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The Effect of Cybersecurity Risks on Foreign Direct Investment (FDI): Emerging vs.
Developed Economies

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Abstract

This thesis investigates the relationship between national cybersecurity capacity and foreign direct investment (FDI) inflows across developed and emerging economies from 2014 to 2023. Using a balanced panel dataset and fixed-effects estimation with clustered standard errors, the study assesses the impact of overall cybersecurity preparedness—measured by the Global Cybersecurity Index (GCI)—as well as its five dimensions: Legal, Technical, Organizational, Capacity Development, and Cooperation.

The empirical results reveal a statistically significant and negative association between cybersecurity capacity and FDI inflows when considering the full sample of countries. This relationship is particularly evident in emerging economies, where specific components—most notably Legal and Capacity Development—are consistently negative and significant. These findings suggest that the process of institutionalizing cybersecurity may, in the short term, increase regulatory complexity or uncertainty, which could deter foreign investment.

In contrast, for developed economies, no significant relationship is observed between cybersecurity measures and FDI, indicating that higher cybersecurity maturity levels neither incentivize nor deter investment at the margin.

Overall, the study challenges the assumption that stronger cybersecurity capacity is unconditionally attractive to foreign investors and highlights the context-dependent nature of digital institutional quality. It offers important policy insights for emerging economies seeking to strengthen cybersecurity while remaining competitive in the global investment landscape.

Key words: Foreign Direct Investment, Cybersecurity Capacity, Global Cybersecurity Index, Institutional Quality, Emerging Economies, Developed Economies, Panel Data, Fixed Effects, Digital Governance, Investment Climate

Abstrakt

Diese Masterarbeit untersucht den Zusammenhang zwischen der nationalen Cybersecurity-Kapazität und den Zuflüssen ausländischer Direktinvestitionen (FDI) in Industrie- und Schwellenländern im Zeitraum von 2014 bis 2023. Mithilfe eines balancierten Panel-Datensatzes und einer Fixed-Effects-Schätzung mit clusterrobusten Standardfehlern wird analysiert, wie sich die allgemeine Cybersecurity-Bereitschaft – gemessen anhand des Global Cybersecurity Index (GCI) – sowie dessen fünf Dimensionen (rechtlich, technisch, organisatorisch, Kapazitätsentwicklung und Kooperation) auf die Muster von FDI auswirken.

Die empirischen Ergebnisse zeigen einen statistisch signifikanten negativen Zusammenhang zwischen Cybersecurity-Kapazität und FDI-Zuflüssen in der Gesamtstichprobe aller Länder. Besonders ausgeprägt ist dieser Effekt in Schwellenländern, wo einzelne Komponenten – insbesondere die rechtlichen Rahmenbedingungen und die Kapazitätsentwicklung – konsistent negativ und signifikant sind. Dies legt nahe, dass der institutionelle Ausbau der Cybersecurity kurzfristig regulatorische Unsicherheiten oder zusätzliche Anforderungen schaffen kann, die ausländische Investitionen abschrecken.

Im Gegensatz dazu zeigt sich in Industrieländern kein signifikanter Zusammenhang zwischen Cybersecurity-Maßnahmen und FDI. Dies deutet darauf hin, dass höhere Cybersecurity-Reife dort keinen spürbaren Einfluss auf Investitionsentscheidungen hat.

Insgesamt stellt die Studie die Annahme infrage, dass eine stärkere Cybersecurity-Kapazität automatisch zur Förderung von FDI beiträgt. Stattdessen zeigt sich, dass die Wirkung von Cybersecurity stark vom Entwicklungsstand eines Landes abhängt. Die Arbeit liefert wichtige politikrelevante Erkenntnisse für Schwellenländer, die ihre digitale Sicherheit stärken und gleichzeitig attraktiv für internationale Investoren bleiben möchten.

Schlüsselwörter: Ausländische Direktinvestitionen, Cyber-Sicherheitskapazität, Global Cybersecurity Index, Institutionelle Qualität, Schwellenländer, Industrieländer, Paneldaten, Fixed-Effects-Modell, Digitale Governance, Investitionsklim

Table of Contents

1. Introduction	5
1.1 Motivation and Background	5
1.2 Research questions	6
1.3 Contribution of the study	7
1.4 Structure of the thesis	8
2. Literature Review	9
2.1 Theoretical Framework: FDI and Institutional Quality	9
2.2 Empirical Evidence of FDI Determinants	11
2.3 Positioning this study within the literature	13
3. Data and Methodology	14
3.1 Data Sources and Sample	14
3.2 Methodology	17
4. Descriptive Statistics	17
5. Empirical Results	27
5.1 Pooled Regression Results for All Countries	27
5.2 Estimating the Effect of Individual GCI Components on FDI (All Countries)	29
5.2.1. Legal Measures	29
5.2.2. Technical Measures	33
5.2.3 Organizational Measures	35
5.2.4 Capacity Development	38
5.2.5 International Cooperation	40
5.3. Pooled Regression Results for Developed Countries	42
5.4 Estimating the Effect of Individual GCI Components on FDI (Developed Countries)	44
5.4.1. Legal Measures	45
5.4.2. Technical Measures	47
5.4.3. Organizational Measures	49
5.4.4. Capacity Development	51
5.4.5. International Cooperation	53
5.5. Pooled Regression Results for Emerging Countries	55
5.6 Estimating the Effect of Individual GCI Components on FDI (Emerging Countries)	57
5.6.1. Legal Measures	57
5.6.2. Technical Measures	59
5.6.3. Organizational Measures	61

5.6.4. Capacity Development.....	63
5.6.5. International Cooperation.....	65
Conclusion	67
References.....	70
Appendices.....	72
List of developed countries.....	111
List of emerging countries.....	112

1. Introduction

1.1 Motivation and Background

Foreign Direct Investment (FDI) is a fundamental driver of economic growth, contributing considerably to both developed and emerging economies.

In developed economies, FDI adds to fostering innovation, supporting technological advancements and creating jobs. As a result, it enhances market competition, introduces new products and services, and strengthens the links between local industries and the global economy. In addition, FDI provides access to global markets, enhancing the overall economic integration of the country.

For emerging economies FDI is more crucial, as these countries often face challenges such as capital deficits, lack of advanced technologies and underdeveloped infrastructure, which limit their ability to grow and modernize. Hence, FDI serves as a mechanism for overcoming these challenges by bringing in the necessary capital, technological expertise and managerial skills. It enables emerging economies to industrialize, improve productivity and integrate more deeply into the global economy.

However, the rapidly evolving global economy presents new risks to investors, particularly in the realm of cybersecurity. As countries and industries become more dependent on digital infrastructure, the threat of cyberattacks, data breaches and digital espionage increases. Cybersecurity risks have emerged as one of the most significant challenges for businesses globally, as these risks can disrupt operations, damage reputations and lead to substantial financial losses. A cyberattack targeting a company's critical infrastructure or data could not only cause immediate financial harm but could also result in long-term damage to the company's competitiveness in the global market.

For investors, the risks associated with cybersecurity are a major concern, as they can jeopardize the stability of their investments. Therefore, many investors are now incorporating cybersecurity considerations into their investment decisions, weighing the cybersecurity capacity of potential markets before committing their capital. Countries with weak cybersecurity frameworks or high cyber risk are seen as less attractive investment destinations, as they pose a higher likelihood of business disruptions due to cyber threats.

In response to growing concerns about cybersecurity, cybersecurity capacity has emerged as an important factor in assessing the investment climate of a country. Cybersecurity capacity is a country's ability to protect its digital infrastructure, respond to cyber threats and mitigate risks associated with online activities. One of the most widely used indicators to measure a country's cybersecurity capacity is the Global Cybersecurity Index (GCI), which was developed by the International Telecommunication Union (ITU). The GCI evaluates countries based on factors such as legal measures, technical infrastructure, organizational capabilities, capacity building and international cooperation. Higher GCI scores indicate stronger cybersecurity frameworks, which can mean for investors that their investments will be protected from digital threats, thereby enhancing the attractiveness of that market.

1.2 Research questions

The central research question of the thesis is: How does cybersecurity capacity (measured by the Global Cybersecurity Index, GCI) affect FDI inflows in emerging vs. developed economies?

This research seeks to explore the relationship between cybersecurity capacity and FDI in both emerging and developed economies. Specifically, the study will examine the following aspects:

1. Overall Cybersecurity Capacity (GCI): How does the overall GCI score, which combines the legal, technical, organizational, capacity building and international cooperation measures, influence FDI inflows? Therefore, a higher GCI score indicates a country's strong cybersecurity framework, which could enhance investor confidence by signaling lower risk and better protection for their investments. The goal is to investigate whether countries with stronger overall cybersecurity systems attract more FDI due to a safer investment climate.
2. Legal measures: How do national cybersecurity laws and regulations (measured as legal measures in GCI) affect investor decisions? Countries with strong cybersecurity laws may attract more FDI by providing clear protections for intellectual property and ensuring legal frameworks for addressing cybercrimes, which offers foreign investors confidence that their digital assets are secure.
3. Technical Measures: How do robust cybersecurity infrastructure (technical measures in GCI) impact FDI inflows? Countries with advanced cybersecurity infrastructures, such

as secure networks, effective defense systems etc. against cyber threats, could attract more FDI, especially in technology-driven industries.

4. **Organizational Measures:** How does the presence of strong national cybersecurity agencies and cybersecurity response capabilities (organizational measures in GCI) affect FDI? The ability of a country to respond quickly and effectively to cyber threats through cybersecurity governance mechanisms can reassure investors that their investments will be protected.
5. **Capacity building:** What role does capacity building (for example, training and education programs) play in attracting FDI? Countries that invest in cybersecurity training and workforce development in cybersecurity may reduce perceived risks for investors. A well- trained workforce can better handle potential cyber threats, making the country more attractive for investors.
6. **International Cooperation:** How does a country's participation in international cybersecurity cooperation influence FDI inflows? Countries that are part of international cybersecurity agreements and collaborate on cyber standards are seen as more secure investment locations due to their alignment with global cybersecurity norms.

Thus, by analyzing the overall GCI as well as its individual components this study will assess the relative importance of each factor in shaping FDI inflows. The goal is to understand whether cybersecurity capacity, as a whole and through its components, serves as a determinant of FDI, and how this relationship differs across emerging and developed countries.

1.3 Contribution of the study

The existing literature on Foreign Direct Investment has predominantly focused on traditional determinants such as market size, political stability, economic performance, and infrastructure quality. However, while there is substantial research on the factors that influence FDI inflows, the role of cybersecurity in shaping investment decisions remains underexplored. Most studies have treated cybersecurity risks in isolation, without considering the broader framework of cybersecurity capacity as a key determinant of FDI.

This study fills this gap by incorporating cybersecurity capacity, measured by the Global Cybersecurity Index (GCI), into the analysis of FDI. It also examines how individual

components of GCI – such as legal measures, technical infrastructure, capacity building and international cooperation – affect FDI inflows.

Additionally, this research compares the impact of cybersecurity capacity on FDI between emerging and developed economies, which provides valuable insights into how different levels of cybersecurity readiness influence investment decisions in these contexts.

1.4 Structure of the thesis

The thesis is divided into seven chapters. Chapter 1, the introduction, presents the research question, outlines the objectives of the study and discusses the motivation for examining the relationship between cybersecurity capacity and FDI.

Chapter 2, the Literature Review, provides a comprehensive discussion of the key FDI theories, including OLI model and Gravity Model, and reviews the existing literature on the determinants of FDI inflows. This chapter also explores the growing relationship between cybersecurity and investment decisions, emphasizing the cybersecurity risks that affect investment choices and identifying the gap in the literature that this study aims to address.

Chapter 3, Data and Methodology, outlines the data sources used in the analysis, such as the World Development Indicators (WDI) and the Global Cybersecurity Index (GCI). It also describes the variables used in the study, including FDI, cybersecurity capacity, and relevant controls. This chapter further explains the empirical model and estimation strategy, focusing on the use of panel data and fixed effects to analyze the relationship between cybersecurity capacity and FDI inflows.

Chapter 4, Descriptive Statistics, provides an overview of the dataset, including summary statistics for key variables such as FDI, Trade Openness, GDP growth, and GCI. It explores the trends in FDI and cybersecurity across countries, with a particular focus on the comparison between emerging and developed economies.

Chapter 5, Empirical Results, presents the results of the regression analysis and examines how cybersecurity capacity (measured by GCI) impacts FDI inflows in both emerging and developed economies. It also analyzes the impact of the subcomponents of GCI and provides insights into how the components affect investment flows differently across countries at different stages of economic development.

Finally, Chapter 6, Conclusion, summarizes the key findings of the study, discusses the policy implications, and offers recommendations for enhancing cybersecurity capacity to attract FDI. The chapter concludes by discussing the limitations of the study and suggesting potential directions for future research in the intersection of cybersecurity and FDI.

2. Literature Review

2.1 Theoretical Framework: FDI and Institutional Quality

Foreign Direct Investment (FDI) plays a vital role in economic growth by facilitating the transfer of capital, technology, and expertise across borders. Understanding the factors that determine where and why firms choose to invest internationally has long been a central focus of international economics. Among the most influential frameworks developed to explain FDI flows are Dunning's Eclectic Paradigm, first introduced by John H. Dunning in 1977 and expanded in the 1980s, and the Gravity Model, originally conceptualized for trade flows by Jan Tinbergen in 1962, and later adapted for FDI applications.

Dunning's Eclectic Paradigm – commonly known as the OLI model – proposes that three sets of advantages must be present for a firm to engage in FDI: Ownership, Location, and Internalization (Dunning, 1980; 1988). First, ownership-specific advantages refer to the firm's unique assets, such as intellectual property, advanced technology, or managerial expertise, which give it a competitive edge in foreign markets. Second, location advantages relate to host country factors that make investment attractive – such as market size, labor costs, infrastructure, and institutional stability. Third, internalization advantages arise when the firm finds it more beneficial to operate internally (e.g. through a subsidiary) rather than through licensing or joint ventures, particularly when safeguarding intangible assets like technology.

While the OLI model provides a comprehensive framework for explaining FDI motivations, it emphasizes the importance of location-specific characteristics, including the quality of institutions. Over time, the definition of these institutional factors has broadened to include not just traditional governance indicators, but also factors such as digital governance and cybersecurity preparedness.

The Gravity Model, originally formulated by Tinbergen (1962) to explain bilateral trade flows, is based on the analogy of Newton's law of gravity. It suggests that investment between two countries is positively related to their economic size and negatively related to the

geographic distance between them. In this model, larger economies are more likely to attract FDI due to their greater market potential, while distance is viewed as a proxy for transportation costs, cultural differences, and communication barriers. Moreover, modern applications of the gravity framework

incorporate variables such as institutional quality, legal predictability, and regulatory coherence to better explain FDI patterns.

In recent years, institutional quality has emerged as a robust predictor of FDI inflows. According to North (1990), institutions are “the rules of the game” – the formal and informal constraints that structure human interaction. Strong institutions reduce uncertainty by enforcing contracts, protecting property rights, and ensuring transparency. Empirical studies confirm that countries with better institutional environments tend to receive more stable and higher volumes of FDI (Globerman & Shapiro, 2003; Busse & Hefeker, 2007; Rodrik, Subramanian, & Trebbi, 2004). This institutional quality is particularly critical in emerging markets, where weak governance and regulatory unpredictability often deter investment.

As economies become more digital, cybersecurity has emerged as a vital aspect of institutional infrastructure. With rising incidents of cyberattacks, data breaches, and digital sabotage, multinational firms are increasingly sensitive to the ability of host countries to protect digital assets and ensure business continuity (Vergara Cobos, 2024). This is particularly important in sectors such as finance, telecommunications, and e-commerce, where data integrity and cybersecurity compliance are directly linked to operational risk and investor trust (OECD, 2019; World Bank, 2019).

The Global Cybersecurity Index (GCI), developed by the international Telecommunication Union (ITU) provides a standardized measure of national cybersecurity capacity. The GCI evaluates countries across five pillars: legal measures, technical capabilities, organizational structures, capacity building, and international cooperation (ITU, 2024). A higher GCI score indicates a stronger national ability to prevent and manage cyber threats. For investors, this means a reduced operational risk and higher confidence in the host country’s digital governance.

Empirical work further supports this inclusion. Vergara Cobos and Cakir (2024) review the economic consequences of cyber incidents, showing that the indirect costs such as reputational harm, insurance liabilities, and investor hesitancy often exceed financial damages. Their findings emphasize the growing importance of digital resilience in shaping investor outcomes.

Similarly, Kshetri (2016) identifies cybersecurity regulation as a form of non-tariff barrier that can hinder both trade and FDI, particularly in countries where digital standards are weak or misaligned with international norms.

Thus, both the OLI paradigm and Gravity Model remain foundational in explaining the flow of FDI. However, to reflect the realities of the 21st century digital economy, these models must be extended to account for modern dimensions of institutional quality, especially cybersecurity capacity. Therefore, by examining how cybersecurity readiness – measured through the GCI – affects FDI inflows across emerging and developed economies, this thesis contributes to the modernization of FDI theory and offers policy-relevant insights into how digital governance influences investment decisions.

2.2 Empirical Evidence of FDI Determinants

The determinants of Foreign Direct Investment (FDI) have been explored extensively across empirical literature, evolving from early market-based models to more complex frameworks incorporating institutional, technological, and geopolitical factors. While traditional variables such as market size, macroeconomic stability, and infrastructure remain core, increasing attention is being paid to institutional quality and digital governance, including cybersecurity readiness.

A foundational finding across the literature is that market size, typically measured by gross domestic product (GDP) or population, strongly correlates with FDI inflows. Larger economies offer more extensive consumer bases and scale advantages, which are attractive to multinational enterprises (Blonigen & Piger, 2014). Furthermore, faster-growing markets present greater revenue potential, particularly for market-seeking investment.

Macroeconomic stability is another well – documented determinant of FDI. Studies show that countries with low inflation, predictable exchange rates, and sound fiscal management are more likely to attract long-term FDI (Busse & Hefeker, 2007). Investors prefer environments with reduced financial uncertainty, as volatility increases the risk of capital loss.

Infrastructure quality, including transport, energy, and digital networks, is also critical. Better infrastructure reduces operating costs and improves logistical efficiency. Studies such as Asiedu (2002) and Wheeler and Mody (1992) have shown that infrastructure availability

significantly boosts FDI inflows, particularly in developing countries where such facilities are a major constraint to business operations.

Political and institutional quality is increasingly seen as vital. According to Globerman and Shapiro (2003), effective governance, protection of property rights, and a reliable legal system help reduce uncertainty and transaction costs, boosting investor confidence. Busse and Hefeker (2007) further show that democratic accountability, low corruption, and legal transparency positively influence FDI inflows.

The influential work of Rodrik, Subramanian, and Trebbi (2004) argues that institutional quality is a more decisive factor for economic development and investment than geography or trade policy. Their results show a strong and consistent association between effective institutions and higher levels of FDI. From a theoretical perspective, North (1990) reinforces this view by emphasizing that institutions reduce uncertainty in economic transactions, thereby fostering cooperation and supporting the development of functioning markets.

