineated in the literature review section, to provide guidance for the methods and analyses conducted in this study.

Hypothesis 1. The quality of the legal system increases FDI inflows.

Hypothesis 2. The impact of the quality of the legal system on FDI inflows differs between developed countries and developing countries.

Hypothesis 3. The quality of the regulatory system increases FDI inflow.

Hypothesis 4. The impact of the quality of the regulatory system differs between developed countries and developing countries.

The panel quantile regression estimator was preferred because this approach enables researchers to explore a range of conditional quantiles, revealing different types of conditional heterogeneity in the data (Kato et al., 2012). It is more efficient than other estimators, such as ordinary least squares (OLS), when the error terms are not normally distributed (Koenker and Bassett, 1978; Buchinsky, 1998). It is also less sensitive to outliers, and the error terms do not have to be constant across the distribution (Buchinsky, 1998; Kaya, 2021). As reported in the descriptive statistics in Table 2 above, the data series of this research is skewed and contain outliers.

The coefficients of the regression model were estimated using fixed effect quantile regression method of Machado and Santos Silva (2019). They estimate the conditional quantiles $QY(\tau | X)$ for a location-scale model of the following form (Machado and Santos Silva, 2019: 8):

$$Y_{it} = \alpha_i + X'_{it}\beta + (\delta_i + Z'_{it}\gamma)U_{it}, \quad (1)$$

with

$$P\{\delta_i + Z'_{it}\gamma > 0\} = 1. \quad (2)$$

In Equation (1), i represents the country while t represents the time. Y_{it} is the FDI inflow, X'_{it} is a vector of regressors (independent and control variables), Z is a k -vector of transformations of X components, α_i and γ_i capture the individual fixed effects, β represents the vector of parameters to be estimated, and U_{it} is a sequence of independent and identically distributed (i.i.d.) random variables.

This estimator employs moment conditions to estimate model parameters and is useful when panel data models have individual effects and endogenous explanatory variables (Machado and Santos Silva, 2019). It also exhibits robust performance in the presence of error terms, exhibiting high skewness and kurtosis (Machado and Santos Silva, 2019).

Second, as a robustness check, the following random effects model was estimated when RL and DEVRL are independent variables:

$$FDI_{it} = \alpha + \beta_1 * RL_{it} + \beta_2 * (DEVRL)_{it} + \beta_3 WUI_{it} + \beta_4 CT_{it} + \beta_5 MS_{it} + \beta_6 OP_{it} + \beta_7 IS_{it} + \beta_8 EMP_{it} + u_i + \varepsilon_{it}, \quad (3)$$

Where, i represents the country and t represents the time. α is the random intercept, β represents the slope coefficients, u_i captures the individual fixed effects, and ε_{it} represents the idiosyncratic error term, which is i.i.d.

I also estimated the following fixed effects model when RQ and DEVRQ are independent variables:

$$FDI_{it} = \alpha_i + \beta_1 * RQ_{it} + \beta_2 * (DEVRQ)_{it} + \beta_3 WUI_{it} + \beta_4 CT_{it} + \beta_5 MS_{it} + \beta_6 OP_{it} + \beta_7 IS_{it} + \beta_8 EMP_{it} + \varepsilon_{it}, \quad (4)$$

Where, i represents the country and t represents the time. α_i captures the individual fixed effects, β represents the slope coefficients, and ε_{it} represents the idiosyncratic error term, which is i.i.d.

4. Empirical Results

Equation (1) above was estimated with two sets of independent variables. The first set of independent variables is composed of RL and DEVRL (Model I), while the second set contains RQ and DEVRQ as independent variables (Model II). Control variables are the same for both models.

