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## HETEROGENEOUS EFFECTS OF INSTITUTIONAL QUALITY ON FDI: EVIDENCE FROM EU MEMBER STATES

### RAZLIČITI UČINCI INSTITUCIONALNE KVALITETE NA FDI: EMPIRIJSKI DOKAZI IZ EU-A

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**ABSTRACT:** This paper analyses the impact of institutional quality on foreign direct investment (FDI) inflows in European Union member states over the period 1996–2023. The primary objective is to examine whether the effects of individual Worldwide Governance Indicators (WGI) on FDI differ between countries with high and low levels of institutional quality. Countries are classified based on the median value of the Government Effectiveness (GE) indicator. The analysis applies a fixed effects panel model with robust standard errors. Model diagnostics confirm the specification's validity while robustness is tested using a dynamic panel model. The results indicate that control of corruption and political stability are positively and significantly associated with FDI inflows. However, their effects are notably weaker in low-governance countries. Other WGI dimensions do not exhibit statistically significant relationships with FDI.

**KEY WORDS:** foreign direct investment, institutional quality, WGI, European Union, panel data

**SAŽETAK:** Ovaj rad analizira utjecaj institucionalne kvalitete na tokove inozemnih izravnih ulaganja (FDI) u zemljama Europske unije u razdoblju 1996. – 2023. Cilj istraživanja jest utvrditi razlikuje li se učinak pojedinih indikatora upravljanja (WGI) na FDI među zemljama visoke i niske institucionalne kvalitete, koje su klasificirane na temelju medijana indikatora učinkovitosti vlade (GE). U analizi se primjenjuje panel model s fiksnim učincima, pri čemu se koriste robusne standardne pogreške. Dijagnostički testovi potvrđuju valjanost specifikacije modela, dok se robusnost rezultata dodatno provjerava dinamičkim panel modelom. Rezultati pokazuju da su kontrola korupcije i politička stabilnost značajno povezani s višim razinama FDI no njihov učinak je slabiji u zemljama s nižom institucionalnom kvalitetom. Ostali indikatori nisu statistički značajni.

**KLJUČNE RIJEČI:** inozemna izravna ulaganja, institucionalna kvaliteta, WGI, Europska unija, panel podaci

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## 1. INTRODUCTION

Foreign direct investment (FDI) is widely acknowledged as a significant contributor to economic development, serving not only as a source of capital but also as a mechanism for the dissemination of knowledge and technology to recipient countries (Gangi and Abdulrazak, 2012). While traditional determinants of FDI such as market size, labour costs and trade openness have been extensively analysed, increasing attention is being paid to institutional quality as a fundamental factor shaping investment decisions.

Within the framework of the European Union (EU) where member states differ markedly in administrative efficiency legal standards and political stability the investigation of how institutional configurations shape FDI inflows is particularly warranted. The EU integrates both mature high-income economies and newer post-transition states which exhibit substantial divergence in institutional maturity and governance quality.

This study analyses the relationship between institutional quality and FDI inflows across EU countries through the lens of six governance dimensions as conceptualised by the World Bank's Worldwide Governance Indicators (WGI). These dimensions include Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence, Regulatory Quality, Rule of Law and Voice and Accountability. According to the World Bank (2024) the WGI capture perceptions of governance performance across countries over extended periods reflecting broad institutional patterns.

There are several reasons suggesting that the quality of institutions plays a significant role in influencing the ability to attract foreign direct investment (Bénassy-Quéré et al. 2007). First, foreign investors may be drawn to favourable productivity prospects and well-established governance frameworks. Second, poor institutions can bring additional costs on investors such as corruption-related expenses. Third, FDI is particularly sensitive to uncertainties that comes from inefficient governance, policy instability, corruption and weak legal rights.

Given these challenges, strong institutional frameworks should favour development by encouraging investment in general, since they reduce uncertainty and increase expected returns on investment (Bénassy-Quéré et al. 2007). Institutions characterized by secure property rights, economic freedom, an effective regulatory system and a well-functioning bureaucratic structure contribute to greater profitability of FDI (El Fakiri and Cherkaoui, 2022).

As Dobrowolska et al. (2023) emphasise, investment decisions depend not only on macroeconomic fundamentals but also on institutional factors such as legal transparency, administrative quality and governance effectiveness. Institutional quality as a component of "good governance" is integral to enhancing a country's competitiveness and fostering trust among foreign investors. In broader terms, good governance supports economic growth, strengthens human capital and promotes social cohesion (World Bank, 2024).