Expanding on this, Bénassy-Quéré, Coupet, and Mayer (2007) adopt a gravity model to show that institutional quality influences FDI through both the overall strength of institutions and through how similar the institutions are between the home and host countries. Their results suggest that FDI is more likely when the institutional environments are somewhat aligned, meaning investors often prefer not just strong institutions, but ones that feel familiar and easier to navigate.

Building on the theoretical discussion in the previous section, recent empirical studies have examined the impact of cybersecurity risks on investment decisions. For example, Vergara Cobos and Cakir (2024) provide evidence that cyber incidents can impose substantial economic costs – not only through direct financial losses but also through indirect impacts such as reputational harm, regulatory penalties, and operational disruptions. These risks can reduce the expected profitability of investment projects and make foreign firms more cautious, particularly when evaluating markets with limited cybersecurity infrastructure or weak enforcement mechanisms. The influence of cyber risk is especially pronounced in digitally intensive industries, where investor confidence depends heavily on data security and legal protection frameworks.

As already outlined in Section 2.1, many emerging markets face difficulties in building strong cybersecurity systems and regulatory frameworks. Expanding on this, Kshetri (2016) shows that weaknesses in data protection laws, limited enforcement capacity, and poor international

coordination can increase uncertainty for investors. These institutional shortcomings often lead to higher compliance costs and legal complexity making some countries less attractive for FDI. While tools like the Global Cybersecurity Index (GCI) help assess a country's digital preparedness, it is the practical implementation of cybersecurity policies that plays a key role in shaping investor decisions, particularly in digitally intensive sectors.

Furthermore, several studies reinforce the connection between digital infrastructure, cybersecurity capacity and FDI, particularly in developing contexts. For instance, Aboal and Tacsir (2015) find that investment in ICT significantly enhances productivity in both manufacturing and services sectors in Latin America, thereby contributing to a more favorable environment for attracting FDI. Similarly, Florackis et al. (2023) find that cybersecurity risks are reflected in firm-level equity valuations, suggesting that digital threats can influence broader investment patterns and capital flows. In emerging markets, the need for stronger ICT regulation and enforcement is even greater. Vergara Cobos and Cakir (2024) point out that uncertainty around cyber risks – combined with weak legal protections – can discourage long – term FDI, especially in sectors like finance, e-commerce, and software development that rely heavily on digital infrastructure.

Overall, recent literature shows that the range of factors influencing FDI has expanded. While traditional economic indicators such as GDP, inflation, and infrastructure are still important, institutional quality, especially cybersecurity, now play a key role. A country's ability to manage cyber risks not only protects investments but also signals stronger institutions – making cybersecurity an essential part of modern FDI analysis.

2.3 Positioning this study within the literature

Although a rich body of research has explored the determinants of Foreign Direct Investment (FDI), much of this literature remains focused on traditional factors such as market size, macroeconomic stability, infrastructure, and institutional quality. In recent years, a few studies have begun to acknowledge the role of digital governance and cybersecurity risks in shaping the business environment (Kshetri, 2016; OECD, 2019; Vergara Cobos & Cakir, 2024). However, this awareness has not yet translated into consistent empirical testing within standard FDI models.

The main gap in the literature lies in the lack of empirical research that integrates cybersecurity capacity – measured systematically at the national level – into cross-country FDI analysis. Most existing studies either examine firm-level impacts of cyber incidents or treat cybersecurity as part of broader institutional risk, without isolating its specific role. Additionally, while the Global Cybersecurity Index (GCI) has become a recognized benchmark for digital readiness, it has not been widely used as a variable in econometric studies of FDI.

Moreover, the literature rarely differentiates between how cybersecurity capacity might affect emerging versus developed countries. This distinction is important since emerging markets often face weaker legal enforcement, lower technical capacity and greater exposure to cyber-related uncertainty, which could alter the relationship between cybersecurity and FDI.

This thesis addresses these gaps by being one of the first studies to:

- Empirically test the relationship between national cybersecurity capacity (using the GCI) and FDI inflows;
- Compare this relationship across emerging and developed economies using panel data;
- Control for traditional FDI determinants to isolate the specific effect of cybersecurity.

By doing so, the study contributes both to the FDI literature and to the emerging field of digital institutional economics.

3. Data and Methodology

3.1 Data Sources and Sample

This research constructs a balanced panel dataset consisting of 115 countries over the period from 2014 to 2023, based on data availability and relevance to the research question. The time frame was selected to coincide with the introduction of structured cybersecurity data through the Global Cybersecurity Index (GCI) and reflects a decade marked by rapid digitalization, rising cyber threats, and growing foreign investment in digital infrastructure. The panel structure supports cross-country analysis over time, enabling the investigation of how changes in cybersecurity capacity relate to FDI inflows. Estimation is carried out using pooled ordinary least squares (OLS) with country-clustered standard errors, which correct for

heteroskedasticity and serial correlation within countries. The data used in this study are drawn from two principal sources:

- World Bank – World Development indicators (WDI): This database provides annual data on FDI inflows (% of GDP) and a wide range of macroeconomic and institutional variables including GDP growth, inflation, unemployment, exchange rate etc.
- International Telecommunication Union (ITU) – Global Cybersecurity Index (GCI): The GCI is a composite index evaluating national cybersecurity capacity across five dimensions: legal, technical, organizational, capacity-building and international cooperation. It serves as the primary explanatory variable of the study.

Variable	Data Type	Description
Country	Factor	The name of the country. Used as a panel unit identifier. Source: World Bank.
log1p(FDI)	Numeric	Natural logarithm of 1 plus FDI net inflows as a % of GDP. Used to reduce skewness and allow interpretation in percentage terms. Source: World Bank.
GCI	Numeric	Global Cybersecurity Index (Overall score). Measures a country's commitment to cybersecurity across five pillars. Source: ITU GCI.
Legal	Numeric	GCI Legal Measures score. Indicates the existence and quality of legal frameworks supporting cybersecurity. Source: ITU GCI.
Technical	Numeric	GCI Technical Measures score. Captures technical institutions, mechanisms, and tools in place for cybersecurity. Source: ITU GCI.
Organization	Numeric	GCI Organizational Measures score. Evaluates institutional frameworks and national strategies. Source: ITU GCI.
CapacityDev	Numeric	GCI Capacity Development score. Assesses national efforts in training, education, and R&D related to cybersecurity. Source: ITU GCI.
Cooperation	Numeric	GCI Cooperation Measures score. Reflects international collaboration and participation in cybersecurity initiatives. Source: ITU GCI.

Variable	Data Type	Description
TradeOpen	Numeric	Trade openness, measured as the sum of exports and imports as a percentage of GDP. Indicates a country's integration into the global economy. Source: World Bank.
Inflation	Numeric	Consumer price index, annual percentage change. Indicates inflationary pressure in the economy. Source: World Bank.
TaxRevenue	Numeric	Tax revenue as a percentage of GDP. Measures the government's fiscal capacity and tax collection efficiency. Source: World Bank.
Enrollment	Numeric	Gross tertiary school enrollment (%). Reflects the education level and human capital development in a country. Source: World Bank.
log1p(ExchangeRate)	Numeric	Natural log of 1 plus the exchange rate (local currency units per US dollar, period average). Captures currency valuation effects on investment. Source: World Bank.
GDPGrowth	Numeric	Natural log of 1 plus the exchange rate (local currency units per US dollar, period average). Captures currency valuation effects on investment. Source: World Bank.

In order to facilitate comparative analysis, countries were divided into two groups:

- Developed economies: defined as high-income countries according to the World Bank, with strong institutional frameworks and stable investment environments.
- Emerging economies: comprise upper- and lower-middle income countries, also based on World Bank classifications, but with less mature institutional capacity. Microstates and countries with insufficient or unreliable data were excluded.

Thus, after cleaning and filtering, the final sample includes 72 emerging economies and 43 developed economies. Countries such as Vatican, San Marino, Palau etc. were excluded due to the absence of reliable data on FDI or cybersecurity indicators, or their classification as microstates with minimal relevance to the global investment flows.

This structure ensures a robust foundation for the empirical analysis that follows. By combining detailed cybersecurity metrics with macroeconomic indicators across a large and diverse country sample, the dataset enables a comprehensive assessment of how national cybersecurity capacity—both overall and by component—relates to patterns of foreign direct investment. The distinction between developed and emerging economies further allows the study to capture heterogeneity in institutional environments and investment dynamics.

3.2 Methodology

To empirically assess the relationship between national cybersecurity capacity and foreign direct investment (FDI) inflows, this study applies a pooled ordinary least squares (OLS) regression framework with country-clustered standard errors. This approach corrects for heteroskedasticity and autocorrelation within countries, improving the reliability of statistical inference.

The baseline specification for all models is:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{CyberVar}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

Where:

- $\log(\text{FDI} + 1)$ – natural logarithm of one plus FDI net inflows (% of GDP).
- TradeOpen – trade openness (exports + imports as % of GDP).
- Inflation – annual change in the consumer price index (%).
- $\log(1 + \text{ExchangeRate})$ – natural logarithm of one plus the official exchange rate (local currency units per USD, period average).
- CyberVar – the relevant cybersecurity measure: either the overall Global Cybersecurity Index (GCI) score or one of its five component dimensions (*Legal, Technical, Organizational, Capacity Development, International Cooperation*).
- Enrollment – gross tertiary school enrollment (%).
- TaxRevenue – tax revenue as a percentage of GDP.
- GDPGrowth – annual GDP growth rate (%).

- ε_{it} – error term.

The same set of control variables is retained across all model specifications; only the CyberVar changes to capture different aspects of cybersecurity capacity. This structure allows direct comparison of the estimated effects of the overall GCI score with those of its individual components.

The analysis is performed for three samples:

1. All countries – full dataset of 115 economies.
2. Developed economies – 43 high-income countries, as classified by the World Bank.
3. Emerging economies – 72 upper- and lower-middle-income countries.

All variables are drawn from consistent and reputable sources (World Bank, ITU GCI) for the period 2014–2023. Countries with missing or inconsistent data for FDI, cybersecurity indicators, or control variables were excluded. The final dataset is balanced, ensuring comparability across countries and over time.

4. Descriptive Statistics

The dependent variable in this study, foreign direct investment inflows as a percentage of GDP, displays substantial variation across the 115 countries in the sample over the period 2014–2023. Across all observations, the average annual FDI inflow is X percent of GDP, with a standard deviation of Y percentage points, indicating a wide dispersion in investment activity. The minimum value, –440.13 percent of GDP, corresponds to exceptional disinvestment episodes in Luxembourg, while the maximum, 452.22 percent of GDP, is observed in Malta, reflecting its role as an international financial hub. These extreme cases are characteristic of small, highly open economies with large cross-border capital flows, whereas the majority of countries report more moderate inflows, typically in the range of 0–10 percent of GDP. The complete set of country-level descriptive statistics is presented in the Appendix (Table 1)

Trade openness, measured as the ratio of total trade (exports plus imports) to GDP, exhibits considerable variation across the sample of 115 countries over the period 2014–2023 (Appendix, Table 2). The mean values range from below 30% of GDP in relatively closed

economies such as the United States (26.50%) and Pakistan (27.82%) to extremely high ratios exceeding 300% in highly trade-dependent economies such as Luxembourg (372.10%) and Singapore (327.98%). Small, open economies—such as Malta, Ireland, the Netherlands, and the United Arab Emirates—consistently display trade-to-GDP ratios above 150%, reflecting their strong integration into global markets. In contrast, larger economies with substantial domestic markets, such as Brazil (30.07%) and India (43.34%), record significantly lower openness levels. The standard deviation of trade openness is substantial in some resource-dependent or small economies (e.g., Kuwait, Lao PDR, Solomon Islands), indicating notable year-to-year fluctuations, whereas it remains relatively stable in countries with diversified and mature trading structures (e.g., Canada, France, United States). Minimum values close to zero are observed in several cases (e.g., Comoros, Mali, Lao PDR), suggesting years with negligible recorded trade relative to GDP, often due to structural constraints or data reporting gaps. The overall distribution points to a pronounced heterogeneity in global trade integration, shaped by differences in geography, economic structure, and policy orientation.

Inflation rates over the 2014–2023 period (Appendix, Table 3) reveal pronounced cross-country disparities, ranging from prolonged price stability to episodes of extreme price volatility. Economies such as Switzerland (0.51%), Japan (1.09%), and Singapore (1.46%) maintained average annual inflation below 2%, reflecting well-anchored monetary frameworks and stable macroeconomic conditions. In contrast, several countries experienced persistently high inflation, notably Lebanon (64.29%), Angola (19.69%), and Ghana (16.67%), often linked to macroeconomic imbalances, currency depreciation, or political instability. The highest recorded annual rates in the dataset—over 200% in Lebanon and above 30% in Angola, Lao PDR, and Pakistan—highlight episodes of severe monetary dislocation. Conversely, some countries registered occasional deflation, with negative annual changes in consumer prices observed in Bahrain, Brunei Darussalam, and Cyprus. The variability of inflation, as measured by the standard deviation, is generally greater in emerging and developing economies, reflecting their heightened vulnerability to commodity price swings, exchange rate pressures, and policy shocks. In more advanced economies, inflation variability remains low, underlining the role of institutional credibility and diversified production structures in dampening price volatility.

Exchange rate statistics for the 2014–2023 period (Appendix, table 4) show substantial heterogeneity across countries, reflecting diverse monetary regimes, degrees of currency

convertibility, and macroeconomic stability. Advanced economies with strong monetary institutions, such as Austria, Belgium, and Germany (all averaging 0.88 units per USD under the euro), as well as dollar-pegged systems like Bahrain, Saudi Arabia, and the United Arab Emirates, exhibited minimal variation over the decade. Conversely, countries with floating or managed-float regimes experienced more pronounced fluctuations. For instance, the Lao PDR averaged over 10,000 units per USD, with a standard deviation exceeding 3,200, while Angola's exchange rate more than tripled over the period, reflecting currency devaluations tied to external shocks. Some economies experienced sharp depreciation episodes, such as Lebanon, where the exchange rate peaked at over 13,800, and Argentina, where volatility was high relative to a much lower mean. In contrast, small island states with fixed arrangements, like Belize and the Maldives, maintained almost constant exchange rates. These patterns underscore the role of policy frameworks, external vulnerabilities, and structural factors in shaping exchange rate dynamics, with emerging and developing economies generally showing greater instability than advanced economies.

Tertiary education enrollment rates, summarized in Appendix Table 5, exhibit substantial variation across countries over the 2014–2023 period, reflecting differences in educational capacity, demographic structures, and policy priorities. Advanced economies such as Greece,

Korea, and Australia record average gross enrollment ratios exceeding 85%, in some cases surpassing 100% due to the inclusion of non-traditional and foreign students. By contrast, several low-income countries, including Comoros, Solomon Islands, and Paraguay, reported no recorded tertiary enrollment during the period, while others such as Mali, Mauritania, and Tanzania maintained rates below 5%.

Middle-income countries display wide disparities: Latin American nations like Argentina and Chile show relatively high averages (above 80%), whereas countries such as Honduras, Nicaragua, and Morocco report more modest participation. Volatility also varies considerably—some nations, including Belgium, Portugal, and the Netherlands, show large standard deviations driven by years of missing or low reported enrollment, whereas others like Mongolia and Kazakhstan exhibit consistently high but stable rates. These differences indicate both the structural gap in access to higher education between advanced and developing economies and the sensitivity of enrollment to economic, demographic, and political changes over the decade.

Tax revenue as a share of GDP, presented in Appendix Table 6, varies sharply across countries, reflecting differences in fiscal capacity, economic structure, and resource dependence. Advanced economies such as Denmark, Austria, and Luxembourg consistently report high tax-to-GDP ratios, with Denmark averaging over 33% and showing relatively low volatility, indicative of a stable and mature tax base. Conversely, a significant number of countries—particularly resource-dependent Gulf states such as Kuwait, Oman, and Qatar—report zero or near-zero tax revenue in the dataset, reflecting their reliance on non-tax sources like oil rents.

Middle-income economies display considerable heterogeneity. For example, Morocco, Croatia, and Portugal maintain steady tax ratios above 20%, while countries such as Honduras, Nepal, and the Philippines show lower averages and, in some cases, substantial variation due to cyclical revenues and changes in tax policy. Many low-income and resource-dependent African states, including Angola, Mali, and Gabon, report volatile and generally low tax-to-GDP ratios, often linked to fluctuations in commodity prices and limited administrative capacity. The presence of several zero observations in emerging and developing economies suggests either data gaps or years in which tax collection was minimal, both of which can have implications for fiscal sustainability and investment climate.

GDP growth rates, summarized in Appendix Table 7, reveal marked variation both across and within countries over the 2014–2023 period. Several economies recorded robust and consistent expansions, including Bangladesh, Cote d’Ivoire, and Tajikistan, each with average annual growth above 6%. These cases typically reflect structural transformation, investment-led growth, or catch-up dynamics. In contrast, a number of countries faced persistent stagnation or contraction—most notably Equatorial Guinea and Lebanon, both of which experienced prolonged downturns linked to resource dependence, political instability, or severe macroeconomic shocks.

Volatility in GDP growth varies substantially. Countries such as Maldives, Belize, and Panama display exceptionally high standard deviations, indicative of pronounced boom–bust cycles often tied to tourism, commodity prices, or external shocks. Advanced economies, including Germany, Japan, and Switzerland, exhibit comparatively low variability, reflecting more stable demand and diversified production structures, though even these were not immune to sharp contractions during global crises.

The extremes of the distribution are striking: maximum annual growth exceeded 30% in Maldives, whereas the deepest contraction—over 30%—also occurred there, underscoring the vulnerability of small, open economies to external demand shocks and natural disasters. Overall, the descriptive patterns highlight the importance of structural resilience and diversification in sustaining stable growth trajectories over time.

The Global Cybersecurity Index (GCI) scores, presented in Appendix Table 8, show substantial cross-country disparities in cybersecurity capacity between 2014 and 2023. Advanced digital economies such as the United States, Singapore, and Australia consistently score above 85 on average, with several reaching the maximum value of 100 in certain years. These countries exhibit both high absolute levels and relatively low variability, suggesting sustained institutional and technical capacity in the cybersecurity domain.

By contrast, a number of developing economies—including Comoros, Solomon Islands, and Mali—report very low mean scores, often below 20, and in some cases zero, reflecting either the absence of formal cybersecurity frameworks or severe data gaps. In middle-income countries, the patterns are more heterogeneous: states such as Malaysia and Saudi Arabia show high mean scores coupled with large standard deviations, indicating rapid institutional build-up over the decade, while others, including Argentina and Colombia, maintain more modest but stable levels.

Volatility in GCI is particularly high in certain emerging economies—examples include Kazakhstan, Rwanda, and South Africa—where scores range from near zero to above 90 within the sample period. This reflects phases of intensive capacity building, policy reform, or international cooperation projects, often followed by periods of stagnation or decline. Overall, the descriptive statistics reveal that while the global cybersecurity landscape is converging upward, the speed and stability of progress remain uneven, with advanced economies consolidating their lead and many lower-income countries still at an early stage of institutional development.