In a classical multiple linear regression model, it is undesirable to have multicollinearity among the regressors. To measure the extent of collinearity in a multiple regression model, we can use the variance inflation factor (VIF), which is a statistical technique. Variables are moderately correlated if the VIF value is between 1 and 5, and highly correlated if the VIF value is between 5 and 10. The maximum tolerated level is considered to be a VIF value of 10 (Hair et al., 1995). Table 3 presents the VIF values. The inclusion of interaction variables in Models (1) and (2) is expected to yield high VIF values for RL, DEVRL, RG, and DEVRG, yet none of them are above 10. As average VIF values are less than 10, we can conclude that there is no problem with multicollinearity.

Table 3. VIF Values for Model I and Model II

Model I		Model II	
Variable	VIF	Variable	VIF
RL	6.91	RG	5.08
DEVRL	8.16	DEVRG	5.60
WUI	1.08	WUI	1.08
CT	1.39	CT	1.40
MS	1.10	MS	1.10
OP	1.54	OP	1.65
IS	1.21	IS	1.20
EMP	1.60	EMP	1.40
Mean	2.87	Mean	2.31

Figure 1 presents the quantile graph for FDI. The graph shows that the variable series includes quantiles ranging from the 25th to the 75th percentile. Additionally, the normality tests, including skewness and kurtosis tests (sktest) by D'Agostino et al. (1990) and Royston (1992), Shapiro-Wilk test (Shapiro and Wilk, 1965), and Shapiro-Francia test (Shapiro and Francia, 1972), conducted in Table 4 confirm the non-normality of the FDI variable series. The rejection of the null hypothesis at a 1% significance level across all tests indicates that the dependent variable is not normally distributed. Consequently, it is expected that the quantile regression produces more efficient results.

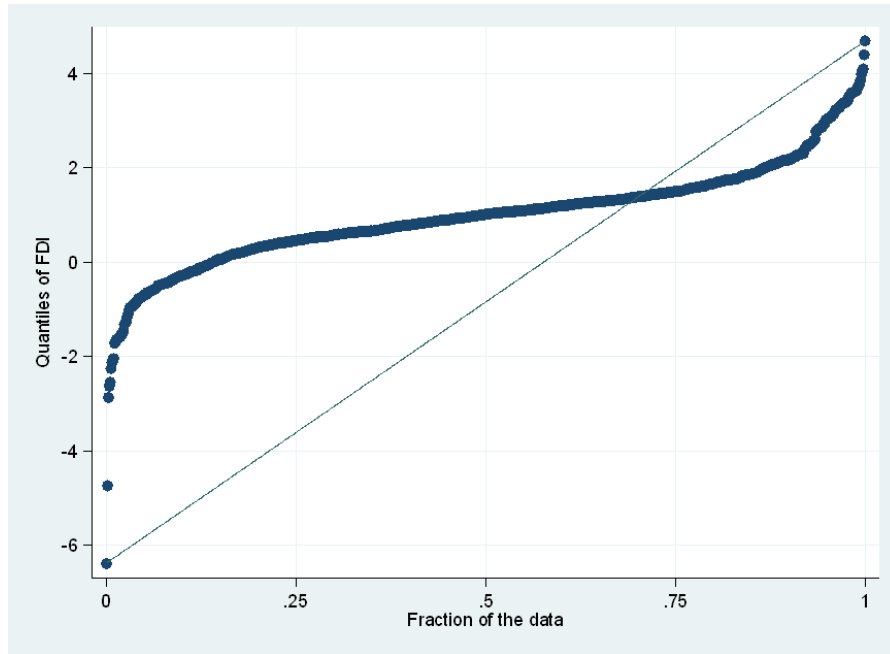


Figure 1. FDI by Quantiles

Table 4. FDI Variable Normality Test Results

Variable	Skewness and Kurtosis Tests (sktest)	Shapiro-Wilk Test	Shapiro-Francia Test
	Statistics	Statistics	Statistics
FDI	858.83***	0.556***	0.551***

Note: *** denotes significance level at 1%.