This paper contributes to both academic literature and policy discourse in several important ways. First, it examines the impact of institutional quality on FDI inflows within the European Uniona region that is economically integrated but institutionally diverse. Second, instead of treating institutional quality as a uniform concept, the study explores the conditional effects of individual governance dimensions depending on the host country's level of institutional development. Third, the use of interaction terms and robust panel data

models allows for a deeper understanding not only of statistical associations but also of the economic rationale behind them.

Findings suggest that control of corruption and political stability are positively and significantly associated with FDI inflows, particularly in countries characterised by high institutional quality. In contrast, these effects appear weaker or statistically insignificant in lower-governance EU members. These results imply that institutional reforms are more effective in attracting FDI when embedded within a supportive and stable governance framework underscoring the need for tailored policy strategies across EU member states.

This paper is organised in five sections. Section 2 provides the relevant theoretical and empirical literature on the relationship between institutional quality and foreign direct investment. Section 3 outlines the methodological framework, including data sources, variable definition and the econometric strategy. Section 4 presents the empirical results and discusses the economic relevance of the findings. Section 5 concludes by summarising the main contributions and limitations of the study and suggests directions for future research.

## 2. THE LITERATURE REVIEW

The relationship between institutional quality and FDI has been extensively examined in the empirical literature using diverse samples, time periods and econometric strategies. A consistent finding is that the impact of institutional dimensions is heterogeneous across country groups depending on their income level, governance maturity and regional context.

Several studies confirm that institutional quality plays a particularly strong role in attracting FDI to high-income countries. Sabir et al. (2019) using system GMM estimation across income-based country groups from 1996 to 2016, show that all six dimensions of the Worldwide Governance Indicators (WGI) positively influence FDI. However, the effects are more pronounced in developed countries, indicating that institutional quality plays a stronger role in high-income economies. Similarly, Peres et al. (2018) report that governance significantly boosts FDI inflows in developed countries especially through control of corruption and rule of law whereas governance indicators fail to attract FDI in weaker institutional environments due to instability and enforcement issues. El Fakiri and Cherkaoui (2022) further support this by showing that rule of law, regulatory quality and control of corruption have a statistically significant impact only in high-income countries.

In contrast, the influence of governance indicators appears more selective and nonlinear in developing contexts. Saha et al. (2022) analysing 28 lower-middle-income countries from 2002 to 2018, find that regulatory quality and control of corruption positively affect FDI inflows. However, rule of law and voice and accountability are negatively associated with FDI and the effect of government effectiveness and political stability is insignificant. The authors conclude that the relationship between institutional quality and FDI is nonlinear and conditional on a country's income level and regional context. Similarly, Lee (2021) explores how institutional quality influences FDI inflows in a non-linear manner, focusing on 34 developing nations across Asia and Eastern Europe over the period from 2000 to 2017. The study reports that improvements in institutional quality enhance FDI only beyond a governance threshold. This threshold is especially high for indicators such as political stability, government effectiveness and rule of law.

Hayat (2019) explores the role of institutional quality in amplifying the growth effects of FDI in low and middle-income countries. His findings suggest that better institutional quality enhances the positive impact of FDI on economic growth. Khan et al. (2022) examine 107 developing countries and 39 Belt and Road economies (2002–2019). Their findings confirm that strong institutions significantly enhance FDI inflows though the strength of individual WGI indicators varies. Control of corruption and regulatory quality were highlighted as particularly important for fostering a favourable investment environment.

Within Africa, Gangi and Abdulrazak (2012) analyse 50 countries from 1996 to 2010 and identify voice and accountability, government effectiveness and rule of law as statistically significant determinants of FDI, while other governance indicators are not. The authors suggest that the impact of institutional quality depends on the broader governance environment. In the Latin American context, Biro et al. (2019) find that voice and accountability, rule of law, regulatory quality and control of corruption positively influence FDI inflows. Their results suggest that countries with better governance such as Chile and Uruguay are more attractive to foreign investors.

In the South Asian context, Shah et al. (2015) investigate FDI inflows in five SAARC countries from 2006 to 2014. Their results indicate that political stability and regulatory quality have a significant positive impact on FDI while corruption deters investment. Other traditional FDI determinants like market size and development level remain influential, whereas human capital and openness are found to be statistically insignificant.

In the context of the EU, Dobrowolska et al. (2023) study 28 member states between 2004 and 2020. Their findings indicate a moderate but positive association between institutional quality and FDI with regulatory quality and rule of law being particularly important. Using institutional clustering and governance-based classification they demonstrate that institutional quality remains a relevant determinant of investment within the EU's integrated economic structure.