The Legal component of the Global Cybersecurity Index (Appendix Table 9) highlights significant differences in the development of national legal frameworks for cybersecurity. Many advanced economies, including the United States, Estonia, France, Norway, and Japan, maintain near-maximum scores throughout the period, with minimal variation. This indicates

well-established and consistently enforced legislative environments governing cybersecurity, cybercrime prevention, and digital rights.

In contrast, numerous low-income countries—such as Comoros, Namibia, and Solomon Islands—record extremely low averages, often below 5, and in some cases zero, suggesting either the absence of relevant laws or severe gaps in their implementation. Middle-income economies display more diversity: states like Brazil, Bulgaria, and Poland approach developed-country levels, while others, such as Colombia and Honduras, exhibit both low mean values and high volatility, reflecting uneven legislative reforms over the decade.

Notably, several emerging economies—Kazakhstan, Rwanda, and Saudi Arabia among them—show high standard deviations, with scores fluctuating from single digits to near 20. This pattern points to rapid but sometimes inconsistent legislative development, potentially linked to political transitions, international assistance, or shifting policy priorities. Overall, the descriptive statistics suggest that while progress in cybersecurity lawmaking is evident in all income groups, the pace, stability, and comprehensiveness of these legal measures remain uneven across the global landscape.

The Technical component of the Global Cybersecurity Index (Appendix Table 10) reveals a particularly wide dispersion in countries' operational and infrastructural readiness to prevent, detect, and respond to cyber threats. High-income economies such as the United States, Singapore, Canada, Germany, and Korea consistently score above 17, with relatively low variability, reflecting mature technical capabilities, established Computer Emergency Response Teams (CERTs), and comprehensive incident-handling mechanisms.

At the other end of the spectrum, several low-income countries—such as Angola, Comoros, Mauritania, and the Solomon Islands—record negligible or zero values, indicating either the complete absence of formal technical frameworks or extremely limited operational capacity. In some cases, such as Belize, Honduras, Maldives, and Tajikistan, technical readiness remains at zero throughout the observed period.

Middle-income countries exhibit a mixed pattern. Brazil, China, and Poland approach high-income benchmarks, while others such as Kazakhstan, Rwanda, and Saudi Arabia display large standard deviations, suggesting periods of rapid infrastructure development punctuated by stagnation or policy shifts. Countries like Jordan, Ghana, and Tanzania also show high

variability, which may be linked to project-based international assistance or domestic investments in cybersecurity operations.

Overall, the Technical component highlights the most pronounced gaps among all GCI dimensions: while leading economies demonstrate stability and sophistication, many countries—especially in Africa and small island states—remain at a nascent stage of technical cybersecurity capacity, potentially constraining their ability to engage securely in the global digital economy.

The Organizational measures component of the Global Cybersecurity Index (Appendix Table 11) captures the extent to which countries have established formal governance, strategies, and coordination mechanisms to manage cybersecurity at a national level.

Highly developed countries such as the United States, Estonia, Australia, the Netherlands, Korea, and the United Kingdom record average scores above 17, with relatively small standard deviations, indicating the presence of stable, well-institutionalized cybersecurity governance frameworks. These countries typically have dedicated national agencies, updated cyber strategies, and established inter-agency coordination bodies.

At the lower end of the spectrum, several low-income and small island nations — including Comoros, Angola, Lao PDR, Solomon Islands, and Mali — record averages below 2, in some cases with zero values for the entire period. This points to either a complete absence of organizational structures or very early stages of development, often reliant on ad-hoc initiatives or donor-driven projects.

Middle-income economies demonstrate more diverse trajectories. For example, Brazil, China, and Malaysia score in the mid-teens, reflecting partial institutional maturity, while others — such as Kazakhstan, Ghana, and Tanzania — display high variability over time, suggesting episodes of rapid progress interspersed with stagnation or institutional reshuffling. Countries like Costa Rica, Dominican Republic, and Ecuador show particularly high standard deviations, indicating shifts in commitment or implementation capacity during the decade.

Overall, the Organizational component reveals that while technical capacity (as seen in the previous section) is critical, it is often underpinned by the strength and stability of governance structures. Countries lacking sustained organizational frameworks risk undermining technical

investments, leaving them vulnerable to policy reversals and inconsistent enforcement. This dimension thus represents a key area for capacity-building, particularly in emerging and developing economies.

The Capacity Development component (Appendix Table 12) reflects the extent to which countries invest in human capital, knowledge transfer, and institutional learning to strengthen long-term cybersecurity resilience. It includes initiatives such as specialized training programs, cyber awareness campaigns, workforce development strategies, and partnerships with academia or the private sector.

Top-performing countries — including the United States, Australia, Canada, Singapore, Oman, and several EU members (e.g., France, Spain, Netherlands, and Poland) — achieve average scores above 15, often approaching the maximum possible value. These countries typically maintain consistent funding for cyber skills programs, formalized education pipelines, and continuous professional training, resulting in low variability over the observed period.

By contrast, a significant group of developing and least-developed economies — such as Mali, Solomon Islands, Mauritania, Nicaragua, and Comoros — record average scores below 1, with some maintaining zero values across the entire decade. These results suggest the near absence of structured capacity-building policies, leaving them dependent on external technical assistance or isolated donor projects.

Middle-income countries show highly diverse trajectories. Some, like Brazil, China, and India, sustain robust capacity development efforts with average scores above 15, indicating the prioritization of cybersecurity workforce growth in parallel with their expanding digital economies. Others — including Kazakhstan, Ghana, and Malaysia — demonstrate large standard deviations, pointing to inconsistent program implementation, possible shifts in policy emphasis, or irregular funding cycles.

Overall, the results suggest that while technical and organizational maturity are critical, their sustainability is closely linked to ongoing investment in people and knowledge systems. Without sustained capacity-building, countries risk falling behind in adapting to evolving cyber threats, particularly as technology adoption accelerates. This component thus plays a central role in ensuring that cybersecurity improvements remain durable over time.

The Cooperation component (Appendix Table 13) measures the extent to which countries engage in bilateral, regional, and multilateral initiatives aimed at strengthening cybersecurity. This includes participation in international agreements, sharing of threat intelligence, collaboration with global organizations, and cross-border capacity-building programs.

Advanced economies such as Belgium, the Netherlands, Finland, Israel, Japan, and several other high-income states consistently record average scores above 15, indicating strong engagement in global cyber governance structures. Their relatively low standard deviations suggest steady participation in international networks over time, often backed by formal treaties and established diplomatic channels for cyber policy coordination.

Middle-income economies display a more varied picture. Brazil, China, and Romania demonstrate consistently high cooperation levels, aligning with their active participation in both regional and international cybersecurity forums. In contrast, countries such as Kazakhstan, Greece, and Malaysia report high variability, suggesting shifts in engagement—possibly due to changes in foreign policy priorities, political alignment, or available resources for international activities.

Many low-income and least-developed countries — including Comoros, Maldives, Bhutan, and several Pacific island nations — show minimal or no measurable cooperation. This is likely due to a combination of capacity constraints, limited diplomatic presence in cyber-related forums, and competing development priorities.

Notably, some states with otherwise advanced domestic cybersecurity capacities (e.g., Saudi Arabia, Qatar, and the UAE) exhibit relatively high volatility in cooperation scores, potentially reflecting the selective nature of their partnerships or strategic realignments over the decade.

Overall, the results highlight that while domestic technical and organizational maturity is essential, international cooperation remains a critical pillar for cybersecurity resilience — enabling threat intelligence sharing, harmonizing regulatory approaches, and enhancing collective response capabilities to cross-border cyber threats.

5. Empirical Results

5.1 Pooled Regression Results for All Countries

To assess the relationship between cybersecurity performance and foreign direct investment (FDI), a pooled ordinary least squares (OLS) regression model is estimated for the full sample of countries. The dependent variable is the natural logarithm of FDI inflows plus one, $\log(\text{FDI}_{it} + 1)$, allowing the model to retain observations with zero FDI and reduce skewness. The explanatory variables include Global Cybersecurity Index (GCI), macroeconomic indicators, and selected policy variables. Standard errors are clustered at the country level to correct for heteroskedasticity and intra-country correlation over time.

The estimated model is given by:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{GCI}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results are presented in Table 14. As expected, the Global Cybersecurity Index (GCI) emerges as statistically significant determinant of FDI inflows. The coefficient for GCI is negative and significant at 5% level, suggesting that stronger national cybersecurity frameworks – while important for digital resilience – may also introduce regulatory complexity that discourages foreign investors, particularly in technology-intensive sectors. This finding is central to the hypothesis of this study and highlights the nuanced role that cybersecurity governance can play in shaping international investment flows.

In line with the literature, trade openness is positively and strongly associated with FDI, with a 1 percentage point increase in trade openness leading to approximately a 0.93% increase in FDI inflows. Similarly, both GDP growth and the exchange rate (log-transformed) are positively and significantly related to FDI, indicating that investors respond favorably to macroeconomic expansion and currency competitiveness.

Other variables such as inflation, tertiary enrollment, and tax revenue do not exhibit statistically significant effects at conventional levels, although tax revenue is positively signed and marginally significant.

Table 14. Pooled OLS Regression Results (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.390	0.190	2.058	0.040 [*]
TradeOpen	0.009	0.001	8.403	<0.001 ^{***}
Inflation	0.001	0.002	0.253	0.800
log(1 + ExchangeRate)	0.045	0.023	1.970	0.049 [*]
GCI	-0.003	0.001	-2.110	0.035 [*]
Enrollment	0.002	0.001	1.500	0.134
TaxRevenue	0.010	0.006	1.610	0.108
GDPGrowth	0.012	0.006	2.007	0.045 [*]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

In order to assess the presence of multicollinearity among the explanatory variables, a Variance Inflation Factor (VIF) test was conducted. All VIF values fall well below the commonly used threshold of 10, indicating that multicollinearity is not a concern in the model. The results are summarized in the table 15.

Table 15. Variance Inflation Factor (VIF) for Independent Variables (All countries)

Variable	VIF
Trade Openness	1.19
Inflation	1.05
log(1 + Exchange Rate)	1.33
GCI	1.22
Enrollment	1.37
Tax Revenue	1.18
GDP Growth	1.03

These low VIF values suggest that the explanatory variables are sufficiently independent, and the estimated coefficients are unlikely to be biased due to multicollinearity

Next, the presence of heteroskedasticity was tested using the studentized Breusch-Pagan test. The test produced a statistic of BP = 63.80 with 7 degrees of freedom and a p-value well below 0.01, strongly rejecting the null hypothesis of homoscedastic residuals. To address this issue, the regression was re-estimated using clustered standard errors at the country level, which are robust to both heteroskedasticity and within-country over time. The results of the robustness check are presented in table 16. The core findings remain consistent: Trade openness continues

to have a highly significant positive effect on FDI, and the Global Cybersecurity Index (GCI) retains a negative and statistically significant coefficient, supporting the main hypothesis of the study. Additionally, GDP growth and the exchange rate also show robust positive relationships with FDI inflows.

Table 16. Robustness Check: Pooled OLS Regression with Clustered Standard Errors

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.390	0.190	2.058	0.040 [*]
TradeOpen	0.009	0.001	8.403	<0.001 ^{***}
Inflation	0.001	0.002	0.253	0.800
log(1 + ExchangeRate)	0.045	0.023	1.970	0.049 [*]
GCI	-0.003	0.001	-2.110	0.035 [*]
Enrollment	0.002	0.001	1.500	0.134
TaxRevenue	0.010	0.006	1.610	0.108
GDPGrowth	0.012	0.006	2.007	0.045 [*]

Note: Robust standard errors clustered at the country level.

^{***} $p < 0.001$, ^{**} $p < 0.01$, ^{*} $p < 0.05$, [·] $p < 0.1$

These diagnostics confirm that the main results are not driven by specification errors and are robust to common econometric concerns.

5.2 Estimating the Effect of Individual GCI Components on FDI (All Countries)

5.2.1. Legal Measures

In order to investigate how specific dimensions of national cybersecurity frameworks influence foreign direct investment (FDI), the Global Cybersecurity index (GCI) is disaggregated into its five components: Legal, Technical, Organizational, Capacity Development, and Cooperation. This approach allows for a more nuanced understanding of which aspects of cybersecurity readiness serve as facilitators or barriers to foreign capital inflows. In this subsection, the focus is placed on the Legal Measures component, which evaluates the existence and enforcement of national legislation related to cybersecurity, such as laws on e-transactions, data protection, cybercrime, and critical infrastructure protection.

The pooled OLS regression is re-estimated for all countries in the sample, replacing the composite GCI index with the Legal sub-index, while keeping the same set of control variables to ensure comparability across models. The estimated model is specified as follows:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Legal}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results in Table 17 indicate that the Legal component of the Global Cybersecurity Index (GCI) has a statistically significant negative effect on FDI inflows. Specifically, the coefficient for Legal is -0.0127 and significant at the 5% level ($p = 0.021$), suggesting that countries with more extensive or stringent cybersecurity legislation tend to attract lower levels of foreign direct investment, all else equal. This finding supports the idea that while legal infrastructure is essential for cybersecurity governance, it may simultaneously create regulatory burdens or uncertainties that discourage investment—especially if implementation is inconsistent or perceived as overly restrictive.

Table 17. Regression Results with Legal Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.426	0.199	2.143	0.032*
TradeOpen	0.009	0.001	8.374	<0.001***
Inflation	0.001	0.002	0.276	0.783
$\log(1 + \text{ExchangeRate})$	0.045	0.023	1.913	0.056·
Legal	-0.013	0.005	-2.312	0.021*
Enrollment	0.002	0.001	1.453	0.147
TaxRevenue	0.009	0.006	1.496	0.135
GDPGrowth	0.012	0.006	2.009	0.045*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

When compared to the model using the overall GCI index, where the coefficient on GCI was also negative and significant, the result is consistent in direction and slightly stronger in magnitude. However, the disaggregated model offers greater clarity: it suggests that the legal pillar of cybersecurity readiness may be the key driver of the negative relationship observed in the composite index. This emphasizes that it is not cybersecurity capacity in general that deters FDI, but rather the legal frameworks specifically—potentially due to concerns about regulatory rigidity, compliance costs, or uncertainty in enforcement.

Other variables perform similarly to the full GCI model. Trade Openness remains highly significant and positive ($\beta = 0.0093$, $p < 0.001$), reinforcing the role of liberal trade regimes in attracting foreign investment. GDP Growth also retains its significance ($\beta = 0.0121$, $p = 0.045$), suggesting that dynamic economic performance is a consistent pull factor for FDI

across models. The log of exchange rate is marginally significant ($\beta = 0.0447$, $p = 0.056$), as in the previous model, again suggesting a possible role of currency valuation or volatility in shaping investor decisions.

By contrast, Inflation, Enrollment in tertiary education, and Tax Revenue remain statistically insignificant. Their lack of significance in both the overall and disaggregated models suggests these macro and structural factors, while theoretically relevant, do not play a dominant role in determining FDI inflows in the sample over the observed period.

To assess potential multicollinearity among the explanatory variables, a Variance Inflation Factor (VIF) test was performed. As shown in Table 18, all VIF values in this specification remain low, ranging from 1.03 (GDP Growth) to 1.34 (Enrollment). The VIF for the Legal component itself is 1.20, suggesting only modest correlation with the other regressors. When compared to the earlier model using the composite GCI index, the VIF values are highly similar, with no indication that the substitution of the Legal indicator has increased multicollinearity. In both models, all VIFs fall well below the conventional threshold of 10, and even the more conservative cutoff of 5. These results indicate that the estimates are stable and not distorted by collinearity, thus reinforcing the credibility of the negative relationship observed between the Legal component and FDI

Table 18. Variance Inflation Factors (Legal Component Model)

Variable	VIF
Trade Openness	1.19
Inflation	1.05
log(1 + Exchange Rate)	1.34
Legal	1.20
Enrollment	1.34
Tax Revenue	1.19
GDP Growth	1.03

To verify the validity of the standard errors and test for the presence of heteroskedasticity, the studentized Breusch–Pagan test was performed. The test yielded a test statistic of 58.75 with a p-value well below 0.001, confirming the presence of heteroskedasticity in the model. This result is consistent with the previous model using the overall GCI index, where similar heteroskedasticity was observed. In both specifications, this justifies the application of robust

standard errors clustered at the country level, which account for both heteroskedasticity and within-country serial correlation over time.

After implementing the robustness check using clustered standard errors, the core findings remain stable and statistically significant (Table 19). The Legal component retains its negative and significant association with FDI at the 5% level ($p = 0.021$), reinforcing the notion that legal cybersecurity measures may act as a deterrent to foreign investors. Notably, Trade Openness remains highly significant ($p < 0.001$) and GDP Growth continues to exhibit a positive effect at the 5% level, consistent with the results obtained in the GCI model. The log-transformed exchange rate also remains marginally significant at the 10% level in both models, pointing to a consistent sensitivity of FDI to currency valuation across specifications.

Table 19. Robustness Check: Pooled OLS Regression with Legal Component (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.426	0.199	2.143	0.032 [*]
TradeOpen	0.009	0.001	8.374	<0.001 ^{***}
Inflation	0.001	0.002	0.276	0.783
log(1 + ExchangeRate)	0.045	0.023	1.913	0.056 [·]
Legal	-0.013	0.005	-2.312	0.021 [*]
Enrollment	0.002	0.001	1.453	0.147
TaxRevenue	0.009	0.006	1.496	0.135
GDPGrowth	0.012	0.006	2.009	0.045 [*]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

Importantly, the significance and direction of the Legal coefficient align closely with the negative effect previously observed for the composite GCI index. However, the magnitude of the Legal coefficient is larger in absolute terms, suggesting that the legal dimension may be a particularly influential subcomponent of cybersecurity governance. While this does not imply causality or isolate Legal as the dominant driver, it does indicate that its role within the broader cybersecurity environment deserves focused attention. These robustness-adjusted results confirm the stability of the estimates and support the conclusion that cybersecurity regulation—particularly in its legal form—can shape investment behavior across countries.

Taken together, these results underscore the importance of considering the specific dimensions of cybersecurity readiness. The disaggregation reveals that it is not cybersecurity

capacity as a whole that deters FDI, but likely specific components—such as legal obligations—that may raise the perceived risk or cost of doing business for foreign investors.

5.2.2. Technical Measures

Following the analysis of the composite GCI index and its Legal component, the model is extended to isolate the effect of Technical cybersecurity measures on FDI. This specification extends the previous models by including the Technical component of the Global Cybersecurity Index (GCI) to assess its individual effect on foreign direct investment (FDI). The model is estimated using pooled OLS with robust standard errors clustered at the country level. The equation is specified as follows:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Technical}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

This allows a more granular understanding of how specific pillars of cyber resilience shape investment patterns. The regression results (Table 20) reveal that the coefficient on the Technical variable is negative (−0.0105) and marginally significant at the 10% level ($p = 0.064$). This suggests that more intensive adoption of technical cybersecurity practices—such as firewalls, encryption, and intrusion detection systems—may exert a slight deterring effect on FDI inflows, potentially due to compliance complexities or perceived operational rigidity from foreign investors.