Table 5 presents the quantile regression results for Models I and II, covering quantiles ranging from the 25th to the 75th percentiles. The findings indicate that countries with higher quality legal systems attract higher levels of FDI, demonstrating a significant and positive impact of legal quality on FDI inflows. Specifically, a one unit increase in RL leads to a 30.4% increase in FDI inflow at the 25th quantile, 35.1% at the 50th quantile, and 39.1% at the 75th quantile. These findings demonstrate that the impact of legal quality becomes greater as countries experience higher levels of FDI inflow.

An analysis was conducted to examine if the influence of RL varies based on a country's development status. The findings presented in Table 5 reveal that the coefficient of the interaction term is both negative and statistically significant. This implies that the effect of legal quality on FDI inflow is relatively weaker in developed countries when compared to developing countries. Furthermore, for higher FDI inflows, the strength of this impact increases, displaying the growing disparity between developed and developing countries in the effect of regulatory quality on FDI inflow. Specifically, the influence of legal quality is stronger for developing countries compared to developed countries when FDI inflow is higher.

Table 5. Quantile Regression Results

Models	Model I				Model II			
	OLS	25 th Quant	50 th Quant	75 th Quant	OLS	25 th Quant	50 th Quant	75 th Quant
RL	0.345* ** (0.082)	0.304** * (0.101)	0.351** * (0.070)	0.391** * (0.081)				
developed *RL	- 0.668* ** (0.114)	- 0.714** * (0.148)	- 0.660** * (0.103)	- 0.615** * (0.119)				
RQ					0.453* ** (0.082)	0.373** * (0.096)	0.470** * (0.065)	0.545** * (0.075)
developed *RQ					- 0.688* ** (0.096)	- 0.687** * (0.125)	- 0.690** * (0.085)	- 0.691** * (0.097)
WUI	- 0.416* * (0.191)	-0.475* (0.277)	-0.367* (0.193)	-0.276 (0.223)	- 0.476* * (0.189)	-0.539* (0.282)	- 0.438** (0.192)	-0.359 (0.219)
CT	- 0.011* * (0.005)	-0.011 (0.008)	- 0.012** (0.005)	- 0.012** (0.006)	- 0.009* (0.005)	-0.010 (0.008)	-0.009* (0.005)	-0.009 (0.006)
MS	0.026* ** (0.009)	0.038** (0.015)	0.025** (0.010)	0.015 (0.012)	0.027* ** (0.008)	0.039** * (0.015)	0.025** (0.010)	0.014 (0.012)
OP	0.906* ** (0.057)	0.907** * (0.085)	0.899** * (0.060)	0.894** * (0.069)	0.909* ** (0.059)	0.912** * (0.089)	0.904** * (0.060)	0.897** * (0.069)
IS	-0.006 (0.006)	-0.009 (0.007)	-0.007 (0.005)	-0.005 (0.006)	-0.003 (0.007)	-0.005 (0.007)	-0.004 (0.005)	-0.004 (0.006)
EMP	0.025* ** (0.003)	0.026** * (0.004)	0.024** * (0.003)	0.022** * (0.003)	0.021* ** (0.003)	0.022** * (0.004)	0.020** * (0.003)	0.018** * (0.003)
Constant	-0.017 (0.224)				-0.092 (0.222)			
R-Squared	0.352				0.360			

Note: *, ** and *** denote significance levels at 10%, 5% and 1%, respectively.

The use of control variables indicates that uncertainty has a significant negative impact on FDI inflows at a 10% significance level between the 25th and 50th quantiles. This negative effect may be due to the fact that FDI investments are partially irreversible. Investment decision-makers adopt a cautious "wait and see" approach when faced with uncertainty. Furthermore, corporate tax negatively and significantly affects the inflow of FDI within specific quantiles (50th and 75th), suggesting that higher tax rates decrease FDI inflow. Conversely, market size has a positive and significant impact within the 25th and 50th quantiles, indicating that countries with a

higher GDP per capita attract more FDI. The factors of openness and workforce consistently and positively impact FDI inflow across all quantiles, regardless of the level of FDI. Among all the explanatory variables, openness has the most significant impact.