One of the earlier studies, Globerman and Shapiro (2002) analyzed how governance structures affect both inward and outward FDI in a global sample of developed and developing countries during 1995–1997. Relying on the six dimensions of institutional quality proposed by Kaufmann et al. (2010) later formalized as the WGI, the study finds that governance infrastructure is a significant determinant of FDI. Among the six indicators, government effectiveness, regulatory quality and rule of law had positive and statistically significant impact on FDI inflows. In contrast, voice and accountability, political stability and control of corruption did not show a statistically significant effect. The research highlights the importance of institutional quality in shaping investment decisions. Expanding the analysis to 164 countries from 1996 to 2006, Buchanan et al. (2012) show that institutional quality not only increases FDI inflows but also reduces their volatility, providing greater stability for investment planning.

### 3. METHODOLOGY

This study employs annual data for the period 1996–2023 which corresponds to the first and most recent years for which the Worldwide Governance Indicators (WGI) are available for all 27 European Union (EU) member states. The analysis is based on sec-

ondary data from reliable and publicly available sources. The primary data source is the World Bank, which provides comprehensive and harmonised datasets on governance and economic indicators.

Dependent variable are foreign direct investments represented as inward FDI flows in % of county's GDP. As defined by Eurostat (2025) foreign direct investment involves a cross-border investment by a domestic investor aiming to maintain a long-term relationship with a business located in another country. This enduring interest is generally recognized when the investor obtains at least 10% of the company's equity or equivalent voting rights.

Independent variables that are in focus of the study are Six dimensions of institutional quality from the WGI: (1) Control of Corruption (CC) (2) Government Effectiveness (GE) (3) Political Stability and Absence of Violence (PV) (4) Regulatory Quality (RQ) (5) Rule of Law (RL) and (6) Voice and Accountability (VA). The WGI scores range from -2.5 (weak governance) to +2.5 (strong governance). An increase in the value of a WGI indicator reflects an improvement in the respective aspect of institutional quality. Specifically, higher values of Control of Corruption (CC) indicate better control over corruption; Government Effectiveness (GE) captures more efficient and reliable public services and policy implementation; Political Stability and Absence of Violence (PV) denotes reduced political risk and conflict; Regulatory Quality (RQ) reflects the government's ability to create and enforce market-friendly regulations; Rule of Law (RL) signals stronger legal institutions and contract enforcement; and Voice and Accountability (VA) represents greater political freedom and citizen participation (World Bank, 2024)

Control variables include GDP growth rate (gy) inflation (inf) trade openness (trade) and the logarithm of the real effective exchange rate (lnreer).

While governance-based country classifications are typically applied across broader regional or income groupings (e.g., developed versus developing countries), this study adopts a data-driven approach specifically tailored to the European Union (EU) context. To capture institutional heterogeneity within the EU, the Government Effectiveness (GE) indicator—one of the six Worldwide Governance Indicators (WGI)—was used as a proxy for overall institutional quality. This choice is justified by the high correlation between GE and other WGI dimensions (correlation coefficients  $\rho > 0.87$ ), as well as its broad conceptual coverage. GE reflects perceptions of public service quality, policy formulation and implementation, civil service independence and the credibility of government commitments (World Bank, 2024).

Based on average GE scores from 1996 to 2023, the median threshold of 0.98 was used to classify countries into two groups. Countries with a GE score above 0.98 were designated as high-governance ( $\text{dummy\_low} = 0$ ), while those with a score equal to or below 0.98 were classified as low-governance ( $\text{dummy\_low} = 1$ ). This binary classification facilitates an empirical examination of whether the effects of institutional quality on FDI differ between governance environments.

According to this classification, 13 countries were assigned to the low-governance group ( $\text{dummy\_low} = 1$ ): Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia. The remaining 14 countries were classified as high-governance ( $\text{dummy\_low} = 0$ ): Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Portugal, Spain and Sweden.

The interaction term (*dummy\_low\_x\_WGI* indicator) was included in the regression model to test whether the influence of institutional quality on FDI inflows differs between countries with lower and higher levels of governance quality. Other recent studies have also attempted to classify EU countries based on institutional performance. For instance, Dobrowolska et al. (2021) developed a composite index using 20 indicators from the Global Competitiveness Index (GCI) grouping member states into five clusters via hierarchical clustering. Similarly, Peres et al. (2018) measured institutional quality through selected governance components such as control of corruption and rule of law. In a follow-up study, Dobrowolska et al. (2023) combined all six WGI dimensions into a synthetic index using percentile ranks and employed Ward's method to empirically cluster EU-28 countries based on institutional similarity.

Drawing on the institutional classification of EU member states into high- and low-governance groups, as well as the six individual dimensions of governance from the Worldwide Governance Indicators the analysis employs six separate panel model specifications. Each model incorporates one WGI indicator and its interaction with the governance group dummy to assess whether the effect of institutional quality on FDI varies across governance contexts.