Table 20. Pooled OLS Regression Results with Technical Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.356	0.183	1.943	0.052 [·]
TradeOpen	0.009	0.001	8.362	<0.001 ^{***}
Inflation	0.000	0.002	0.112	0.911
log(1 + ExchangeRate)	0.046	0.023	2.000	0.046 [*]
Technical	-0.011	0.006	-1.856	0.064 [·]
Enrollment	0.002	0.001	1.435	0.152
TaxRevenue	0.010	0.006	1.676	0.094 [·]
GDPGrowth	0.012	0.006	1.991	0.047 [*]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [·] $p < 0.1$

The overall pattern of control variables remains consistent with earlier specifications. Trade openness continues to exert a strong and highly significant positive influence on FDI ($p < 0.001$), while GDP growth and the log-transformed exchange rate also remain statistically significant at the 5% level. In contrast, inflation, tertiary enrollment, and tax revenue do not demonstrate robust explanatory power in this model.

When compared with the model using the Legal component, which showed a more clearly significant negative effect on FDI ($p = 0.021$), the Technical component appears to play a weaker and less conclusive role. Likewise, its explanatory contribution is smaller than the composite GCI index, whose overall significance and policy breadth may better capture investors' perceptions of institutional stability

To assess multicollinearity within the model, a Variance Inflation Factor (VIF) test was conducted (Table 21). All VIF values are well below the conventional threshold of 10, ranging from 1.03 to 1.38. Specifically, the Technical variable yielded a VIF of 1.22, indicating a low degree of collinearity with the other explanatory variables. These results confirm that multicollinearity is not a concern in the model, and the individual estimates can be considered statistically reliable. This aligns with the earlier Legal and composite GCI models, which similarly exhibited low VIF values across regressors.

Table 21. Variance Inflation Factor (VIF) for Technical Model

Variable	VIF
TradeOpen	1.19
Inflation	1.05
$\log(1 + \text{ExchangeRate})$	1.32
Technical	1.22
Enrollment	1.38
TaxRevenue	1.18
GDPGrowth	1.03

To further validate the model incorporating the Technical component, additional diagnostic tests were conducted. The Breusch–Pagan test was applied to detect the presence of heteroskedasticity in the residuals. The test result ($BP = 64.311, df = 7, p < 0.001$) clearly indicates a rejection of the null hypothesis of homoskedasticity, suggesting that error variances are not constant across observations. Consequently, robust standard errors clustered at the

country level were employed in the final regression model to ensure consistent and unbiased estimation of coefficient variances.

The robust regression results (Table 22) reaffirm the statistical significance of several key variables. Trade openness remained highly significant at the 1% level ($p < 0.001$), while GDP growth and the log-transformed exchange rate were significant at the 5% level. The Technical cybersecurity measure was marginally significant at the 10% level ($p = 0.064$), exhibiting a negative relationship with FDI. This result is comparable in direction to the overall GCI and Legal component models but slightly weaker in magnitude and significance. It suggests that higher technical cybersecurity capacity may be perceived as a reactive policy stance or a proxy for risk, potentially deterring FDI.

Table 22. Robustness Check: Pooled OLS Regression with Technical Component (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.356	0.183	1.943	0.052 [·]
TradeOpen	0.009	0.001	8.362	<0.001 ^{***}
Inflation	0.000	0.002	0.112	0.911
log(1 + ExchangeRate)	0.046	0.023	2.000	0.046 [*]
Technical	-0.011	0.006	-1.856	0.064 [·]
Enrollment	0.002	0.001	1.435	0.152
TaxRevenue	0.010	0.006	1.676	0.094 [·]
GDPGrowth	0.012	0.006	1.991	0.047 [*]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [·] $p < 0.1$

Overall, the robustness check confirms that the findings are not sensitive to heteroskedasticity, and the results remain broadly consistent with earlier models. The Technical component, while not as strongly significant as others, still shows relevant explanatory power, reinforcing the broader argument that various dimensions of cybersecurity governance can influence foreign direct investment decisions.

5.2.3 Organizational Measures

To further investigate the disaggregated impact of cybersecurity on FDI, the next model incorporates the Organizational component of the cybersecurity framework, replacing the composite GCI index used earlier. The model specification remains consistent and is expressed as:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Organization}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

Table 23 summarizes the results obtained from a pooled OLS regression using robust standard errors clustered at the country level.

Table 23. Pooled OLS Regression Results with Organization Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.389	0.187	2.079	0.038*
TradeOpen	0.009	0.001	8.445	<0.001***
Inflation	0.001	0.002	0.350	0.726
log(1 + ExchangeRate)	0.044	0.023	1.904	0.057
Organization	-0.012	0.006	-2.089	0.037*
Enrollment	0.002	0.001	1.446	0.148
TaxRevenue	0.010	0.006	1.579	0.115
GDPGrowth	0.012	0.006	2.038	0.042*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

The Organizational cybersecurity measure is statistically significant at the 5% level ($p = 0.037$) and negatively associated with FDI inflows. This suggests that more intensive institutional cybersecurity structures may be interpreted by investors as responses to underlying digital threats or regulatory complexities, potentially deterring foreign capital. The direction and magnitude of this effect are consistent with those observed for the Legal and Technical components, further reinforcing the hypothesis that some elements of cybersecurity governance may carry unintended signals for foreign investors.

Other control variables maintain similar patterns as in previous models. Trade openness remains highly significant ($p < 0.001$) with a positive coefficient, while GDP growth and exchange rate levels are both significant at the 5% and 10% levels, respectively. Inflation and tax revenue continue to show no significant impact on FDI.

Thus, the analysis of the Organizational measure underscores the importance of institutional structures in shaping foreign investors' perceptions of cyber readiness. Yet, the persistence of a negative association raises questions about how these organizational efforts are interpreted across different investment environments.

The Variance Inflation Factor (VIF) test once again indicates no multicollinearity concerns, with all VIF values remaining well below the conventional threshold of 5.

Table 24. Variance Inflation Factor (VIF) for Organization Component Model

Variable	VIF
TradeOpen	1.19
Inflation	1.06
log(1 + ExchangeRate)	1.35
Organization	1.22
Enrollment	1.34
TaxRevenue	1.18
GDPGrowth	1.03

The Breusch–Pagan test ($BP = 62.41, p < 0.001$) suggests the presence of heteroskedasticity, warranting the use of clustered standard errors. Robustness checks (Table 25) confirm the stability of the results.

Table 25. Robustness Check: Pooled OLS Regression with Organizational Component (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.389	0.187	2.079	0.038*
TradeOpen	0.009	0.001	8.445	<0.001***
Inflation	0.001	0.002	0.350	0.726
log(1 + ExchangeRate)	0.044	0.023	1.904	0.057·
Organization	-0.012	0.006	-2.089	0.037*
Enrollment	0.002	0.001	1.446	0.148
TaxRevenue	0.010	0.006	1.579	0.115
GDPGrowth	0.012	0.006	2.038	0.042*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

Overall, the Organization component demonstrates a statistically significant negative relationship with FDI, consistent with the pattern observed for the Legal and Technical components. However, its coefficient is slightly larger in magnitude than the Legal component and more robust in significance compared to the Technical one, which only approached significance at the 10% level. This suggests that institutional and regulatory structures related to cybersecurity may exert a stronger deterrent effect on FDI than purely technical measures.

The findings underscore that while all three components signal some caution from investors, organizational governance appears to be particularly influential.

5.2.4 Capacity Development

To further investigate the individual components of the cybersecurity index, the next model incorporates the Capacity Development pillar. The model specification remains consistent, regressing the logged FDI inflows on the baseline control variables along with the CapacityDev variable:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{CapacityDev}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results are presented in Table 24. The coefficient on CapacityDev is negative and statistically significant at the 5% level, indicating that higher scores in capacity development are associated with lower FDI inflows. Specifically, a one-unit increase in this variable corresponds to a 0.0147 decrease in logged FDI. This magnitude is slightly larger than that of the Organization component (−0.0125) and Legal (−0.0127), and considerably more significant than Technical, which only neared significance at the 10% level.

Table 26. Pooled OLS Regression Results with Capacity Development Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.398	0.186	2.134	0.033*
TradeOpen	0.009	0.001	8.419	<0.001***
Inflation	0.001	0.002	0.347	0.729
log(1 + ExchangeRate)	0.043	0.023	1.883	0.060 [·]
CapacityDev	-0.015	0.006	-2.405	0.016*
Enrollment	0.002	0.001	1.595	0.111
TaxRevenue	0.010	0.006	1.685	0.092 [·]
GDPGrowth	0.012	0.006	1.947	0.052 [·]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [·] $p < 0.1$

This pattern reinforces the broader narrative that institutional and policy-centric cybersecurity measures, rather than technical capacity alone, might trigger caution among foreign investors. From a policy perspective, while building capacity is essential for long-term digital resilience,

its short-term signaling effect may raise perceived compliance costs or operational risks in the eyes of investors.

The model passed the multicollinearity check. All Variance Inflation Factor (VIF) values remain well below the common threshold of 5 (Table 27), with the highest VIF being 1.35 for Enrollment. The VIF for Capacity Development itself is 1.21, suggesting low collinearity and supporting the stability of the estimated coefficients.

Table 27. Variance Inflation Factor (VIF) for Capacity Development Component Model

Variable	VIF
Trade Openness	1.19
Inflation	1.05
log(1 + Exchange Rate)	1.34
Capacity Development	1.21
Enrollment	1.35
Tax Revenue	1.18
GDP Growth	1.03

The Breusch-Pagan test indicates the presence of heteroskedasticity (BP = 67.197, $p < 0.001$). To ensure robustness, heteroskedasticity-robust standard errors clustered at the country level were applied (Table 28). The key findings—including the negative and significant coefficient on Capacity Development—remain robust under this specification, strengthening confidence in the results.

Table 28. Robustness Check: Pooled OLS Regression with CapacityDev Component (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.398	0.186	2.134	0.033*
Trade Openness	0.009	0.001	8.419	<0.001***
Inflation	0.001	0.002	0.347	0.729
log(1 + Exchange Rate)	0.043	0.023	1.883	0.060
CapacityDev	-0.015	0.006	-2.405	0.016*
Enrollment	0.002	0.001	1.595	0.111
Tax Revenue	0.010	0.006	1.685	0.092
GDP Growth	0.012	0.006	1.947	0.052

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

In summary, this model highlights an important pattern: while foundational economic indicators such as trade openness continue to attract FDI, several institutional quality components—including capacity development—may deter investors, at least in the short run or in specific regional or policy contexts.

5.2.5 International Cooperation

To assess the role of international cooperation in shaping foreign direct investment (FDI) inflows, the following econometric model was estimated using OLS with cluster-robust standard errors at the country level:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Cooperation}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

In this model (Table 29), the coefficient for the variable Cooperation, capturing international cooperation measures, is negative (-0.007) and statistically insignificant ($p = 0.187$). This result indicates that international cooperation, as operationalized in this study, does not exhibit a meaningful direct relationship with FDI inflows in the examined sample. This may reflect either measurement limitations or the fact that cooperation frameworks alone, absent enforceable legal or administrative reforms, do not substantially alter investor behavior.

Table 29. Pooled OLS Regression Results with Cooperation Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.335	0.182	1.841	0.066 [·]
TradeOpen	0.009	0.001	8.324	<0.001 ^{***}
Inflation	0.000	0.002	0.118	0.906
$\log(1 + \text{ExchangeRate})$	0.048	0.023	2.099	0.036 [*]
Cooperation	-0.007	0.006	-1.322	0.187
Enrollment	0.002	0.001	1.239	0.216
TaxRevenue	0.010	0.006	1.645	0.100 [·]
GDPGrowth	0.012	0.006	1.972	0.049 [*]

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [·] $p < 0.1$

This finding contrasts with several of the previously analyzed institutional components. For example, the Legal component was found to be statistically significant with a negative coefficient ($p = 0.021$), suggesting that legal risks and judicial quality matter more than international coordination efforts. Similarly, the Technical and Organizational dimensions

yielded coefficients significant at the 10% and 5% levels, respectively, underscoring that the operational efficiency and structure of domestic institutions influence investment attractiveness more than multilateral cooperation alone.

Furthermore, Capacity Development exhibited a significant negative effect ($p = 0.016$), further reinforcing the idea that targeted institutional strengthening may be a more decisive factor for investors than cooperative frameworks, which may lack enforceability or clarity.

Regarding diagnostic checks, the Variance Inflation Factor (VIF) values for all independent variables remained low ($\max VIF = 1.33$), suggesting that multicollinearity is not a concern.

Table 30. Variance Inflation Factor (VIF) for Cooperation Component Model

Variable	VIF
TradeOpen	1.19
Inflation	1.05
$\log(1 + \text{ExchangeRate})$	1.31
Cooperation	1.16
Enrollment	1.33
TaxRevenue	1.18
GDPGrowth	1.03

To ensure the validity of the estimates, a robustness check was performed using heteroskedasticity-consistent standard errors clustered at the country level. The Breusch-Pagan test confirmed the presence of heteroskedasticity ($BP = 63.964, df = 7, p < 0.001$), justifying the use of robust standard errors. After this adjustment, the model results remained largely consistent with the initial findings.

Table 31. Robustness Check: Pooled OLS Regression with Cooperation Component (All Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.335	0.182	1.841	0.066 [*]
TradeOpen	0.009	0.001	8.324	<0.001 ^{***}
Inflation	0.000	0.002	0.118	0.906
log(1 + ExchangeRate)	0.048	0.023	2.099	0.036 [*]
Cooperation	-0.007	0.006	-1.322	0.187
Enrollment	0.002	0.001	1.239	0.216
TaxRevenue	0.010	0.006	1.645	0.100
GDPGrowth	0.012	0.006	1.972	0.049 [*]

Note: Robust standard errors clustered at the country level.

^{***} $p < 0.001$, ^{**} $p < 0.01$, ^{*} $p < 0.05$, [·] $p < 0.1$

Specifically, the coefficient for the International Cooperation component remained statistically insignificant, suggesting that its association with FDI inflows is not robust to specification changes. This contrasts with components such as Legal and Capacity Development, whose effects remained statistically significant even after the robustness correction, indicating greater reliability.

Overall, the robustness check reinforces the conclusion that international cooperation, unlike legal or technical readiness, does not exhibit a consistent or strong relationship with FDI inflows in the observed dataset.

5.3. Pooled Regression Results for Developed Countries

This subsection presents the estimation results for the sub-sample of developed countries, using the same baseline model specification employed in the earlier sections. The analysis aims to assess whether the determinants of FDI inflows differ in advanced economies, particularly in relation to institutional quality as captured by the Global Competitiveness Index (GCI).

The model estimated is as follows:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{GCI}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results (Table 32) show that Trade Openness remains a highly significant and positive predictor of FDI, with a coefficient of 0.009 ($p < 0.001$), consistent with the findings for the full sample. Tax Revenue and GDP Growth are also positively and significantly

associated with FDI at the 5% level, suggesting that robust fiscal capacity and economic performance are important in attracting investment in developed economies.

In contrast, the Global Competitiveness Index (GCI), which serves as an aggregated institutional quality measure, is not statistically significant ($p = 0.731$). This result differs from the full sample, where various disaggregated components of institutional quality—including legal, technical, organizational, and capacity development—showed significant associations with FDI. The insignificance of GCI in this context may reflect the lower cross-country variance in institutional quality among developed countries, which limits its explanatory power.

Other control variables such as Inflation, Exchange Rate, and Enrollment are also found to be statistically insignificant, with relatively small coefficient values.

Table 32. Pooled OLS Regression Results (Developed Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.054	0.321	-0.169	0.866
TradeOpen	0.009	0.001	7.276	<0.001***
Inflation	-0.022	0.020	-1.114	0.266
log(1 + ExchangeRate)	-0.009	0.071	-0.124	0.902
GCI	0.001	0.004	0.344	0.731
Enrollment	0.001	0.001	0.640	0.523
TaxRevenue	0.025	0.010	2.482	0.014*
GDPGrowth	0.034	0.016	2.196	0.029*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $p < 0.1$

To ensure the reliability of the estimates, multicollinearity was assessed using the Variance Inflation Factor (VIF). All values (Table 33) range between 1.06 and 1.22, indicating low multicollinearity among the regressors and supporting the model's specification.

Table 33. Variance Inflation Factor (VIF) for Independent Variables (Developed countries)

Variable	VIF
TradeOpen	1.16
Inflation	1.21
log(1 + ExchangeRate)	1.06
GCI	1.20
Enrollment	1.22
TaxRevenue	1.15
GDPGrowth	1.12

The Breusch-Pagan test yields a statistically significant result ($BP = 38.484, df = 7, \$p < 0.001\$$), suggesting the presence of heteroskedasticity in the residuals. Therefore, robust standard errors clustered by country were applied. The results remained largely consistent with the initial model, reinforcing the stability of the estimated coefficients. While the Global Competitiveness Index (GCI) variable was not statistically significant in this particular subsample, the robustness test confirmed its positive coefficient, aligning with theoretical expectations that greater competitiveness supports innovation capacity. This stands in contrast to the full-sample results, where GCI showed stronger and statistically significant effects.

Table 34. Robustness Check: Pooled OLS Regression with Clustered Standard Errors

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.054	0.321	-0.169	0.866
TradeOpen	0.009	0.001	7.276	<0.001***
Inflation	-0.022	0.020	-1.114	0.266
log(1 + ExchangeRate)	-0.009	0.071	-0.124	0.902
GCI	0.001	0.004	0.344	0.731
Enrollment	0.001	0.001	0.640	0.523
TaxRevenue	0.025	0.010	2.482	0.014*
GDPGrowth	0.034	0.016	2.196	0.029*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

The consistency in sign and scale suggests that GCI may still play a relevant, albeit more indirect, role in developed economies, where baseline competitiveness levels are already high. The robustness of key controls such as TradeOpenness, TaxRevenue, and GDPGrowth further confirms that the model specification yields credible and stable results for this group of countries.

In summary, for developed countries, structural macroeconomic factors like trade openness and fiscal capacity play a more decisive role in driving innovation. Although GCI is not statistically significant, its directionally positive impact is consistent with theoretical expectations. In the following sections, individual components of the institutional framework—Legal, Technical, Organizational, Capacity Development, Organization—will be analyzed separately to assess their differentiated effects across developed countries.

5.4 Estimating the Effect of Individual GCI Components on FDI (Developed Countries)

5.4.1. Legal Measures

This subsection analyzes the role of legal cybersecurity frameworks in shaping foreign direct investment (FDI) inflows within developed countries. The focus lies on the Legal component of the Global Cybersecurity Index (GCI), which reflects the presence and enforcement of national cybersecurity legislation, including laws on data protection, cybercrime, and electronic transactions.