The regression results for Model II are similar to those of Model I since legal and regulatory qualities complement each other. The positive and statistically significant coefficient of regulatory quality indicates that higher regulatory quality is associated with increased FDI inflow. This finding aligns with the results of previous studies conducted by Kaushal (2021) and Saha et al. (2022). Specifically, a one unit increase in the RQ results in a 30.4% increase in FDI inflow at the 25th quantile, 37.3% at the 50th quantile, and 54.5% at the 75th quantile, indicating that the impact of regulatory quality strengthens as countries experience higher levels of FDI inflow. Additionally, the results suggest that regulatory quality has a slightly stronger impact on FDI inflow compared to legal quality.

The coefficient of the interaction term is negative and statistically significant, suggesting that regulatory quality has a stronger influence in developing countries than in developed ones. Furthermore, this influence grows stronger in countries with higher levels of FDI inflow. These results are in line with expectations, as developing countries typically face more severe bureaucratic and administrative challenges, which can give rise to issues like corruption and unfair competition. Hence an improvement in the effectiveness of the regulatory system brings in greater FDI inflow to those countries. The effects of control variables align with those of Model I, except for corporate tax, which demonstrates a significant impact at the 50th quantile with a significance level of 10%.

Since the coefficients of the variables of interest remained consistently significant at 1% significance level across the 25th, 50th, and 75th quantiles, the impact of independent variables on the 10th or 90th quantiles were not analyzed any further.

OLS regression results were presented in Figure 2 and Figure 3 to compare them with the quantile regression results. It is worth mentioning that the significance of the coefficients for the variables of interest remained consistent across both statistical methods, as depicted in Figures 2 and 3. The quantile coefficients fell within the confidence interval of the OLS regression. However, the quantile regression allows us to obtain a more comprehensive understanding of the influence of the variables of interest on different FDI quantiles.