Model (1)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 CC_{it} + \beta_4 CC_{it} \cdot \text{dummy\_low} + \beta_5 lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T.$$

In all models,  $\alpha_i$  represents fixed effects for individual countries,  $\gamma_t$  time fixed effects,  $u_{it}$  is the error term. Control variables  $gy_{it}$  represents GDP growth (annual %),  $inf_{it}$  represents inflation (annual %),  $lnreer_{it}$  represents logarithm of real effective exchange rate index and  $trade_{it}$  represents sum of exports and imports as % of GDP

The key variables are control of corruption ( $\beta_3 CC_{it}$ ) and the interaction term between control of corruption and the indicator variable for low governance EU countries (*dummy\_low*) ( $\beta_4 CC_{it} \cdot \text{dummy\_low}$ ).

Model (2)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 GE_{it} + \beta_4 GE_{it} \cdot \text{dummy\_low} + \beta_5 lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T$$

The key variables are government efficiency ( $\beta_3 GE_{it}$ ) and the interaction term between government efficiency and the indicator variable for low governance EU countries (*dummy\_low*) ( $\beta_4 GE_{it} \cdot \text{dummy\_low}$ ).

Model (3)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 PV_{it} + \beta_4 PV_{it} \cdot \text{dummy\_low} + \beta_5 \lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T$$

The key variables are Political Stability and Absence of Violence / Terrorism ( $\beta_3 PV_{it}$ ) and the interaction term between Political Stability and Absence of Violence / Terrorism and the indicator variable for low governance EU countries (dummy\_low) ( $\beta_4 PV_{it} \cdot \text{dummy\_low}$ ).

Model (4)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 RL_{it} + \beta_4 RL_{it} \cdot \text{dummy\_low} + \beta_5 \lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T$$

The key variables are Rule of Law ( $\beta_3 RL_{it}$ ) and the interaction term between Rule of Law and the indicator variable for low governance EU countries (dummy\_low) ( $\beta_4 RL_{it} \cdot \text{dummy\_low}$ ).

Model (5)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 RQ_{it} + \beta_4 RQ_{it} \cdot \text{dummy\_low} + \beta_5 \lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T$$

The key variables are Regulatory Quality ( $\beta_3 RQ_{it}$ ) and the interaction term between Regulatory Quality and the indicator variable for low governance EU countries (dummy\_low) ( $\beta_4 RQ_{it} \cdot \text{dummy\_low}$ ).

Model (6)

$$FDI_{it} = \alpha_i + \beta_1 gy_{it} + \beta_2 inf_{it} + \beta_3 VA_{it} + \beta_4 VA_{it} \cdot \text{dummy\_low} + \beta_5 \lnreer_{it} + \beta_6 trade_{it} + \gamma_t + u_{it}$$

$$i = 1, \dots, N; \quad t = 1, \dots, T$$

The key variables are Voice and Accountability ( $\beta_3 VA_{it}$ ) and the interaction term between Voice and Accountability and the indicator variable for low governance EU countries (dummy\_low) ( $\beta_4 VA_{it} \cdot \text{dummy\_low}$ ).



Table 1. presents the variables used in the analysis along with their definitions, measurement methods, data sources and frequency.

**Table 1.** List of variables, their definition and measurement

Variable	Definition	Measurement, source and frequency
Foreign direct investments (FDI)	Foreign direct investment (FDI) refers to cross-border investment where an entity based in one country (the investor) establishes a long-term interest in a business located in another country. A lasting interest typically implies owning at least 10% of the company's shares or voting power in the foreign enterprise.	Inward FDI flows in % of GDP Source: World Bank Frequency: annual data
Real gross domestic product growth rate (gy)	This indicator represents the yearly growth rate of a country's GDP, measured at market prices and adjusted for inflation using constant local currency. The GDP figure includes the total value added by all domestic producers along with taxes on products. The data is presented using constant 2015.	Secondary data, percentage Source: World Bank Frequency: annual data
Inflation (inf)	Inflation measured using the consumer price index (CPI), indicates the annual rate of change in the average prices that consumers pay for a standard set of goods and services. The composition of this basket may remain fixed or be updated periodically, such as on a yearly basis.	Secondary data, percentage Source: World Bank Frequency: Annual data
Voice and Accountability (VA)	This indicator reflects how much influence citizens have in their country's political process, including the freedom to elect leaders, express opinions, join associations and access independent media sources.	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data
Political Stability and Absence of Violence/ Terrorism (PV)	This governance dimension assesses the perceived risk of political unrest or instability, as well as the likelihood of incidents related to politically motivated violence including acts of terrorism.	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data
Government Effectiveness (GE)	This variable represents perceptions about how efficiently public services are delivered, the professional quality and independence of the civil service, the soundness of policy design and execution, and the trustworthiness of the government in upholding its commitments.	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data
Regulatory Quality (RQ)	Regulatory quality captures the extent to which the government is perceived as capable of designing and enforcing regulations and policies that encourage and support the development of the private sector.	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data