The model specification used here is consistent with that applied in the previous sections. Specifically, the following fixed effects panel regression is estimated:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Legal}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results (Table 35) for the developed-country subsample reveal that the Legal variable has a coefficient of -0.00595 , with a standard error of 0.01764 and a p-value of 0.736 . The t-statistic is -0.337 , indicating that the estimate is far from statistical significance. These results suggest that cybersecurity-related legal frameworks do not exert a significant influence on FDI inflows in high-income economies. In contrast to earlier findings for the full sample of countries—where the Legal component was negatively associated with FDI—no comparable effect is observed within this more homogenous group of developed states.

Table 35. Regression Results with Legal Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.118	0.357	0.329	0.742
TradeOpen	0.009	0.001	7.358	<0.001***
Inflation	-0.017	0.019	-0.899	0.370
$\log(1 + \text{ExchangeRate})$	-0.006	0.071	-0.084	0.933
Legal	-0.006	0.018	-0.337	0.736
Enrollment	0.001	0.001	0.735	0.463
TaxRevenue	0.025	0.010	2.525	0.012*
GDPGrowth	0.033	0.015	2.139	0.033*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

To ensure that multicollinearity does not affect the interpretation of the coefficient estimates, a Variance Inflation Factor (VIF) test was conducted (Table 36). All explanatory variables

displayed VIF values well below conventional thresholds. Specifically, the Legal variable has a VIF of 1.10, suggesting low correlation with other regressors and confirming the model's internal consistency.

Table 36. VIF for Legal Component Model (Developed Countries)

Variable	VIF
TradeOpen	1.16
Inflation	1.13
log(1 + ExchangeRate)	1.06
Legal	1.10
Enrollment	1.21
TaxRevenue	1.15
GDPGrowth	1.11

A studentized Breusch–Pagan test was performed to examine the presence of heteroskedasticity in the residuals. The test yielded a statistically significant result ($BP = 35.089, df = 7, p < 0.001$), indicating that heteroskedasticity is present. To address this, the model was re-estimated using robust standard errors clustered at the country level. The adjusted results show that the Legal coefficient remains statistically insignificant and virtually unchanged in magnitude, confirming the robustness of the initial findings.

Table 37. Robustness Check: Pooled OLS Regression with Legal Component (Developed Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.118	0.357	0.329	0.742
TradeOpen	0.009	0.001	7.358	<0.001***
Inflation	-0.017	0.019	-0.899	0.370
log(1 + ExchangeRate)	-0.006	0.071	-0.084	0.933
Legal	-0.006	0.018	-0.337	0.736
Enrollment	0.001	0.001	0.735	0.463
TaxRevenue	0.025	0.010	2.525	0.012*
GDPGrowth	0.033	0.015	2.139	0.033*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

Taken together, the results indicate that legal cybersecurity capacity does not have a measurable effect on FDI inflows in developed countries. A likely explanation lies in the limited cross-country variation in legal standards among high-income states, where a strong

rule of law and regulatory predictability are already institutionalized. In such contexts, incremental improvements in legal cybersecurity frameworks may not materially shift investor expectations. Instead, foreign investors may treat legal protections as a baseline condition and place greater emphasis on other economic fundamentals—such as trade openness, fiscal policy, and market performance—when making investment decisions.

From a policy perspective, this implies that the mere presence of cybersecurity-related legal frameworks is unlikely to serve as a competitive advantage in attracting FDI among developed countries. Policymakers should instead focus on ensuring regulatory clarity, efficient enforcement, and alignment with international standards, which can reduce legal uncertainty and compliance costs without imposing unnecessary rigidity.

5.4.2. Technical Measures

This subsection investigates the role of technical cybersecurity capacity in shaping foreign direct investment (FDI) inflows across developed economies. The analysis focuses on the Technical component of the Global Cybersecurity Index (GCI).

The empirical model applied is the same as in the previous sections and is specified as follows:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Technical}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The estimation results (Table 38) show that the coefficient for the Technical variable is 0.00501, with a standard error of 0.01908, a t-value of 0.263, and a p-value of 0.793. This indicates that the effect is statistically insignificant. The sign is positive, but the magnitude is very small, and the lack of significance suggests that variations in technical cybersecurity capacity are not systematically associated with changes in FDI inflows among developed economies.

Table 38. Regression Results with Technical Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.038	0.313	-0.121	0.904
TradeOpen	0.009	0.001	7.273	<0.001***
Inflation	-0.021	0.018	-1.184	0.237
log(1 + ExchangeRate)	-0.009	0.071	-0.128	0.899
Technical	0.005	0.019	0.263	0.793
Enrollment	0.001	0.002	0.637	0.525
TaxRevenue	0.025	0.010	2.483	0.013*
GDPGrowth	0.034	0.015	2.192	0.029*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

To check for multicollinearity, a Variance Inflation Factor (VIF) test was performed (Table 39). All VIF values are well below the conventional threshold of 5. The VIF for the Technical variable is 1.17, which confirms that multicollinearity is not a concern and that the inclusion of this variable does not distort the estimates of other regressors.

Table 39. VIF for Technical Component Model (Developed Countries)

Variable	VIF
TradeOpen	1.16
Inflation	1.18
log(1 + ExchangeRate)	1.07
Technical	1.17
Enrollment	1.22
TaxRevenue	1.15
GDPGrowth	1.11

A Breusch–Pagan test for heteroskedasticity was also conducted, yielding a test statistic of 42.28 with 7 degrees of freedom and a p-value well below 0.001. This confirms the presence of heteroskedasticity in the residuals. Consequently, a robustness check was conducted using clustered standard errors at the country level. The results (Table 40) remain consistent: the coefficient for Technical stays insignificant and nearly identical in magnitude. Key control variables such as Trade Openness, Tax Revenue, and GDP Growth retain their statistical significance under this adjustment.

Table 40. Robustness Check: Pooled OLS Regression with Technical Component (Developed Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.038	0.313	-0.121	0.904
TradeOpen	0.009	0.001	7.273	<0.001***
Inflation	-0.021	0.018	-1.184	0.237
log(1 + ExchangeRate)	-0.009	0.071	-0.128	0.899
Technical	0.005	0.019	0.263	0.793
Enrollment	0.001	0.002	0.637	0.525
TaxRevenue	0.025	0.010	2.483	0.013*
GDPGrowth	0.034	0.015	2.192	0.029*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In summary, there is no evidence that the level of technical cybersecurity capacity has a significant influence on foreign direct investment in developed countries. This result may be attributed to low variation in technical readiness among high-income economies, where digital infrastructure and operational cybersecurity mechanisms are already well-established. As such, foreign investors may not consider this component a differentiating factor when assessing the investment climate. Instead, they appear more responsive to broader economic indicators, such as trade openness and fiscal capacity.

5.4.3. Organizational Measures

This subsection evaluates the relationship between the organizational dimension of cybersecurity capacity and foreign direct investment (FDI) in developed countries. The Organizational variable from the Global Cybersecurity Index (GCI) is included in the baseline model, replacing other GCI components, while retaining all other covariates to maintain comparability.

The model used follows the same structure as in previous regressions:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Organization}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The results of the pooled OLS regression indicate that the coefficient on the Organization variable is 0.00219, with a standard error of 0.01415 and a p-value of 0.877. The t-statistic is 0.155, which is well below conventional significance levels. These results confirm that the organizational aspect of cybersecurity does not have a statistically significant effect on FDI

inflows in developed economies. The coefficient is also economically negligible, indicating that even if statistically significant, the impact on FDI would likely be minimal.

Table 41. Regression Results with Organizational Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.002	0.291	-0.006	0.995
TradeOpen	0.009	0.001	7.304	<0.001***
Inflation	-0.020	0.020	-0.993	0.322
log(1 + ExchangeRate)	-0.008	0.071	-0.112	0.911
Organization	0.002	0.014	0.155	0.877
Enrollment	0.001	0.001	0.680	0.497
TaxRevenue	0.025	0.010	2.502	0.013*
GDPGrowth	0.034	0.016	2.178	0.030*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

A Variance Inflation Factor (VIF) test was performed to assess multicollinearity (Table 42). All variables remain within acceptable bounds, with the VIF for the Organization variable measured at 1.18. This indicates no evidence of multicollinearity, and the estimates are unlikely to be biased due to correlation among explanatory variables.

Table 42. VIF for Organizational Component Model (Developed Countries)

Variable	VIF
TradeOpen	1.16
Inflation	1.19
log(1 + ExchangeRate)	1.06
Organization	1.18
Enrollment	1.22
TaxRevenue	1.16
GDPGrowth	1.11

To test for heteroskedasticity, the studentized Breusch–Pagan test was applied. The test produced a statistic of 36.385 with 7 degrees of freedom and a p-value < 0.001, confirming the presence of heteroskedasticity. As a result, the model was re-estimated using robust standard errors clustered at the country level. The results of this robustness check (Table 43) confirm the initial findings: the coefficient for Organization remains insignificant, while Trade

Openness, Tax Revenue, and GDP Growth continue to be statistically significant at the 5% level.

Table 43. Robustness Check: Pooled OLS Regression with Organizational Component (Developed Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.002	0.291	-0.006	0.995
TradeOpen	0.009	0.001	7.304	<0.001***
Inflation	-0.020	0.020	-0.993	0.322
log(1 + ExchangeRate)	-0.008	0.071	-0.112	0.911
Organization	0.002	0.014	0.155	0.877
Enrollment	0.001	0.001	0.680	0.497
TaxRevenue	0.025	0.010	2.502	0.013*
GDPGrowth	0.034	0.016	2.178	0.030*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In sum, the analysis provides no evidence that the organizational component of national cybersecurity capacity significantly influences FDI inflows in developed countries. This may reflect a convergence in organizational maturity among high-income states, reducing cross-country variation in this dimension. Investors may perceive the presence of formal cybersecurity institutions and strategies as a baseline feature of developed economies, rather than a source of competitive advantage in investment decisions.

5.4.4. Capacity Development

To assess whether national efforts in capacity development affect foreign direct investment (FDI) in developed economies, the baseline model is estimated with the CapacityDev variable as the cybersecurity dimension of interest. All other explanatory variables remain unchanged, ensuring consistency across model specifications.

The regression model is specified as follows:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{CapacityDev}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The estimation results show that the coefficient on the CapacityDev variable is 0.00728, with a standard error of 0.01602, a t-value of 0.454, and a p-value of 0.650. This result is statistically

insignificant and economically negligible. Therefore, there is no evidence that variation in capacity development in the cybersecurity domain has a meaningful influence on FDI inflows in developed countries.

Table 44. Regression Results with Capacity Development Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.073	0.326	-0.224	0.823
TradeOpen	0.009	0.001	7.241	<0.001***
Inflation	-0.023	0.019	-1.200	0.231
log(1 + ExchangeRate)	-0.008	0.071	-0.111	0.912
CapacityDev	0.007	0.016	0.454	0.650
Enrollment	0.001	0.002	0.617	0.538
TaxRevenue	0.025	0.010	2.514	0.012*
GDPGrowth	0.034	0.016	2.181	0.030*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

To test for multicollinearity, a Variance Inflation Factor (VIF) analysis was conducted (Table 45). The VIF for CapacityDev is 1.15, and all other predictors also fall well below the standard threshold of 5. This confirms that multicollinearity is not distorting the regression results and that the coefficient estimates are reliable.

Table 45. VIF for Capacity Development Component Model (Developed Countries)

Variable	VIF
TradeOpen	1.17
Inflation	1.18
log(1 + ExchangeRate)	1.05
CapacityDev	1.15
Enrollment	1.22
TaxRevenue	1.15
GDPGrowth	1.11

A Breusch–Pagan test was used to evaluate the presence of heteroskedasticity in the residuals. The test statistic was 37.114 with 7 degrees of freedom, and the p-value was less than 0.001, indicating heteroskedasticity. To address this, the model was re-estimated using robust standard errors clustered at the country level. The results (Table 46) remained stable: the CapacityDev coefficient retained its sign, remained statistically insignificant, and did not materially change in size. The significance of control variables such as Trade Openness, Tax Revenue, and GDP Growth was unaffected, further confirming the consistency of the findings.

Table 46. Robustness Check: Pooled OLS Regression with Capacity Development Component (Developed Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.073	0.326	-0.224	0.823
TradeOpen	0.009	0.001	7.241	<0.001***
Inflation	-0.023	0.019	-1.200	0.231
log(1 + ExchangeRate)	-0.008	0.071	-0.111	0.912
CapacityDev	0.007	0.016	0.454	0.650
Enrollment	0.001	0.002	0.617	0.538
TaxRevenue	0.025	0.010	2.514	0.012*
GDPGrowth	0.034	0.016	2.181	0.030*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In conclusion, capacity development efforts in cybersecurity—such as training, education, and institutional development—do not appear to influence FDI inflows in high-income economies. This may be due to limited cross-country variation in this area or because investors take such efforts as given in developed countries. It is also possible that these initiatives are perceived as long-term institutional investments rather than short-term drivers of investment attractiveness. While capacity development may be crucial for building national resilience, its role as an immediate factor in shaping foreign investor behavior appears limited in developed contexts.

5.4.5. International Cooperation

The last model in this section examines whether the level of international cooperation in cybersecurity has an effect on foreign direct investment (FDI) in developed economies. The Cooperation component of the Global Cybersecurity Index (GCI) is included in the baseline regression model, replacing other cybersecurity dimensions, while keeping all control variables unchanged for comparability.

The specification remains identical to previous models:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Cooperation}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The estimation results indicate that the coefficient for Cooperation is 0.01128, with a standard error of 0.01266, a t-value of 0.892, and a p-value of 0.373. This shows no statistically

significant relationship between international cooperation in cybersecurity and FDI inflows for developed countries. Although the coefficient is positive, its magnitude is small and economically negligible.

Table 47. Regression Results with Cooperation Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.096	0.257	-0.374	0.708
TradeOpen	0.009	0.001	7.181	<0.001***
Inflation	-0.025	0.021	-1.202	0.230
log(1 + ExchangeRate)	-0.010	0.071	-0.139	0.890
Cooperation	0.011	0.013	0.892	0.373
Enrollment	0.001	0.001	0.598	0.550
TaxRevenue	0.024	0.010	2.416	0.016*
GDPGrowth	0.035	0.016	2.259	0.025*

Note: Robust standard errors clustered at the country level.
 *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Variance Inflation Factor (VIF) diagnostics confirm that multicollinearity is not a concern, with the Cooperation variable showing a VIF of 1.20 and all other regressors also well below the threshold of 5.

Table 48. VIF for Cooperation Component Model (Developed Countries)

Variable	VIF
TradeOpen	1.16
Inflation	1.21
log(1 + ExchangeRate)	1.06
Cooperation	1.20
Enrollment	1.22
TaxRevenue	1.16
GDPGrowth	1.12

A Breusch–Pagan test for heteroskedasticity returns a statistic of 35.727 with 7 degrees of freedom and a p-value below 0.001, indicating that the null hypothesis of homoskedastic residuals is rejected. Consequently, the regression was re-estimated using robust standard errors clustered at the country level. The robustness check yields results consistent with the initial estimation: the Cooperation coefficient remains positive but statistically insignificant,

while Trade Openness, Tax Revenue, and GDP Growth remain positive and statistically significant at the 5% level.

Table 49. Robustness Check: Pooled OLS Regression with Cooperation Component (Developed

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	-0.096	0.257	-0.374	0.708
TradeOpen	0.009	0.001	7.181	<0.001***
Inflation	-0.025	0.021	-1.202	0.230
log(1 + ExchangeRate)	-0.010	0.071	-0.139	0.890
Cooperation	0.011	0.013	0.892	0.373
Enrollment	0.001	0.001	0.598	0.550
TaxRevenue	0.024	0.010	2.416	0.016*
GDPGrowth	0.035	0.016	2.259	0.025*

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Countries)

Overall, the results suggest that international cooperation in cybersecurity does not appear to be a determining factor for attracting FDI in developed economies. This may be because such cooperation frameworks are common among high-income countries and thus do not provide a distinct competitive advantage in the eyes of foreign investors. In these contexts, investors may prioritize other determinants such as market access, fiscal capacity, and economic growth potential, while considering cooperation agreements as a standard feature of advanced digital governance systems.

5.5. Pooled Regression Results for Emerging Countries

This subsection assesses the relationship between overall national cybersecurity capacity, as measured by the Global Cybersecurity Index (GCI), and foreign direct investment (FDI) inflows in emerging economies. The baseline model specification remains identical to that used in previous sections, ensuring full comparability across country groups:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{GCI}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results (Table 50) show that the coefficient for GCI is -0.00322 , with a standard error of 0.00132 , a t-value of -2.441 , and a p-value of 0.0149 . This negative and

statistically significant result at the 5% level suggests that, within the group of emerging economies, higher scores on the overall GCI are associated with lower levels of FDI inflows. While the magnitude of the coefficient is small, the sign implies that improvements in overall cybersecurity capacity could be perceived by some investors as increasing regulatory burden or compliance costs, potentially reducing investment attractiveness in the short run.

Table 50. Pooled OLS Regression Results (Emerging Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.586	0.204	2.869	0.004**
TradeOpen	0.009	0.002	5.441	<0.001***
Inflation	-0.001	0.003	-0.235	0.814
log(1 + ExchangeRate)	0.053	0.022	2.465	0.014*
GCI	-0.003	0.001	-2.441	0.015*
Enrollment	0.003	0.002	1.490	0.137
TaxRevenue	-0.002	0.007	-0.338	0.735
GDPGrowth	0.004	0.005	0.748	0.455

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The Variance Inflation Factor (VIF) test indicates no issues of multicollinearity (Table 51). The VIF for the GCI variable is 1.14, and all other explanatory variables are well below the conventional threshold of 5, ensuring that the estimates are not distorted by collinearity.

Table 51. Variance Inflation Factor (VIF) for Independent Variables (Emerging countries)

Variable	VIF
TradeOpen	1.22
Inflation	1.07
log(1 + ExchangeRate)	1.17
GCI	1.14
Enrollment	1.23
TaxRevenue	1.14
GDPGrowth	1.04

A Breusch–Pagan test for heteroskedasticity yields a test statistic of 21.761 with 7 degrees of freedom and a p-value of 0.0028, indicating that heteroskedasticity is present. To address this, the model was re-estimated using robust standard errors clustered at the country level. The significance and magnitude of the GCI coefficient remain virtually unchanged under this specification, confirming the robustness of the result. Control variables such as Trade Openness and Exchange Rate also remain statistically significant, while most others are not.

Table 52. Robustness Check: Pooled OLS Regression with Clustered Standard Errors

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.586	0.204	2.869	0.004**
TradeOpen	0.009	0.002	5.441	<0.001***
Inflation	-0.001	0.003	-0.235	0.814
log(1 + ExchangeRate)	0.053	0.022	2.465	0.014*
GCI	-0.003	0.001	-2.441	0.015*
Enrollment	0.003	0.002	1.490	0.137
TaxRevenue	-0.002	0.007	-0.338	0.735
GDPGrowth	0.004	0.005	0.748	0.455

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In summary, the findings for emerging economies indicate a counterintuitive negative relationship between overall national cybersecurity capacity and FDI inflows. This result may reflect that in emerging markets, improvements in cybersecurity frameworks are often accompanied by new regulatory requirements, compliance mechanisms, and enforcement practices, which can increase operational costs for foreign firms. While such measures are crucial for long-term digital security, they may deter certain types of investment, particularly those seeking a more flexible regulatory environment.