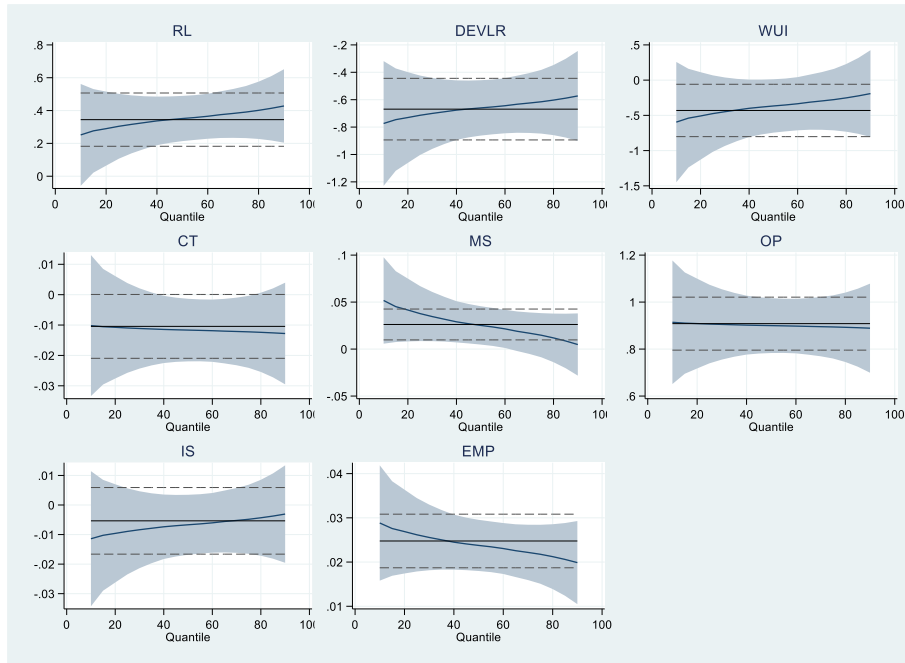


Figure 2. Quantile Regression Coefficients for Model I

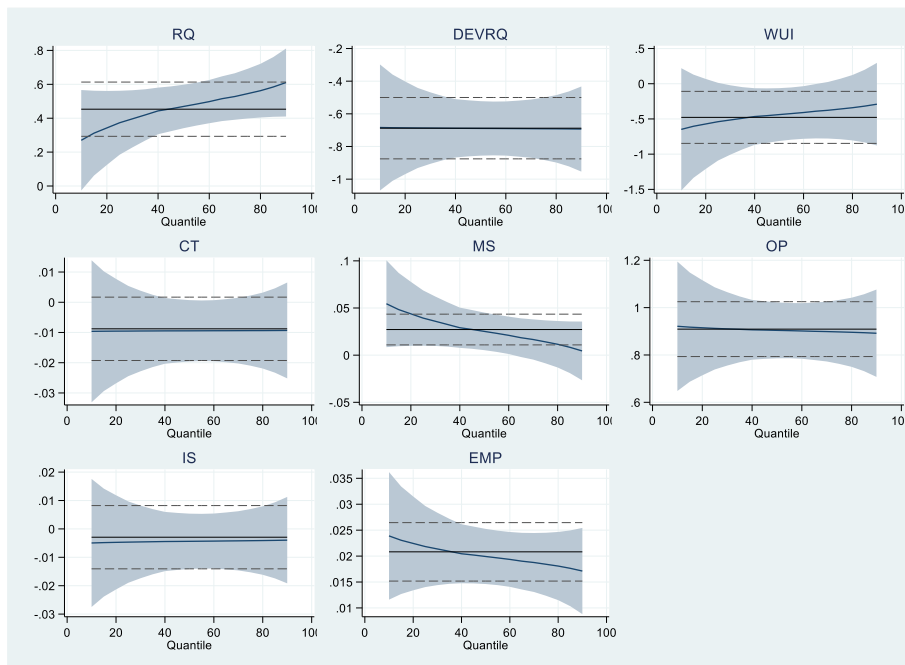


Figure 3. Quantile Regression Coefficient for Model II

4.1 Robustness checks

To further ensure the reliability of the findings, two linear regression models were built, Model III and Model IV, and regression coefficients were estimated using alternative methods based on the results of the diagnostic tests.

First, three model specification tests were conducted to identify the suitable estimation method for estimating the parameters of the models. To determine the appropriate model for our analysis, several tests were conducted. The F-homogeneity test helped us choose between the pooled OLS and fixed-effects models. The likelihood ratio (LR) test was used to decide between pooled OLS and random-effects models. Finally, the Hausman test helped us choose between fixed- and random-effects models. The pooled OLS method is preferable when the error terms do not include unit and/or time effects" (Yerdelen Tatoğlu, 2016). The overall results for Model III favored the random effects method with unit and time effects (two-way model), while the overall results for Model IV favored the fixed effects model with unit and time effects. Table 6 reports the test statistics.

The F-Homogeneity tests revealed that both Model III and Model IV preferred the fixed effects model with unit and time effects. This preference was evident as the null hypotheses were rejected at the 1% significance level. Similarly, the LR test results indicated a preference for the random effects model with unit effects for both models, as the null hypotheses were rejected at the 1% significance level. Finally, while the null hypothesis in the Hausman test for Model III failed to be rejected, suggesting a preference for the random effects model with unit and time effects, the null hypothesis in the Hausman test for Model IV was rejected, indicating a preference for the fixed effects model with unit and time effects.

Table 6. Test Results for Model III and Model IV

Test Statistics	Model III	Model IV
F-Test	10.66***	10.20***
(LR) Chi ² -Test	315.36***	304.09***
Hausman Specification Test	12.99	16.87**

Note: *, ** and *** denote significance levels at 10%, 5% and 1%, respectively.

Before estimating the models, diagnostic tests on the data of Model III and Model IV were conducted. To evaluate the presence of heteroskedasticity in Model III and Model IV, the Levene and Brown-Forsythe tests (Levene, 1960; Brown and Forsythe, 1974), and the Modified Wald test were employed, respectively. Table 7 presents the diagnostic tests results.