Variable	Definition	Measurement, source and frequency
Rule of Law (RL)	This indicator measures the degree of confidence in the legal system, including the enforcement of contracts, protection of property rights, performance of law enforcement agencies and overall control of crime and violence	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data
Control of Corruption (CC)	This variable assesses the extent to which public authority is used for personal benefit, covering both minor and large-scale corruption as well as undue influence by powerful private interests over public institutions.	Secondary data Index scores Source: WGI (World bank) Frequency: Annual data
dummy_low	A binary variable was constructed based on the average value of the Government Effectiveness (ge) indicator across EU countries. Countries with an average GE score above 0.98 were classified as high-governance countries and assigned a value of 0. Countries with an average GE score equal to or below 0.98 were classified as low-governance countries and assigned a value of 1. This threshold (0.98) represents the median value of average GE scores within the EU sample. The dummy variable was then interacted with each WGI indicator to test whether the effect of institutional quality on FDI varies depending on the broader governance environment of the host country.	Source: Author's calculation
Real Effective Exchange Rate (reer)	The real effective exchange rate is calculated by adjusting the nominal effective exchange rate reflecting a currency's value relative to a weighted basket of foreign currencies using a price index or cost deflator. The index is standardized to a base year (2010 = 100). An increase in REER reflects currency appreciation.	Secondary data, Index Source: World Bank Frequency: Annual data
Trade (trade)	This variable represents the total quantitation of a country's exports and imports of goods and services which is expressed as a % of its gross domestic product. It serves as a measure of trade openness.	Secondary data, percentage Source: World Bank Frequency: Annual data

Source: Autor, definitions from World Bank (2024) and Eurostat (2025)

The empirical analysis included a panel data with fixed effects estimator. Fixed effects due to the several reasons (Wooldridge, 2010; 2015). First, there is correlation between unobserved factors and independent variables. The fixed effects model assumes that unobserved, time-invariant factors that vary across countries (e.g. historical features) are correlated with independent variables. Second, fixed effects controls for time-invariant variables, removing the impact of country-specific factors that do not change over time.

Given the relatively limited number of cross-sectional units (N), a static panel model was selected over a dynamic specification for the primary analysis. This ensures more reliable coefficient estimates under the available sample size. To formally assess whether the FE model is preferred to the random effects (RE) alternative, a Hausman test was performed for each of the six model specifications, each including control variables, one Worldwide Governance Indicator (WGI) and its interaction term. In all six cases, the null hypothesis of no systematic difference between FE and RE estimates was rejected at the 5% significance level ( $p < 0.05$ ) supporting the appropriateness of the fixed effects model (Table 2).

**Table 2.** Hausman Test Results by Model Specification

Model	Key Variable	p-value	Estimator
(1)	Control of Corruption (CC)	0.0072	Fixed Effects
(2)	Government Effectiveness (GE)	0.0148	Fixed Effects
(3)	Political Stability (PV)	0.0064	Fixed Effects
(4)	Rule of Law (RL)	0.0101	Fixed Effects
(5)	Regulatory Quality (RQ)	0.0061	Fixed Effects
(6)	Voice & Accountability (VA)	0.0077	Fixed Effects

Source: Author

Wooldridge tests for autocorrelation in panel data were conducted for all six model specifications. In all cases, the null hypothesis of no first-order autocorrelation could not be rejected (all p-values  $> 0.23$ ), indicating no evidence of serial correlation in the panel structure (Table 3). This supports the consistency of the fixed effects estimators without the need for corrections related to serial dependence.

**Table 3.** Wooldridge Test for Autocorrelation

Model	Key Variable	F(1,22)	p-value	Autocorrelation
(1)	Control of Corruption (CC)	1.231	0.2793	Not detected
(2)	Government Effectiveness (GE)	1.476	0.2373	Not detected
(3)	Political Stability (PV)	1.447	0.2418	Not detected
(4)	Rule of Law (RL)	1.302	0.2660	Not detected
(5)	Regulatory Quality (RQ)	1.340	0.2594	Not detected
(6)	Voice & Accountability (VA)	1.484	0.2361	Not detected

Source: Author

To assess potential multicollinearity, Variance Inflation Factors (VIFs) were calculated for all explanatory variables in each model. All models yielded mean VIF values well below the conventional thresholds (all VIFs  $< 1.22$ ). These low VIF values indicate that collinearity is not a concern, even with interaction terms included. This supports the statistical reliability of the estimated coefficients, even in the presence of interaction terms between governance indicators and governance group dummies.