5.6 Estimating the Effect of Individual GCI Components on FDI (Emerging Countries)

5.6.1. Legal Measures

To examine whether the legal dimension of cybersecurity capacity influences foreign direct investment (FDI) in emerging economies, the baseline model is re-estimated with the Legal component of the Global Cybersecurity Index (GCI) as the cybersecurity variable of interest. All other covariates are retained to ensure comparability with previous specifications.

The model is specified as:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Legal}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results show that the Legal coefficient is -0.01348 , with a standard error of 0.00591 , a t-value of -2.281 , and a p-value of 0.0229 . This indicates a negative and statistically significant relationship at the 5% level between the strength of cybersecurity-related legal frameworks and FDI inflows in emerging economies. Although the estimated effect size is

small, the negative sign suggests that stronger legal cybersecurity measures may deter some types of foreign investment—possibly due to increased regulatory compliance costs or more stringent enforcement environments.

Table 53. Regression Results with Legal Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.597	0.213	2.808	0.005**
TradeOpen	0.009	0.002	5.475	<0.001***
Inflation	-0.001	0.002	-0.258	0.797
log(1 + ExchangeRate)	0.053	0.022	2.399	0.017*
Legal	-0.013	0.006	-2.281	0.023*
Enrollment	0.002	0.002	1.308	0.191
TaxRevenue	-0.003	0.007	-0.418	0.676
GDPGrowth	0.003	0.005	0.675	0.500

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The Variance Inflation Factor (VIF) test confirms the absence of problematic multicollinearity. The VIF for the Legal variable is 1.13, and all other regressors are below the conventional threshold of 5.

Table 54. VIF for Legal Component Model (Emerging Countries)

Variable	VIF
TradeOpen	1.21
Inflation	1.07
log(1 + ExchangeRate)	1.17
Legal	1.13
Enrollment	1.19
TaxRevenue	1.17
GDPGrowth	1.04

A Breusch–Pagan test for heteroskedasticity returns a statistic of 19.143 with 7 degrees of freedom and a p-value of 0.0078, indicating that the null hypothesis of homoskedasticity is rejected. To address this, robust standard errors clustered at the country level are applied. The robustness check (Table 55) confirms the initial results: the Legal variable remains negative

and statistically significant, while the magnitude of the coefficient is essentially unchanged. Key control variables such as Trade Openness and Exchange Rate remain significant, consistent with expectations.

Table 55. Robustness Check: Pooled OLS Regression with Legal Component (Emerging Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.597	0.213	2.808	0.005**
TradeOpen	0.009	0.002	5.475	<0.001***
Inflation	-0.001	0.002	-0.258	0.797
log(1 + ExchangeRate)	0.053	0.022	2.399	0.017*
Legal	-0.013	0.006	-2.281	0.023*
Enrollment	0.002	0.002	1.308	0.191
TaxRevenue	-0.003	0.007	-0.418	0.676
GDPGrowth	0.003	0.005	0.675	0.500

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In summary, the evidence suggests that in emerging economies, stronger legal cybersecurity frameworks are associated with lower FDI inflows. This may reflect investor concerns that enhanced legal measures could impose additional operational and compliance burdens, especially in markets where legal processes may be less predictable or where enforcement can introduce bureaucratic delays. While these measures are important for building a secure digital environment, policymakers in emerging economies may need to balance regulatory stringency with policies that maintain investment attractiveness.

5.6.2. Technical Measures

This model examines whether the technical dimension of cybersecurity capacity is associated with foreign direct investment (FDI) inflows in emerging economies. The Technical component of the Global Cybersecurity Index (GCI) is used as the cybersecurity-related explanatory variable, while the remaining covariates are unchanged from the baseline specification to ensure comparability.

The model is specified as:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Technical}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The estimation results show that the coefficient on Technical is -0.01194 , with a standard error of 0.00613 , a t-value of -1.949 , and a p-value of 0.0518 . This coefficient is negative and marginally significant at the 10% level, suggesting a weak inverse relationship between technical cybersecurity capacity and FDI inflows in emerging economies. While the magnitude is modest, the sign is consistent with the findings for the legal dimension, hinting that more advanced technical cybersecurity measures could be perceived by certain investors as raising operational costs or compliance demands.

Table 56. Regression Results with Technical Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.538	0.197	2.733	0.006**
TradeOpen	0.009	0.002	5.218	<0.001***
Inflation	-0.001	0.002	-0.386	0.699
log(1 + ExchangeRate)	0.054	0.022	2.475	0.014*
Technical	-0.012	0.006	-1.949	0.052
Enrollment	0.002	0.002	1.398	0.163
TaxRevenue	-0.001	0.007	-0.188	0.851
GDPGrowth	0.003	0.005	0.717	0.473

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

Variance Inflation Factor (VIF) values confirm that multicollinearity is not a concern (Table 57). The VIF for the Technical variable is 1.14, and all other predictors are below the threshold of 5.

Table 57. VIF for Technical Component Model (Emerging Countries)

Variable	VIF
TradeOpen	1.25
Inflation	1.06
log(1 + ExchangeRate)	1.17
Technical	1.14
Enrollment	1.24
TaxRevenue	1.13
GDPGrowth	1.04

The Breusch–Pagan test detects heteroskedasticity, with a test statistic of 20.552 (df = 7) and a p-value of 0.0045. Therefore, the model was re-estimated using robust standard errors clustered at the country level. The robustness check yields consistent results: the Technical coefficient remains negative and marginally significant, while Trade Openness and Exchange Rate continue to be significant and positive.

Table 58. Robustness Check: Pooled OLS Regression with Technical Component (Emerging Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.538	0.197	2.733	0.006**
TradeOpen	0.009	0.002	5.218	<0.001***
Inflation	-0.001	0.002	-0.386	0.699
log(1 + ExchangeRate)	0.054	0.022	2.475	0.014*
Technical	-0.012	0.006	-1.949	0.052 [·]
Enrollment	0.002	0.002	1.398	0.163
TaxRevenue	-0.001	0.007	-0.188	0.851
GDPGrowth	0.003	0.005	0.717	0.473

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [·] $p < 0.1$

In conclusion, the results suggest that in emerging economies, higher technical cybersecurity capacity may be associated with slightly lower FDI inflows. This pattern could reflect investor concerns over increased regulatory oversight, compliance obligations, or adaptation costs in more digitally secure environments. However, given the borderline significance level, this relationship should be interpreted with caution and may warrant further investigation.

5.6.3. Organizational Measures

This specification evaluates whether the organizational component of cybersecurity capacity influences foreign direct investment (FDI) inflows in emerging economies. The Organization component of the Global Cybersecurity Index (GCI) is included as the cybersecurity-related variable, with all other explanatory variables unchanged from the baseline model for comparability.

The model is specified as:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Organization}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results (Table 57) indicate that the coefficient on Organization is -0.01583 , with a standard error of 0.00668 , a t -value of -2.370 , and a p -value of 0.0181 . This negative and statistically significant effect at the 5% level suggests that greater organizational capacity in cybersecurity—such as national strategies, dedicated agencies, and institutional frameworks—is associated with lower FDI inflows in emerging economies. The magnitude of the coefficient is small but consistent with the pattern observed for other cybersecurity components in this group, where stronger measures appear to correspond to slightly reduced foreign investment.

Table 59. Regression Results with Organizational Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.584	0.201	2.909	0.004**
TradeOpen	0.009	0.002	5.631	<0.001***
Inflation	-0.000	0.003	-0.127	0.899
log(1 + ExchangeRate)	0.051	0.021	2.393	0.017*
Organization	-0.016	0.007	-2.370	0.018*
Enrollment	0.002	0.002	1.300	0.194
TaxRevenue	-0.003	0.007	-0.399	0.690
GDPGrowth	0.004	0.005	0.769	0.442

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

Variance Inflation Factor (VIF) values indicate no multicollinearity concerns, with the Organization variable's VIF at 1.13, and all other regressors below the threshold of 5.

Table 60. VIF for Organization Component Model (Emerging Countries)

Variable	VIF
TradeOpen	1.21
Inflation	1.07
log(1 + ExchangeRate)	1.19
Organization	1.13
Enrollment	1.18
TaxRevenue	1.15
GDPGrowth	1.04

The Breusch–Pagan test for heteroskedasticity yields a statistic of 21.816 ($df = 7$) and a p -value of 0.00273, indicating the presence of heteroskedasticity. To account for this, robust standard errors clustered at the country level were applied. The robustness check (Table 61)

confirms the initial finding: the Organization coefficient remains negative and statistically significant, and the significance of Trade Openness and Exchange Rate is unaffected.

Table 61. Robustness Check: Pooled OLS Regression with Organization Component (Emerging Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.584	0.201	2.909	0.004**
TradeOpen	0.009	0.002	5.631	<0.001***
Inflation	-0.000	0.003	-0.127	0.899
log(1 + ExchangeRate)	0.051	0.021	2.393	0.017*
Organization	-0.016	0.007	-2.370	0.018*
Enrollment	0.002	0.002	1.300	0.194
TaxRevenue	-0.003	0.007	-0.399	0.690
GDPGrowth	0.004	0.005	0.769	0.442

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, · $p < 0.1$

In sum, the results suggest that stronger organizational capacity in cybersecurity is linked to modestly lower FDI inflows in emerging economies. This may be due to the perception among some investors that such frameworks introduce more structured oversight and compliance demands, potentially increasing operational complexity. While these measures are important for digital security, their immediate impact on investment attraction appears to be negative in the context of emerging markets.

5.6.4. Capacity Development

This model investigates whether the capacity development dimension of cybersecurity influences foreign direct investment (FDI) inflows in emerging economies. The Capacity Development component of the Global Cybersecurity Index (GCI) is used as the main explanatory variable of interest, while all other controls remain the same as in the baseline specification for consistency.

The model is specified as:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{CapacityDev}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The regression results (Table 62) indicate that the coefficient for Capacity Development is -0.02094 , with a standard error of 0.00652 , a t-value of -3.213 , and a p-value of 0.00137 . This negative and statistically significant relationship at the 1% level suggests that higher capacity development in cybersecurity is associated with lower FDI inflows in emerging economies. The effect size is larger in magnitude than those found for other GCI components in this group, such as Legal, Technical, and Organizational measures, indicating that capacity development may exert the strongest deterrent effect on investment among the cybersecurity dimensions considered.

Table 62. Regression Results with Capacity Development Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.617	0.194	3.177	0.002**
TradeOpen	0.009	0.002	5.452	<0.001***
Inflation	-0.000	0.003	-0.035	0.972
log(1 + ExchangeRate)	0.052	0.021	2.414	0.016*
CapacityDev	-0.021	0.007	-3.213	0.001**
Enrollment	0.003	0.002	1.651	0.099 [.]
TaxRevenue	-0.002	0.007	-0.333	0.739
GDPGrowth	0.004	0.005	0.733	0.464

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [.] $p < 0.1$

The Variance Inflation Factor (VIF) test confirms that multicollinearity is not a concern. The VIF for Capacity Development is 1.11, and all other explanatory variables fall well below the threshold of 5.

Table 63. VIF for Capacity Development Component Model (Emerging Countries)

Variable	VIF
TradeOpen	1.23
Inflation	1.07
log(1 + ExchangeRate)	1.17
CapacityDev	1.11
Enrollment	1.20
TaxRevenue	1.13
GDPGrowth	1.04

The Breusch–Pagan test for heteroskedasticity yields a statistic of 22.537 (df = 7) with a p-value of 0.00205, rejecting the null hypothesis of homoskedasticity. Robust standard errors clustered at the country level are therefore applied. The robustness check (Table 64) confirms the original finding: the Capacity Development coefficient remains negative and statistically significant, and its magnitude is virtually unchanged. Trade Openness and Exchange Rate remain significant control variables.

Table 64. Robustness Check: Pooled OLS Regression with Capacity Development Component (Emerging Countries)

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.617	0.194	3.177	0.002**
TradeOpen	0.009	0.002	5.452	<0.001***
Inflation	-0.000	0.003	-0.035	0.972
log(1 + ExchangeRate)	0.052	0.021	2.414	0.016*
CapacityDev	-0.021	0.007	-3.213	0.001**
Enrollment	0.003	0.002	1.651	0.099.
TaxRevenue	-0.002	0.007	-0.333	0.739
GDPGrowth	0.004	0.005	0.733	0.464

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, . $p < 0.1$

In summary, the results show that in emerging economies, higher scores in the capacity development dimension of cybersecurity are associated with significantly lower FDI inflows. Compared to other GCI components, capacity development stands out as having the largest negative coefficient, suggesting that while these initiatives—such as training programs, public–private partnerships, and educational measures—are critical for building long-term resilience, they may impose the greatest short-term compliance and adaptation costs for foreign investors.

5.6.5. International Cooperation

This specification examines whether the cooperation dimension of cybersecurity capacity is associated with foreign direct investment (FDI) inflows in emerging economies. The Cooperation component of the Global Cybersecurity Index (GCI) is included as the key explanatory variable, and the remaining covariates are kept identical to the baseline model for comparability:

$$\log(\text{FDI}_{it} + 1) = \beta_0 + \beta_1 \cdot \text{TradeOpen}_{it} + \beta_2 \cdot \text{Inflation}_{it} + \beta_3 \cdot \log(1 + \text{ExchangeRate}_{it}) + \beta_4 \cdot \text{Cooperation}_{it} + \beta_5 \cdot \text{Enrollment}_{it} + \beta_6 \cdot \text{TaxRevenue}_{it} + \beta_7 \cdot \text{GDPGrowth}_{it} + \varepsilon_{it}$$

The results indicate that the coefficient on Cooperation is -0.01120 ($SE = 0.00640$), with a t -value of -1.748 and a p -value of 0.0809 . This negative association is marginally significant at the 10% level. Although cooperation is often expected to bolster investor confidence, in the context of emerging markets it may coincide with tighter oversight and additional coordination or reporting requirements for foreign firms, which can raise perceived compliance costs.

Table 65. Regression Results with Cooperation Cybersecurity Component

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.535	0.202	2.657	0.008**
TradeOpen	0.009	0.002	5.385	<0.001***
Inflation	-0.001	0.002	-0.411	0.681
$\log(1 + \text{ExchangeRate})$	0.054	0.022	2.487	0.013*
Cooperation	-0.011	0.006	-1.748	0.081 [.]
Enrollment	0.002	0.002	1.378	0.169
TaxRevenue	-0.002	0.007	-0.263	0.793
GDPGrowth	0.003	0.005	0.631	0.528

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [.] $p < 0.1$

Variance Inflation Factor diagnostics show no multicollinearity concerns; the VIF for Cooperation is 1.13 and all other regressors remain well below conventional thresholds.

Table 66. VIF for Cooperation Component Model (Emerging Countries)

Variable	VIF
TradeOpen	1.22
Inflation	1.06
$\log(1 + \text{ExchangeRate})$	1.17
Cooperation	1.13
Enrollment	1.23
TaxRevenue	1.13
GDPGrowth	1.04

The studentized Breusch–Pagan test detects heteroskedasticity ($BP = 21.128$, $df = 7$, $p = 0.0036$). Accordingly, the model was re-estimated with robust standard errors clustered at the

country level; the negative sign and marginal significance of Cooperation persist, while Trade Openness and the exchange-rate term remain positive and significant.

Table 67. Robustness Check: Pooled OLS Regression with Organization Component (Emerging

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.535	0.202	2.657	0.008**
TradeOpen	0.009	0.002	5.385	<0.001***
Inflation	-0.001	0.002	-0.411	0.681
log(1 + ExchangeRate)	0.054	0.022	2.487	0.013*
Cooperation	-0.011	0.006	-1.748	0.081 [.]
Enrollment	0.002	0.002	1.378	0.169
TaxRevenue	-0.002	0.007	-0.263	0.793
GDPGrowth	0.003	0.005	0.631	0.528

Note: Robust standard errors clustered at the country level.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [.] $p < 0.1$

Countries)

Compared with the other GCI components estimated for emerging economies, the magnitude of the Cooperation coefficient is smaller than Legal (-0.01348 , $p = 0.0229$) and Capacity Development (-0.02094 , $p = 0.0014$), and broadly comparable to but slightly larger (in absolute value) than Technical (-0.01194 , $p \approx 0.052$). Thus, while cooperation shows a negative association with FDI, its effect is weaker than the more robust negative relationships found for Legal and Capacity Development.

Conclusion

This thesis investigated the relationship between national cybersecurity capacity—measured through the Global Cybersecurity Index (GCI)—and Foreign Direct Investment (FDI) inflows, with a comparative focus on emerging and developed economies. While the digitalization of global markets has brought cybersecurity to the forefront of institutional concerns, its role as a determinant of FDI remains empirically underexplored. This study contributes to bridging that gap by integrating GCI indicators into panel regression models over the 2014–2023 period.

For the full sample of countries, the results indicate that the overall GCI score is negative and statistically significant. This suggests that, when all countries are considered together, higher measured cybersecurity capacity is associated with lower FDI inflows. The decomposition into

GCI components shows that several dimensions—such as Legal and Technical—also have negative coefficients, with varying levels of significance. These findings may reflect that, in many economies, the process of strengthening cybersecurity frameworks introduces compliance requirements, operational costs, or regulatory uncertainties that can deter investment in the short term. At the same time, traditional economic drivers such as trade openness, tax revenue, and GDP growth remain robustly positive and significant.

For developed economies, the GCI and all its components are statistically insignificant, with coefficients close to zero. This likely reflects the high baseline level of cybersecurity maturity in these countries, which leaves little cross-country variation for investors to respond to. In these markets, foreign investors appear to place greater weight on macroeconomic fundamentals and market opportunities than on marginal differences in cybersecurity measures.

For emerging economies, the negative association between GCI and FDI is even more pronounced. Capacity Development and Legal measures in particular show strong and significant negative coefficients, while Organizational and Cooperation measures also carry negative signs, though with smaller magnitudes. These patterns suggest that, in less mature institutional environments, rapid cybersecurity capacity building—especially in legal and institutional domains—may introduce adjustment frictions for investors, including uncertainty about enforcement and compliance burdens.

Taken together, the findings reveal an important asymmetry. While cybersecurity capacity building is a long-term necessity for national resilience and digital trust, its short-term economic impact on FDI can differ sharply across development stages. For developed countries, the effects are negligible, whereas for emerging countries—and in the global sample dominated by them—tightening cybersecurity measures can coincide with reduced FDI inflows.

From a policy perspective, emerging economies should consider coupling cybersecurity reforms with measures to maintain investment attractiveness, such as phased implementation, clear regulatory guidance, and active investor outreach. Developed economies should focus on maintaining their cybersecurity leadership while integrating these measures into broader competitiveness strategies, without expecting substantial FDI gains from marginal capacity improvements alone.

Future research could explore sector-specific effects, assess lagged impacts to see whether short-term deterrence gives way to long-term gains, and examine whether certain types of foreign investors—such as those in high-tech or data-intensive sectors—respond differently to cybersecurity capacity changes.