The null hypotheses were rejected, indicating the presence of heteroskedasticity in the models. Additionally, the Bhargava et al. (1982) and Baltagi-Wu (1999) tests were performed to examine autocorrelation in the data. The critical value for these tests is typically 1.8. The test statistics for Model III were below 1.8, indicating the presence of autocorrelation in the data. Conversely, the test statistics for Model IV were greater than 1.8, suggesting no first-order serial correlation in the data. Lastly, the Pesaran (2004) CD test was employed to evaluate the presence of cross-dependency in the data, and the test results for both Model III and Model IV supported the existence of cross-sectional dependency.

Table 7. Diagnostic Test Results for Model III and Model IV

Test Statistics	Model III	Model IV
Levene and Brown-Forsythe	3.146***	
Modified Wald Test		77.99***
Modified Bhargava et al. Durbin-Watson	1.621	1.947
Baltagi-Wu LBI	1.767	2.046
Pesaran-CD	31.163***	30.233***

Note: *** denotes significance level at 1%.

Using the test results, Model III was estimated using random effects regression and Model IV using fixed effects regression. Additionally, Driscoll-Kraay (1998) standard errors, which are robust to heteroskedasticity, autocorrelation, and general forms of cross-dependency, were employed. Table 8 presents the regression results.

Table 8. Regression Results with Random Effects and Fixed Effects Models

Variables	Model III	Model IV
RL	0.345** (0.170)	
developed*RL	-0.668** (0.267)	
RQ		0.454*** (0.149)
developed*RQ		-0.689*** (0.197)
WUI	-0.416** (0.201)	-0.455** (0.207)
CT	-0.011 (0.015)	-0.009 (0.014)
MS	0.026** (0.010)	0.028*** (0.014)
OP	0.906*** (0.119)	0.905*** (0.118)
IS	-0.006 (0.010)	-0.004 (0.009)
EMP	0.025*** (0.007)	0.020*** (0.006)
Constant	-0.017 (0.399)	-0.028 (0.385)
Number of Observations	851	851
R-Squared	0.352	0.356
Wald chi ²	125.56***	
F-Statistic		17.26***

Notes: Standard errors are in parentheses.

*, ** and *** denote significance levels at 10%, 5% and 1%, respectively.

The results are consistent with the findings of the quantile regressions. The regression results for Model III indicate a positive and statistically significant coefficient of the legal quality at a 5% significance level. The interaction term has a negative and significant coefficient at the 5% level. Uncertainty has a negative and significant effect on FDI inflows, whereas market size, openness, and workforce have positive and significant effects on FDI inflows. The results for Model IV are like those of

Model III, with a positive and statistically significant coefficient of regulatory quality at the 1% level. The interaction term also has a negative and significant coefficient at the 1% level, indicating that regulatory quality has a greater impact on developing countries than on developed ones. While uncertainty, market size, openness, and workforce have significant impacts on FDI inflows, corporate tax and infrastructure have insignificant impacts.

5. Conclusion

FDI brings numerous benefits to host countries, especially those with high poverty rates and limited access to capital markets. Among the various factors that attract FDI inflows, the most crucial ones are the quality of legal and regulatory systems. Unfortunately, the judicial mechanisms in some developing countries may perform poorly. If developing countries experience a disparity in FDI inflow due to inferior legal and regulatory frameworks, they should take precautionary measures to reduce such effects. This research aims to empirically investigate the impact of legal and regulatory qualities on FDI inflows and determine whether this impact varies between developed and developing countries. This study is motivated by the need to understand how legal and regulatory factors affect FDI inflows and whether the effect differs based on a country's level of development.