Given the cross-country nature of the dataset and the known variability in economic and institutional structures among EU member states it was important to test for the presence of heteroskedasticity. The Modified Wald test for groupwise heteroskedasticity (xttest3) strongly rejected the null hypothesis of homoskedasticity in all six model specifications ( $p < 0.0001$ ), indicating that error variances differ significantly across countries.

To address this issue and ensure valid statistical inference, all fixed effects models were estimated using heteroskedasticity-robust standard errors, implemented through the `fe robust` option in Stata. This approach adjusts the standard errors according to the Huber–White method, making them consistent in the presence of heteroskedasticity.

Based on the diagnostic tests the fixed-effects model with robust standard errors was used throughout. Additionally, a dynamic panel model (system GMM) was estimated as a robustness check to account for potential endogeneity and FDI persistence.

When examining the relationship between institutional quality and foreign direct investment (FDI) it is essential to consider the theoretical expectations for each governance dimension. Theoretically, institutional quality reduces uncertainty and transaction costs, thereby encouraging foreign investors to allocate capital in more stable environments (Dunning, 1993). Key dimensions of governance such as control of corruption, rule of law and regulatory quality are expected to positively influence FDI because they ensure transparency, legal protection and predictability (Globerman & Shapiro, 2002; Bénassy-Quéré et al., 2007). Conversely, weak institutions may discourage investment due to the risks associated with policy instability, poor enforcement, or rent-seeking behaviour (Busse & Hefeker, 2007). The table below summarises the expected signs and provides economic intuition for each of the six WGI indicators.

**Table 4.** Expected Signs and Economic Reasoning for WGI Indicators

WGI Indicator	Expected Sign	Key References
Control of Corruption (CC)	Positive	Sabir et al. (2019); Peres et al. (2018); El Fakiri & Cherkaoui (2022); Biro et al. (2019); Khan et al. (2022); Saha et al. (2022)
Government Effectiveness (GE)	Positive	Sabir et al. (2019); Lee (2021); Khan et al. (2022); Globerman & Shapiro (2002); Gangi and Abdulrazak (2012)
Political Stability (PV)	Positive	Sabir et al. (2019); Lee (2021); Shah et al. (2015)
Regulatory Quality (RQ)	Positive	Sabir et al. (2019); El Fakiri & Cherkaoui (2022); Biro et al. (2019); Khan et al. (2022); Globerman & Shapiro (2002); Saha et al. (2022); Shah et al. (2015)
Rule of Law (RL)	Positive	Sabir et al. (2019); Peres et al. (2018); El Fakiri & Cherkaoui (2022); Biro et al. (2019); Globerman & Shapiro (2002); Gangi and Abdulrazak (2012)
Voice and Accountability (VA)	Positive	Sabir et al. (2019); Biro et al. (2019); Gangi and Abdulrazak (2012)

Source: Author

The expected signs and economic reasoning for the impact of institutional dimensions on FDI follow established theoretical frameworks (Bénassy-Quéré et al. 2007; Globerman & Shapiro, 2002; Kaufmann et al. 2010; Busse & Hefeker, 2007; Biro et al. 2019; Gangi and Abdulrazak 2012). Control of Corruption (CC) is expected to be positively associated with FDI because lower corruption levels reduce informal costs and improve the business environment. Government Effectiveness (GE) reflects the quality of public services and policy implementation, which enhances operational efficiency and encourages long-term investment. Political Stability and Absence of Violence (PV) signals a reduced likelihood of conflict and policy reversal, making investment outcomes more predictable. Regulatory Quality (RQ) captures the ability to formulate and implement sound policies, thus lowering regulatory burdens. Rule of Law (RL) is expected to support FDI by ensuring legal protections and reliable dispute resolution mechanisms. Lastly, Voice and Accountability (VA), although more political in nature can contribute indirectly by enhancing transparency and trust in institutions.

#### 4. RESULTS

Results of the six estimated models each of which included one of the six dimensions of the Worldwide Governance Indicators along with an interaction term between the respective governance indicator and the indicator variable for category of institutional quality (dummy\_low) are presented below (Table 5).