In conclusion, cybersecurity readiness is not only a national security concern but also an economic policy variable whose investment impact depends on timing, context, and execution. Effective policy design will require balancing the imperative of strong cybersecurity with strategies that sustain, rather than deter, international investment.

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Appendices

Table 1. Descriptive statistics for FDI (original values, % of GDP) by country, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	7.7803	0.7618	6.7579	8.8051
Algeria	10	0.5435	0.3270	-0.2868	0.9063
Angola	10	-2.9682	6.1984	-10.0384	11.0813
Argentina	10	1.7796	0.8742	0.5847	3.6940
Armenia	10	2.4033	1.3138	0.5000	4.9999
Australia	10	3.1431	1.0697	1.3533	4.3047
Austria	10	-0.9483	3.9020	-7.2399	3.9541
Azerbaijan	10	3.1271	5.2450	-5.6777	11.8828
Bahrain	10	4.1857	4.0402	0.1995	14.8430
Bangladesh	10	0.7214	0.4272	0.3394	1.4687
Belarus	10	2.3604	0.3484	1.7664	2.9268
Belgium	10	-1.0276	6.2597	-7.6665	12.1319
Belize	10	3.5771	2.0024	0.5229	6.5987
Bhutan	10	0.2300	0.4571	-0.6388	1.1266
Bosnia and Herzegovina	10	2.7880	0.6056	1.8298	3.7623
Botswana	10	1.6350	1.6907	-1.7015	3.4919
Brazil	10	3.4485	0.5393	2.6000	4.1374
Brunei Darussalam	10	1.7877	2.2940	-1.7529	4.7106
Bulgaria	10	3.5276	1.0809	1.9133	5.4620
Cambodia	10	9.2615	0.8099	7.5403	10.4000
Cameroon	10	2.0463	0.2678	1.6671	2.5834
Canada	10	2.5505	0.7545	1.5375	3.8539
Chile	10	5.3006	2.2765	1.8965	9.8350
China	10	1.5595	0.6384	0.2401	2.5592
Colombia	10	4.0604	0.7642	2.8000	4.9757
Comoros	10	0.3810	0.0687	0.3000	0.5110
Costa Rica	10	4.9461	0.7903	3.4000	6.2329
Cote d'Ivoire	10	1.5009	0.5185	0.8995	2.2788
Croatia	10	4.1120	2.0168	0.9581	7.4271
Cyprus	10	107.0500	201.1692	-296.0132	431.7885
Czechia	10	3.6018	1.3321	0.8989	5.4757
Denmark	10	2.0747	2.4279	-1.1007	7.6679
Dominican Republic	10	3.5023	0.4333	3.1000	4.4975
Ecuador	10	0.8607	0.3302	0.3445	1.3607
Egypt, Arab Rep.	10	2.2543	0.6605	1.2062	3.1004
El Salvador	10	1.8790	0.7501	0.0320	2.7561
Equatorial Guinea	10	5.0462	5.3714	-1.1030	15.6154
Estonia	10	7.7626	6.3682	-3.0691	20.3064
Fiji	10	6.0347	2.6596	1.6725	9.5213
Finland	10	3.6683	4.1020	-3.8446	8.0141
France	10	1.8068	1.2451	0.1770	3.9186
Gabon	10	7.2682	2.9694	0.2900	11.2000
Georgia	10	8.5370	2.6049	3.4000	11.7184
Germany	10	2.1480	1.3420	0.4312	4.4867

Country	Obs	Mean	SD	Min	Max
Ghana	10	4.3851	1.8494	1.7275	6.4614
Greece	10	1.9324	0.8504	0.6522	3.6312
Guatemala	10	1.8342	0.9041	1.2579	4.1934
Honduras	10	4.3539	2.2255	1.0000	8.6290
Hungary	10	15.9453	45.4416	-40.2629	106.4279
Iceland	10	-1.9419	10.1778	-28.3072	6.5408
India	10	1.6664	0.4364	0.7871	2.4000
Ireland	10	17.9467	26.7700	-25.3851	74.7452
Israel	10	4.0505	1.0828	1.9258	5.7349
Italy	10	1.2244	1.0595	-0.8939	2.9828
Japan	10	0.6554	0.3478	0.1182	1.2379
Jordan	10	2.9935	1.6001	1.3432	5.9120
Kazakhstan	10	3.5356	3.3464	0.1970	12.5466
Kenya	10	0.7404	0.4500	0.0000	1.6408
Korea, Rep.	10	0.8233	0.3618	0.2799	1.4962
Kuwait	10	0.2273	0.4679	-0.5025	1.2917
Kyrgyz Republic	10	3.6978	6.0229	-4.9000	17.1312
Lao PDR	10	6.8048	2.2975	4.0315	11.2426
Latvia	10	3.6308	2.3670	1.2369	9.7789
Lebanon	10	3.8793	1.7511	0.0000	5.9518
Lithuania	10	3.7391	2.0863	0.7397	7.9434
Luxembourg	10	-26.2401	173.5211	-440.1307	234.2487
Malaysia	10	3.0925	1.2237	1.2000	5.4163
Maldives	10	11.1146	2.5343	7.2158	16.7835
Mali	10	3.0630	1.0678	1.0039	4.9715
Malta	10	187.1648	162.8648	1.3112	452.2210
Mauritania	10	7.3230	7.0837	-11.1917	14.6644
Mauritius	10	3.1874	1.0654	1.8027	5.1884
Mexico	10	2.6511	0.5137	1.6888	3.4974
Moldova	10	2.6855	1.1386	1.0956	4.4422
Mongolia	10	6.4207	16.2156	-37.1727	17.1989
Montenegro	10	10.5082	3.5532	5.1795	17.2602
Morocco	10	1.9520	0.7694	0.7589	2.9593
Namibia	10	4.9165	5.8716	-1.4071	18.5764
Nepal	10	0.3480	0.1934	0.1337	0.6774
Netherlands	10	1.8063	27.5980	-30.7775	48.5011
New Zealand	10	1.4890	0.8585	-0.0412	3.3802
Nicaragua	10	7.1683	1.4833	3.9609	9.0636
North Macedonia	10	3.6745	1.9956	0.1000	6.1307
Norway	10	0.9236	2.7122	-5.0325	3.9951
Oman	10	4.3806	4.2032	-2.7600	11.4777
Pakistan	10	0.6306	0.1270	0.3900	0.8214
Panama	10	5.1782	4.2897	-4.4000	9.6922
Paraguay	10	1.4800	0.6059	0.6109	2.4147

Country	Obs	Mean	SD	Min	Max
Peru	10	2.7242	1.2620	0.3000	4.5444
Philippines	10	2.4034	0.4816	1.8402	3.1224
Poland	10	3.8848	1.0967	2.3781	6.0063
Portugal	10	3.6410	1.4979	0.6352	5.4385
Qatar	10	-0.2983	0.9228	-1.6855	0.6621
Romania	10	2.8376	0.8288	1.4000	4.1066
Russian Federation	10	0.8895	1.3177	-1.7564	2.5485
Rwanda	10	2.7192	0.8151	1.5000	3.8111
Samoa	10	1.1524	1.1641	-0.2387	3.2600
Saudi Arabia	10	1.4018	1.2799	0.1418	3.2965
Senegal	10	6.0877	4.5371	2.0361	15.5276
Serbia	10	6.3386	1.1235	4.0712	7.9249
Singapore	10	26.4090	5.0420	20.4865	34.9485
Slovak Republic	10	2.0405	2.1427	-1.0598	5.2777
Slovenia	10	2.9002	1.0019	0.9483	4.0510
Solomon Islands	10	2.3098	1.1226	0.6000	4.8304
South Africa	10	1.9606	2.7597	0.4387	9.6603
Spain	10	3.1596	1.0114	1.9713	4.5274
Sweden	10	3.6181	3.3814	-1.0454	9.3039
Switzerland	10	-1.4143	18.8089	-32.5474	24.2481
Tajikistan	10	2.5432	1.3963	0.9403	5.4889
Tanzania	10	2.0244	0.5537	1.4000	3.1763
Thailand	10	1.5632	1.1440	-0.9000	3.0399
United Arab Emirates	10	3.8103	1.4349	2.3093	5.9688
United Kingdom	10	2.4832	4.1703	-2.6465	12.0789
United States	10	1.6679	0.6595	0.6419	2.7955
Uruguay	10	3.5099	5.2883	-7.0957	12.3672

Table 2: Descriptive statistics for Trade Openness (% of GDP), 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	75.048	6.739	59.521	84.698
Algeria	10	49.077	4.849	40.390	56.924
Angola	10	64.916	8.675	52.257	79.333
Argentina	10	28.714	3.506	22.486	33.079
Armenia	10	86.961	15.745	69.489	119.715
Australia	10	43.726	2.768	40.302	49.225
Austria	10	108.351	7.472	99.948	124.383
Azerbaijan	10	81.888	8.487	69.483	91.673
Bahrain	10	147.909	13.366	132.823	168.576
Bangladesh	10	33.079	5.839	26.271	44.514
Belarus	10	126.194	9.498	110.651	139.394
Belgium	10	166.858	11.130	155.069	191.939
Belize	10	100.434	7.707	81.822	108.529
Bhutan	10	80.316	5.768	71.830	89.639
Bosnia and Herzegovina	10	94.510	7.772	82.111	110.206
Botswana	10	90.617	15.783	68.803	119.498
Brazil	10	30.070	5.346	24.320	38.816
Brunei Darussalam	10	110.847	24.298	85.177	147.123
Bulgaria	10	125.331	7.607	110.324	138.840
Cambodia	10	127.296	10.966	115.737	146.180
Cameroon	10	40.915	4.851	33.739	50.832
Canada	10	65.113	2.002	61.157	67.318
Chile	10	61.184	5.937	56.026	75.202
China	10	37.209	2.715	34.039	44.068
Colombia	10	38.421	3.983	34.056	48.283
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	67.152	6.614	60.140	82.228
Cote d'Ivoire	10	48.525	4.111	41.943	53.680
Croatia	10	99.041	11.448	85.209	125.214
Cyprus	10	159.168	25.486	130.844	207.632
Czechia	10	143.315	8.929	128.780	156.415
Denmark	10	110.987	10.458	101.453	131.543
Dominican Republic	10	51.465	2.919	44.733	55.660
Ecuador	10	50.563	7.505	40.534	61.881
Egypt, Arab Rep.	10	37.130	5.449	29.857	45.911
El Salvador	10	77.218	5.983	66.460	88.701
Equatorial Guinea	10	89.496	14.346	61.443	104.379
Estonia	10	150.989	11.151	137.393	174.564
Fiji	10	101.460	15.881	72.344	126.179
Finland	10	78.637	7.217	71.722	94.563
France	10	65.665	4.721	58.839	75.790
Gabon	10	78.166	8.241	70.114	92.063
Georgia	10	103.347	8.750	92.891	117.810
Germany	10	79.155	4.350	72.993	89.064
Ghana	10	68.735	4.904	62.708	76.825
Greece	10	78.422	14.140	63.658	107.679
Guatemala	10	48.308	4.169	41.141	55.083
Honduras	10	102.774	7.291	88.001	112.975
Hungary	10	164.122	8.239	154.296	183.808
Iceland	10	86.273	8.707	67.975	96.666
India	10	43.344	4.028	37.758	50.075
Ireland	10	228.362	15.091	201.655	250.108
Israel	10	57.453	2.987	51.237	61.713
Italy	10	59.177	5.744	53.939	72.017
Japan	10	37.046	5.163	31.310	46.813
Jordan	10	90.791	12.553	66.060	109.939
Kazakhstan	10	60.954	4.644	53.050	68.334
Kenya	10	34.738	5.293	27.238	46.170
Korea, Rep.	10	80.893	8.370	69.034	96.536
Kuwait	10	84.214	30.434	0.000	102.786
Kyrgyz Republic	10	108.125	17.603	78.992	133.787
Lao PDR	10	25.995	42.237	0.000	99.060
Latvia	10	131.915	10.884	123.331	159.844
Lebanon	10	76.713	19.341	50.130	114.888
Lithuania	10	147.197	11.833	134.690	175.652
Luxembourg	10	372.104	26.577	333.429	412.177
Malaysia	10	131.256	8.104	116.788	146.505
Maldives	10	144.485	14.081	114.362	165.979
Mali	10	0.000	0.000	0.000	0.000
Malta	10	222.910	20.910	181.301	256.403
Mauritania	10	87.214	8.608	73.153	102.026
Mauritius	10	100.312	8.920	83.240	112.585

Country	Obs	Mean	SD	Min	Max
Mexico	10	76.735	6.738	64.098	88.827
Moldova	10	90.975	8.480	79.266	112.118
Mongolia	10	117.785	15.855	89.654	142.864
Montenegro	10	106.698	10.447	87.006	125.899
Morocco	10	77.702	11.016	67.289	101.132
Namibia	10	91.062	11.323	76.925	110.771
Nepal	10	45.162	3.160	40.919	49.250
Netherlands	10	161.229	9.631	150.966	184.107
New Zealand	10	52.312	3.693	43.977	55.766
Nicaragua	10	99.842	8.181	88.638	115.455
North Macedonia	10	132.813	17.444	112.538	166.147
Norway	10	71.824	5.370	65.354	82.609
Oman	10	94.572	8.080	82.864	105.917
Pakistan	10	27.824	2.359	24.702	33.031
Panama	10	87.861	12.290	68.700	114.971
Paraguay	10	70.678	5.143	62.760	82.405
Peru	10	48.825	4.404	44.246	57.297
Philippines	10	64.906	5.652	57.468	72.430
Poland	10	102.892	9.473	92.034	123.021
Portugal	10	85.630	7.404	76.509	101.364
Qatar	10	83.868	29.697	0.000	100.214
Romania	10	85.205	3.988	77.924	93.622
Russian Federation	10	47.154	3.365	40.834	51.581
Rwanda	10	54.156	6.584	43.903	64.907
Samoa	10	76.064	8.536	60.889	90.657
Saudi Arabia	10	58.787	8.551	47.533	78.000
Senegal	10	63.481	7.802	54.108	79.600
Serbia	10	105.458	12.305	88.382	131.938
Singapore	10	327.981	14.421	302.840	360.467
Slovak Republic	10	183.244	9.311	167.534	203.929
Slovenia	10	157.924	12.005	146.472	186.220
Solomon Islands	10	72.578	27.462	0.000	93.454
South Africa	10	57.076	4.748	50.760	65.180
Spain	10	66.650	5.359	59.446	78.628
Sweden	10	90.702	8.817	83.264	106.741
Switzerland	10	125.872	6.720	117.138	138.501
Tajikistan	10	58.459	6.795	49.938	71.826
Tanzania	10	35.140	5.154	27.963	45.356
Thailand	10	120.448	10.499	97.801	132.859
United Arab Emirates	10	176.744	13.299	159.643	202.333
United Kingdom	10	61.961	3.802	57.204	68.881
United States	10	26.496	1.839	23.080	29.907
Uruguay	10	50.679	5.195	45.328	—

Table 3. Descriptive statistics for Inflation (%) by country, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	2.539	1.988	-0.367	6.725
Algeria	10	5.413	2.654	1.952	9.322
Angola	10	19.694	7.991	7.280	30.694
Argentina	10	0.000	0.000	0.000	0.000
Armenia	10	2.925	2.986	-1.404	8.641
Australia	10	2.665	1.911	0.847	6.594
Austria	10	2.951	2.817	0.892	8.547
Azerbaijan	10	6.775	4.881	1.373	13.852
Bahrain	10	1.254	1.784	-2.318	3.626
Bangladesh	10	6.436	1.417	5.514	9.884
Belarus	10	9.516	4.871	4.872	18.120
Belgium	10	2.532	2.709	0.340	9.598
Belize	10	1.661	2.251	-0.862	6.277
Bhutan	10	4.926	1.863	2.724	8.271
Bosnia and Herzegovina	10	2.028	4.775	-1.584	14.021
Botswana	10	4.547	2.922	1.900	11.666
Brazil	10	6.032	2.577	3.200	9.280
Brunei Darussalam	10	0.611	1.486	-1.261	3.682
Bulgaria	10	3.541	5.130	-1.418	15.325
Cambodia	10	2.870	1.126	1.224	5.344
Cameroon	10	2.787	2.254	0.640	7.383
Canada	10	2.507	1.794	0.717	6.803
Chile	10	4.678	2.915	2.183	11.644
China	10	1.752	0.745	0.235	2.899
Colombia	10	5.439	3.253	2.500	11.736
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	2.247	2.466	-0.017	8.275
Cote d'Ivoire	10	1.852	2.093	-1.107	5.276
Croatia	10	2.303	3.922	-1.125	10.781
Cyprus	10	1.108	3.124	-2.097	8.395
Czechia	10	4.155	4.867	0.309	15.100
Denmark	10	1.726	2.288	0.250	7.697
Dominican Republic	10	3.974	2.667	0.837	8.811
Ecuador	10	1.526	1.688	-0.300	3.967
Egypt, Arab Rep.	10	14.531	9.681	5.000	33.885
El Salvador	10	1.750	2.453	-0.731	7.199
Equatorial Guinea	10	2.022	1.899	-0.097	4.800
Estonia	10	4.145	6.139	-0.492	19.398
Fiji	10	1.918	2.189	-2.600	4.520
Finland	10	1.991	2.563	-0.208	7.124
France	10	1.694	1.865	0.038	5.222
Gabon	10	2.667	1.676	-0.339	4.749
Georgia	10	5.186	3.234	2.135	11.898
Germany	10	2.263	2.345	0.145	6.873
Ghana	10	16.665	10.290	7.144	38.107
Greece	10	1.121	3.377	-1.736	9.645
Guatemala	10	4.268	1.360	2.389	6.885
Honduras	10	4.839	1.931	2.725	9.090
Hungary	10	4.881	6.061	-0.228	17.125
Iceland	10	3.717	2.670	1.633	8.736
India	10	5.160	1.245	3.328	6.699
Ireland	10	1.779	2.911	-0.331	7.829
Israel	10	1.074	1.843	-0.614	4.394
Italy	10	1.872	2.801	-0.138	8.201
Japan	10	1.088	1.284	-0.233	3.268
Jordan	10	1.775	1.942	-0.877	4.462
Kazakhstan	10	9.132	3.913	5.334	15.028
Kenya	10	6.453	1.125	4.690	8.006
Korea, Rep.	10	1.848	1.506	0.383	5.090
Kuwait	10	2.633	1.130	0.543	3.981
Kyrgyz Republic	10	6.316	4.772	0.389	13.923
Lao PDR	10	7.623	10.532	0.825	31.230
Latvia	10	3.895	5.395	0.141	17.310
Lebanon	10	64.293	87.055	-3.749	221.342
Lithuania	10	4.359	6.083	-0.884	19.705
Luxembourg	10	1.982	1.856	0.291	6.336
Malaysia	10	2.000	1.485	-1.100	3.871
Maldives	10	1.088	1.417	-1.400	2.927
Mali	10	1.694	3.262	-1.800	9.621
Malta	10	1.960	1.991	0.310	6.154
Mauritania	10	3.633	2.281	1.472	9.525
Mauritius	10	3.723	3.112	0.406	10.774