Annual panel data from 2008 to 2021 using quantile regression with fixed effects were analyzed. Additionally, the parameters of the equations were estimated using random effects and fixed effects models, based on the diagnostic test results, to support the quantile regression results. Empirical results indicate that the quality of legal and regulatory systems is statistically significant, and positively affects FDI inflow for both developing and developed countries; its impact is however greater in developing countries. Specifically, according to quantile regression results, both legal and regulatory qualities have a significant impact on FDI inflow at the 25th, 50th, and 75th quantiles at a 1% significance level. Additionally, interaction variables are significant at the 1% level. OLS results also support the findings of quantile regression results. The empirical results support the findings of Kaushal (2021), Saha et al. (2022), and Sabir et al. (2019) that legal quality has a positive impact on FDI inflow. The positive significant impact can be explained by some theoretical perspectives. First, an effective legal system reduces transaction costs by enabling investors to resolve issues without reliance on government institutions (Perry, 2000). Second, the rule of law discourages anti-market policies and reduces risk (Sabir et al., 2019). Third, rules and laws guarantee future returns by preventing theft through the restriction of control rights that would otherwise allow individuals to seize others' assets (Hoff and Stiglitz, 2005). Overall, these factors work together to create a favorable environment for FDI inflows. The high regulatory quality has a positive impact on FDI inflow because it provides effective safeguards for shareholders, reduces information asymmetry, and ensures transparency in accounting information (Contractor et al., 2020).

The policy implications of this research are crucial. Insisting on weaker and less reliable legal systems can harm FDI inflows, which, in turn, have a negative impact on sustainable economic development. Developed countries are considered safe havens for investors due to their lower legal risks, including regulatory changes, contract risks, and litigation risks, in comparison to developing countries. Institutional investors choose to invest in these countries precisely because of their robust legal systems, which provide protection against potential mistreatment and disputes. In the event of disputes, investors have recourse to legal remedies such as investment

arbitrators and courts, and their rights are protected by the law, making legal risks manageable. Developed countries should enhance their enforcement of intellectual property rights to safeguard innovations and facilitate technology transfer. When the rule of law is absent, control rights erode broader property rights by making theft effortless. Therefore, effective legal regulations and enforcement are crucial for protecting investor and property rights in a country, especially if it aims to attract FDI and instill confidence in investors. Additionally, developed countries should focus on simplifying regulatory processes and reducing bureaucratic barriers.

On the other hand, while emerging and developing countries made up about 25% of global GDP in the early 1980s, they account for about 40% as of 2021 according to IMF (The Economist, 2021). Developing countries possess several advantages compared to developed nations, such as abundant workforce and natural resources. Nevertheless, they often face saving deficits, making foreign investment a necessity. However, it is important to note that investing in these countries carries a higher degree of risk. As per Asiedu (2002), it is not just higher returns that attract more investment. The crucial factor to consider is the risk-adjusted return, rather than just the return itself. In some cases, the risk-adjusted return may be too low to encourage investments that involve partially irreversible commitments (Asiedu, 2002). The empirical results of this study demonstrate that the quality of legal and regulatory systems holds greater significance in developing countries compared to developed countries. This is due to the relatively weaker institutional structures present in developing countries, which make them more susceptible to issues like corruption, monopolism, inadequate protection of property rights, and excessive bureaucracy. Consequently, investing in developing countries becomes riskier. In order to enhance risk-adjusted returns, developing countries should focus on strengthening their legal systems and fostering a favorable business environment. This can be achieved by safeguarding property rights and shielding investors from potential risks such as expropriation and nationalization, thereby making risks more manageable.

There are a few points of clarification that need to be made regarding this study. Firstly, it is important to note that legal and regulatory qualities are not separate from human rights or democracy. Therefore, when conducting a comprehensive analysis, it is necessary to consider the impact of these variables, as well as the influence of corruption. It is crucial to avoid creating multicollinearity issues in the regression models while accounting for these factors. Secondly, this study solely relied on publicly available data for the analyses. To enhance the findings and ensure the reliability of the results, future studies should explore alternative proxies for independent variables. This will help to validate and strengthen the conclusions drawn from the research.

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