Table 5. Fixed Effects Regression Results

<b>Variable Model</b>	<b>CC Model 1</b>	<b>GE Model 2</b>	<b>PV Model 3</b>	<b>RL Model 4</b>	<b>RQ Model 5</b>	<b>VA Model 6</b>
gy	0.6723	0.5444	0.3635	0.5621	0.5518	0.5149
inf	0.1777	0.1781	0.2085	0.1411	0.1208	0.1942
WGI indicator	33.6448 *	21.1974	45.1468 *	65.8657	-31.7162	57.2376
Interaction	-42.1067 *	-30.8171	-45.1002 *	-68.3246	11.1454	-55.1719
lnreer	-8.5889	-7.2546	-22.8489	-12.1982	3.2623	-8.3637
trade	-0.3520	-0.3064	-0.2879	-0.2523	-0.2770	-0.3011
Observations	571	571	571	571	571	571
R-sq within	0.0619	0.0591	0.0709	0.0641	0.0610	0.0593

Source: Author. Note: The upper section of the table lists the estimated coefficients for each variable. \*\*\*, \*\* and \* indicate statistical significance of the variable at the 1%, 5% and 10% levels, respectively. All models include time and spatial fixed effects.

Model (1) shows that Control of Corruption (CC) has a positive and statistically significant effect on FDI inflows, confirming that better control over corruption enhances a country's attractiveness to foreign investors. However, the interaction term between CC and the Low Governance dummy variable ( $\text{dummy\_low} \times \text{CC}$ ) is negative and statistically significant. This implies that the positive effect of CC on FDI is significantly weaker in low-governance countries compared to high-governance ones. This suggests that in contexts with weaker overall institutional frameworks, improving corruption control alone may be insufficient to generate substantial FDI inflows.

Model (2) examines Government Effectiveness (GE), which has a positive but statistically insignificant coefficient, suggesting that in general government effectiveness may encourage FDI, but this effect is not strong or consistent across the EU. Similarly, the interaction term ( $\text{dummy\_low} \times \text{GE}$ ) is negative and insignificant, indicating that the effect of GE on FDI is not significantly different between high- and low-governance EU countries.

Model (3) highlights Political Stability and Absence of Violence (PV) as a significant positive determinant of FDI. This results supports the notion that countries with greater political stability tend to attract more foreign direct investment. This is consistent with the idea that investors prefer stable political environments where policy continuity, safety and the rule of law are more likely to be upheld. Yet, as in Model (1), the interaction term between PV and the low governance dummy variable ( $\text{dummy\_low} \times \text{PV}$ ) is negative and statistically significant. This indicates that the positive effect of political stability on FDI is significantly weaker in low-governance EU countries.

In Model (4) The Rule of Law (RL) coefficient is positive but not statistically significant. Although the sign of the RL coefficient aligns with theoretical expectations (positive effect), the lack of significance implies that rule of law alone may not be a decisive factor for attracting FDI in EU countries. The interaction term ( $\text{dummy\_low} \times \text{RL}$ ) is negative and not significant suggesting no substantial governance-level differences in its effect.

Model (5) presents an exception: Regulatory Quality (RQ) has a negative and insignificant coefficient, which contradicts expectations. This may reflect data limitations or model-specific dynamics, such as overlapping effects with other governance dimensions. The interaction term ( $\text{dummy\_low} \times \text{RQ}$ ) is positive but not significant, offering no conclusive evidence of differential effects by governance group.

Model (6) investigates Voice and Accountability (VA), which exhibits a positive but insignificant effect, indicating no clear influence on FDI. The interaction term ( $\text{dummy\_low} \times \text{VA}$ ) is negative and insignificant, implying that this relationship does not vary significantly across governance levels.

The coefficients for the WGI indicators and their interaction terms appear large because the WGI scores range from  $-2.5$  to  $+2.5$  and even a 1-point change represents a significant improvement in a country's institutional quality. In real life, such large changes are rare and reflect major reforms. Since the dependent variable (FDI) is measured as a percentage of GDP and changes in smaller ranges, the coefficients may seem high but they are reasonable given the scale and meaning of the governance indicators.

Overall, the results indicate that Control of Corruption (CC) and Political Stability and Absence of Violence (PV) are the most consistent and significant predictors of FDI inflows in the EU. However, much more effective in countries with already high institu-

tional quality. This highlights the importance of a comprehensive and stable institutional framework, as isolated reforms in low-governance settings may not produce meaningful investment benefits.

Moreover, although all WGI indicators displayed the theoretically expected positive signs except for Regulatory Quality, only Control of Corruption (CC) and Political Stability and Absence of Violence (PV) demonstrated statistically significant effects. These findings highlight the nuanced and context-dependent nature of institutional determinants of FDI, reinforcing the relevance of interaction terms to account for governance heterogeneity across EU member states.

To assess the dynamic nature of FDI and verify the robustness of the baseline fixed-effects results, a system GMM model was estimated using the *xtabond2* estimator with collapsed instruments and restricted lag structure. The model includes the lagged dependent variable (L.FDI) and was estimated using the two-step GMM method with robust standard errors and finite sample correction. Those dynamic models are robustness checks.

To strengthen the credibility of the findings and address potential endogeneity and the persistence of foreign direct investment (FDI) a dynamic panel data model was estimated as a robustness check. Specifically, the system GMM approach was employed using the *xtabond2* estimator in Stata with collapsed instruments and a restricted lag structure to limit instrument proliferation and ensure model parsimony.

Two dynamic panel models were estimated based on the governance dimensions that showed statistically significant effects in the static fixed-effects analysis: Control of Corruption (CC) and Political Stability and Absence of Violence (PV). The remaining WGI indicators were excluded from the dynamic specification as they did not yield significant results in the baseline models and the aim was not to explore FDI persistence for all dimensions individually.

In the first dynamic model, the lagged dependent variable (L.FDI) was statistically significant at the 5% level ( $p = 0.043$ ), confirming the dynamic nature of FDI. However, none of the other explanatory variables, including Control of Corruption and its interaction term, were statistically significant. Diagnostic tests confirmed model validity: the Arellano–Bond tests showed no first- or second-order autocorrelation (AR(1)  $p = 0.755$ , AR(2)  $p = 0.668$ ) and the Hansen test indicated instrument validity ( $p = 1.000$ ).

A second model was estimated for Political Stability and Absence of Violence (PV). In this case, neither the lagged dependent variable nor the other predictors reached statistical significance. Nonetheless, the Arellano–Bond tests again showed no serial correlation (AR(1)  $p = 0.666$ , AR(2)  $p = 0.753$ ) and the Sargan ( $p = 0.214$ ) and Hansen ( $p = 1.000$ ) tests confirmed the appropriateness of the instruments used.

Although dynamic modelling was performed to ensure robustness, the primary results presented in this study are based on fixed-effects estimation. This methodological choice is justified by the theoretical objective of assessing contemporaneous institutional influences on FDI and by the fact that the fixed-effects models produced more statistically robust and interpretable results.

## 5. CONCLUSION AND LIMITATIONS

This study investigated the impact of institutional quality on foreign direct investment (FDI) inflows in European Union member states over the period 1996–2023. Six dimensions of institutional quality, as measured by the Worldwide Governance Indicators (WGI) were analysed individually using fixed effects panel models. Each specification included an interaction term to test whether the relationship between governance and FDI differs between countries with high and low levels of institutional quality.

The empirical results reveal that Control of Corruption and Political Stability and Absence of Violence are positively and significantly associated with FDI inflows across EU countries. However, these effects are substantially weaker in countries with lower institutional quality. The remaining governance indicators Government Effectiveness, Rule of Law, Regulatory Quality and Voice and Accountability did not show statistically significant effects on FDI.

From an economic perspective, the weaker impact of control of corruption in low-governance countries may reflect broader deficiencies in institutional infrastructure. In such environments, even marginal improvements in corruption control may not compensate for persistent weaknesses such as unreliable legal systems or regulatory unpredictability. Conversely, in countries with stronger governance, corruption control sends a clearer signal of transparency and institutional stability, thereby enhancing investor confidence and expected returns.

A similar interpretation applies to the positive effect of political stability. While stability is typically viewed as favourable for investment, in countries with weak governance, it may lack democratic legitimacy or institutional support, reducing its credibility and signalling power. Investors may remain cautious in these environments due to concerns about the reliability of policy implementation and long-term institutional consistency.

To ensure robustness and address concerns of endogeneity and FDI persistence, dynamic panel models were estimated using the system GMM estimator. Although the dynamic specifications confirmed the consistency and validity of the static results, they did not yield additional statistically significant findings. This outcome reinforces the choice of fixed-effects estimation as the primary methodological approach in this study.

This research contributes to the literature by classifying EU countries based on long-term institutional quality using Government Effectiveness as a proxy for broader governance performance. This approach enabled a more granular analysis of governance heterogeneity within a relatively integrated economic region.

A key limitation of the study is its exclusive focus on EU member states, which limits the generalisability of the findings to other regions. Future research could expand the analysis to include non-EU or developing countries to assess whether institutional improvements have greater marginal effects in lower-income or less stable environments. Additionally, future work could explore sector-specific FDI flows or develop composite indices to capture the multidimensional nature of institutional quality.



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