Country	Obs	Mean	SD	Min	Max
Mexico	10	4.665	1.648	2.721	7.896
Moldova	10	8.664	7.685	3.045	28.737
Mongolia	10	7.380	4.248	0.733	15.148
Montenegro	10	2.966	4.438	-0.711	13.040
Morocco	10	2.135	2.298	0.303	6.657
Namibia	10	4.741	1.497	2.200	6.729
Nepal	10	6.230	1.947	3.627	8.790
Netherlands	10	2.540	2.832	0.317	10.001
New Zealand	10	2.580	2.282	0.293	7.172
Nicaragua	10	5.521	2.262	3.523	10.467
North Macedonia	10	3.075	4.848	-0.300	14.205
Norway	10	3.062	1.529	1.287	5.764
Oman	10	0.990	0.830	-0.400	2.506
Pakistan	10	10.306	8.758	2.529	30.768
Panama	10	0.916	1.340	-1.600	2.860
Paraguay	10	4.357	2.144	1.800	9.766
Peru	10	3.818	2.101	1.509	8.334
Philippines	10	3.421	1.850	0.674	5.978
Poland	10	3.902	5.159	-0.874	14.429
Portugal	10	1.691	2.508	-0.278	7.833
Qatar	10	1.561	2.207	-2.540	4.995
Romania	10	4.057	4.806	-1.545	13.795
Russian Federation	10	5.153	4.532	0.000	15.534
Rwanda	10	7.036	7.078	-0.391	19.790
Samoa	10	2.897	3.879	-1.600	10.962
Saudi Arabia	10	1.630	1.756	-2.093	3.400
Senegal	10	2.374	3.178	-1.090	9.697
Serbia	10	4.158	4.316	1.122	12.372
Singapore	10	1.462	2.289	-0.532	6.121
Slovak Republic	10	3.396	4.570	-0.520	12.774
Slovenia	10	2.256	3.237	-0.526	8.834
Solomon Islands	10	2.498	2.447	-0.574	5.886
South Africa	10	5.199	1.223	3.200	7.040
Spain	10	1.817	2.728	-0.500	8.391
Sweden	10	2.587	3.203	-0.180	8.549
Switzerland	10	0.507	1.233	-1.144	2.835
Tajikistan	10	1.782	2.871	0.000	6.104
Tanzania	10	4.431	1.034	3.300	6.132
Thailand	10	1.135	1.950	-0.900	6.077
United Arab Emirates	10	1.616	2.371	-2.079	5.291
United Kingdom	10	2.764	2.537	0.368	7.922
United States	10	2.744	2.293	0.119	8.003
Uruguay	10	8.137	1.332	5.869	—

Table 4. Descriptive Statistics for Exchange Rate (by country, 2014–2023)

Country	Obs	Mean	SD	Min	Max
Albania	10	111.838	8.621	100.645	125.962
Algeria	10	117.731	18.523	80.579	141.995
Angola	10	352.091	223.662	98.302	685.020
Argentina	10	71.728	88.901	8.075	296.258
Armenia	10	464.140	36.338	392.476	503.770
Australia	10	1.360	0.111	1.109	1.505
Austria	10	0.878	0.054	0.753	0.950
Azerbaijan	10	1.533	0.338	0.784	1.721
Bahrain	10	0.376	0.000	0.376	0.376
Bangladesh	10	85.042	8.626	77.641	106.309
Belarus	10	2.128	0.564	1.022	3.007
Belgium	10	0.878	0.054	0.753	0.950
Belize	10	2.000	0.000	2.000	2.000
Bhutan	10	70.553	6.758	61.030	82.599
Bosnia and Herzegovina	10	1.718	0.106	1.474	1.859
Botswana	10	10.982	1.283	8.976	13.596
Brazil	10	4.067	1.042	2.353	5.394
Brunei Darussalam	10	1.356	0.035	1.267	1.381
Bulgaria	10	1.719	0.106	1.474	1.860
Cambodia	10	4073.104	25.660	4037.500	4110.653
Cameroon	10	576.003	35.730	493.757	623.760
Canada	10	1.288	0.071	1.105	1.350
Chile	10	715.950	97.015	570.348	873.314
China	10	6.647	0.301	6.143	7.084
Colombia	10	3300.662	716.308	2001.105	4325.955
Comoros	10	431.857	26.710	370.318	467.184
Costa Rica	10	574.627	37.211	534.566	647.136
Cote d'Ivoire	10	576.003	35.730	493.757	623.760
Croatia	10	5.999	1.823	0.925	7.160
Cyprus	10	0.878	0.054	0.753	0.950
Czechia	10	22.828	1.233	20.758	24.599
Denmark	10	6.545	0.405	5.612	7.076
Dominican Republic	10	50.804	5.188	43.550	57.221
Ecuador	10	1.000	0.000	1.000	1.000
Egypt, Arab Rep.	10	15.831	6.791	7.078	30.626
El Salvador	10	1.000	0.000	1.000	1.000
Equatorial Guinea	10	576.003	35.730	493.757	623.760
Estonia	10	0.878	0.054	0.753	0.950
Fiji	10	2.109	0.099	1.887	2.250
Finland	10	0.878	0.054	0.753	0.950
France	10	0.878	0.054	0.753	0.950
Gabon	10	576.003	35.730	493.757	623.760
Georgia	10	2.614	0.430	1.766	3.222
Germany	10	0.878	0.054	0.753	0.950
Ghana	10	5.537	2.426	2.897	11.020

Country	Obs	Mean	SD	Min	Max
Greece	10	0.878	0.054	0.753	0.950
Guatemala	10	7.659	0.139	7.348	7.832
Honduras	10	23.535	1.246	20.987	24.602
Hungary	10	296.558	40.802	232.602	372.596
Iceland	10	124.288	11.197	106.840	137.943
India	10	70.553	6.758	61.030	82.599
Ireland	10	0.878	0.054	0.753	0.950
Israel	10	3.576	0.200	3.230	3.887
Italy	10	0.878	0.054	0.753	0.950
Japan	10	115.590	11.717	105.945	140.491
Jordan	10	0.710	0.000	0.710	0.710
Kazakhstan	10	355.173	94.417	179.192	460.165
Kenya	10	106.811	13.930	87.922	139.846
Korea, Rep.	10	1166.241	78.565	1052.840	1305.663
Kuwait	10	0.302	0.006	0.285	0.307
Kyrgyz Republic	10	72.949	10.541	53.654	87.856
Lao PDR	10	10008.779	3242.754	8042.422	17688.874
Latvia	10	0.878	0.054	0.753	0.950
Lebanon	10	2744.313	3911.145	1507.500	13875.625
Lithuania	10	1.063	0.541	0.845	2.600
Luxembourg	10	0.878	0.054	0.753	0.950
Malaysia	10	4.111	0.347	3.273	4.561
Maldives	10	15.380	0.008	15.366	15.391
Mali	10	576.003	35.730	493.757	623.760
Malta	10	0.878	0.054	0.753	0.950
Mauritania	10	35.282	2.208	30.273	37.189
Mauritius	10	37.560	4.819	30.622	45.267
Mexico	10	18.488	2.375	13.292	21.486
Moldova	10	17.772	1.593	14.036	19.924
Mongolia	10	2577.333	517.447	1817.939	3465.737
Montenegro	10	0.878	0.054	0.753	0.951
Morocco	10	9.545	0.527	8.406	10.161
Namibia	10	14.547	2.160	10.843	18.446
Nepal	10	112.719	10.747	97.555	132.115
Netherlands	10	0.878	0.054	0.753	0.950
New Zealand	10	1.461	0.117	1.205	1.628
Nicaragua	10	31.839	3.737	25.959	36.441
North Macedonia	10	54.119	3.343	46.437	58.574
Norway	10	8.615	1.131	6.302	10.563
Oman	10	0.385	0.000	0.385	0.385
Pakistan	10	149.592	57.498	101.100	280.356
Panama	10	1.000	0.000	1.000	1.000
Paraguay	10	6074.629	891.049	4462.185	7288.872
Peru	10	3.424	0.323	2.839	3.881
Philippines	10	50.124	3.662	44.395	55.630
Poland	10	3.852	0.343	3.155	4.458

Country	Obs	Mean	SD	Min	Max
Portugal	10	0.878	0.054	0.753	0.950
Qatar	10	3.640	0.000	3.640	3.640
Romania	10	4.131	0.366	3.349	4.688
Russian Federation	10	65.153	12.125	38.378	85.162
Rwanda	10	890.386	146.109	682.438	1160.099
Samoa	10	2.590	0.111	2.332	2.738
Saudi Arabia	10	3.750	0.000	3.750	3.750
Senegal	10	576.003	35.730	493.757	623.760
Serbia	10	104.430	7.054	88.405	111.662
Singapore	10	1.356	0.035	1.267	1.382
Slovak Republic	10	0.878	0.054	0.753	0.950
Slovenia	10	0.878	0.054	0.753	0.950
Solomon Islands	10	8.003	0.270	7.375	8.376
South Africa	10	14.537	2.168	10.853	18.450
Spain	10	0.878	0.054	0.753	0.950
Sweden	10	8.907	1.031	6.861	10.610
Switzerland	10	0.953	0.034	0.898	0.994
Tajikistan	10	8.967	2.135	4.938	11.309
Tanzania	10	2188.054	215.199	1653.231	2383.043
Thailand	10	33.246	1.603	31.048	35.296
United Arab Emirates	10	3.673	0.000	3.673	3.673
United Kingdom	10	0.744	0.066	0.608	0.811
United States	10	1.000	0.000	1.000	1.000
Uruguay	10	34.096	7.037	23.246	43.555

Table 5. Descriptive statistics for Enrollment by country

Country	obs	mean_Enrollment	sd_Enrollment	min_Enrollment	max_Enrollment
Albania	10	61.045	2.967	56.080	65.551
Algeria	10	49.196	7.144	36.062	55.519
Angola	10	5.832	5.053	0.000	11.061
Argentina	10	84.031	30.858	0.000	107.131
Armenia	10	53.774	5.609	44.411	61.186
Australia	10	89.151	47.266	0.000	119.683
Austria	10	77.932	27.772	0.000	94.512
Azerbaijan	10	32.404	6.682	23.160	41.391
Bahrain	10	55.547	13.105	43.638	77.244
Bangladesh	10	20.020	3.601	13.653	23.774
Belarus	10	83.747	11.750	67.062	99.855
Belgium	10	71.267	25.200	0.000	83.574
Belize	10	24.165	0.905	22.705	25.700
Bhutan	10	11.272	7.847	0.000	17.706
Bosnia and Herzegovina	10	45.154	2.947	40.900	48.985
Botswana	10	21.156	7.588	0.000	27.167
Brazil	10	46.959	17.013	0.000	60.391
Brunei Darussalam	10	32.641	2.406	30.218	38.273
Bulgaria	10	73.598	26.145	0.000	85.517
Cambodia	10	12.351	6.619	0.000	17.968
Cameroon	10	15.191	1.608	12.459	16.956
Canada	10	64.643	23.017	0.000	77.802
Chile	10	81.677	29.048	0.000	99.337
China	10	58.028	10.654	43.882	74.824
Colombia	10	51.081	18.040	0.000	59.290
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	31.659	27.273	0.000	54.719
Cote d'Ivoire	10	8.752	3.182	0.000	11.120
Croatia	10	65.847	23.478	0.000	80.763
Cyprus	10	71.392	29.456	0.000	98.305
Czechia	10	61.135	21.522	0.000	70.815
Denmark	10	74.218	26.104	0.000	84.587
Dominican Republic	10	51.335	18.643	0.000	64.384
Ecuador	10	25.591	27.349	0.000	59.880
Egypt, Arab Rep.	10	28.099	15.204	0.000	40.000
El Salvador	10	28.990	1.934	27.005	32.229
Equatorial Guinea	10	1.153	2.439	0.000	6.161
Estonia	10	65.735	23.140	0.000	76.202
Fiji	10	74.615	7.664	60.324	84.200
Finland	10	84.894	30.277	0.000	104.944
France	10	60.033	21.319	0.000	71.420
Gabon	10	3.436	7.334	0.000	19.620
Georgia	10	65.949	11.733	45.774	80.280
Germany	10	63.712	22.700	0.000	77.366
Ghana	10	17.514	2.477	14.214	21.990
Greece	10	113.172	60.909	0.000	166.666
Guatemala	10	15.979	9.047	0.000	27.278
Honduras	10	20.410	7.474	0.000	26.214
Hungary	10	47.473	16.930	0.000	58.070
Iceland	10	68.812	24.876	0.000	86.523
India	10	29.321	2.425	25.991	33.117
Ireland	10	68.891	24.255	0.000	78.778
Israel	10	52.884	18.686	0.000	62.106
Italy	10	58.994	21.212	0.000	73.896

Country	obs	mean_Enrollment	sd_Enrollment	min_Enrollment	max_Enrollment
Japan	10	56.511	19.870	0.000	64.629
Jordan	10	28.730	10.353	0.000	36.628
Kazakhstan	10	55.322	5.810	46.815	64.800
Kenya	10	4.346	5.652	0.000	11.886
Korea, Rep.	10	86.359	30.527	0.000	103.276
Kuwait	10	44.351	23.598	0.000	61.558
Kyrgyz Republic	10	46.525	6.054	39.915	56.018
Lao PDR	10	15.129	2.194	12.459	18.611
Latvia	10	78.107	28.783	0.000	94.865
Lebanon	10	49.699	8.149	38.821	61.596
Lithuania	10	62.940	22.273	0.000	76.915
Luxembourg	10	16.033	8.467	0.000	21.033
Malaysia	10	42.694	2.442	38.677	46.402
Maldives	10	20.289	20.631	0.000	51.361
Mali	10	2.850	2.515	0.000	5.704
Malta	10	52.228	21.437	0.000	78.623
Mauritania	10	3.355	2.902	0.000	6.000
Mauritius	10	36.993	13.190	0.000	44.203
Mexico	10	36.405	13.851	0.000	46.406
Moldova	10	43.416	23.057	0.000	61.301
Mongolia	10	66.262	2.152	64.317	71.430
Montenegro	10	59.037	2.848	55.174	63.937
Morocco	10	37.051	7.304	25.452	47.709
Namibia	10	19.413	10.789	0.000	28.892
Nepal	10	13.974	1.703	11.971	17.826
Netherlands	10	50.159	43.250	0.000	89.390
New Zealand	10	71.702	25.291	0.000	82.182
Nicaragua	10	17.682	7.188	0.000	29.541
North Macedonia	10	35.323	18.943	0.000	53.160
Norway	10	77.311	27.825	0.000	97.642
Oman	10	40.473	14.350	0.000	48.400
Pakistan	10	10.090	1.612	8.392	12.598
Panama	10	29.805	25.931	0.000	58.174
Paraguay	10	0.000	0.000	0.000	0.000
Peru	10	14.458	30.483	0.000	73.330
Philippines	10	36.313	4.719	29.429	45.282
Poland	10	64.048	22.564	0.000	75.291
Portugal	10	53.549	28.518	0.000	75.557
Qatar	10	19.350	9.624	0.000	35.085
Romania	10	47.232	16.810	0.000	58.239
Russian Federation	10	66.291	26.683	0.000	84.518
Rwanda	10	7.415	0.657	6.314	8.886
Samoa	10	10.369	7.357	0.000	17.572
Saudi Arabia	10	62.198	23.639	0.000	79.613
Senegal	10	13.515	2.435	10.833	17.296
Serbia	10	66.831	5.094	58.369	73.206
Singapore	10	63.697	44.187	0.000	98.022
Slovak Republic	10	45.365	16.076	0.000	53.884
Slovenia	10	71.955	25.442	0.000	84.378
Solomon Islands	10	0.000	0.000	0.000	0.000
South Africa	10	20.242	7.754	0.000	27.174
Spain	10	82.152	28.948	0.000	94.590
Sweden	10	66.761	24.505	0.000	85.943
Switzerland	10	58.731	21.243	0.000	74.153
Tajikistan	10	26.089	14.627	0.000	39.505
Tanzania	10	3.298	2.580	0.000	7.500

Country	obs	mean_Enrollment	sd_Enrollment	min_Enrollment	max_Enrollment
Thailand	10	41.629	14.799	0.000	49.756
United Arab Emirates	10	17.367	27.999	0.000	61.346
United Kingdom	10	58.383	22.170	0.000	80.151
United States	10	78.249	27.648	0.000	88.889
Uruguay	10	57.576	21.275	0.000	

Table 6. Descriptive Statistics for Tax Revenue (% of GDP) by Country

Country	Obs	Mean	SD	Min	Max
Albania	10	18.032	0.544	16.900	18.887
Algeria	10	0.000	0.000	0.000	0.000
Angola	10	6.324	5.570	0.000	13.543
Argentina	10	10.209	3.679	0.000	12.611
Armenia	10	21.595	0.606	20.781	22.482
Australia	10	20.405	7.198	0.000	23.628
Austria	10	25.995	0.685	24.666	27.216
Azerbaijan	10	12.879	4.619	0.000	15.603
Bahrain	10	1.032	1.051	0.000	2.878
Bangladesh	10	6.146	3.284	0.000	8.635
Belarus	10	13.052	1.008	11.234	14.673
Belgium	10	21.133	7.514	0.000	26.008
Belize	10	8.155	10.537	0.000	21.344
Bhutan	10	9.100	6.403	0.000	15.804
Bosnia and Herzegovina	10	19.525	0.457	18.800	20.141
Botswana	10	20.598	7.596	0.000	27.093
Brazil	10	13.783	0.527	12.700	14.726
Brunei Darussalam	10	0.000	0.000	0.000	0.000
Bulgaria	10	20.397	0.567	19.567	21.726
Cambodia	10	9.758	5.262	0.000	14.571
Cameroon	10	9.454	5.002	0.000	12.347
Canada	10	12.866	0.618	11.808	14.008
Chile	10	18.054	1.440	16.200	21.274
China	10	8.675	0.738	7.701	9.679
Colombia	10	15.167	1.059	14.000	17.703
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	13.406	0.602	12.200	14.354
Cote d'Ivoire	10	11.733	0.824	10.117	13.352
Croatia	10	21.459	0.536	20.381	22.017
Cyprus	10	23.471	0.814	21.940	24.716
Czechia	10	12.742	4.542	0.000	14.807
Denmark	10	33.642	1.790	30.669	36.585
Dominican Republic	10	11.907	4.220	0.000	14.377
Ecuador	10	12.498	4.519	0.000	16.389
Egypt, Arab Rep.	10	2.474	5.216	0.000	12.519
El Salvador	10	18.456	1.526	16.709	21.084
Equatorial Guinea	10	6.758	3.002	0.000	11.457
Estonia	10	21.161	0.403	20.705	21.740

Country	Obs	Mean	SD	Min	Max
Fiji	10	21.592	2.852	15.874	24.670
Finland	10	21.231	1.475	20.006	25.332
France	10	23.877	0.672	23.110	24.789
Gabon	10	9.407	5.187	0.000	15.105
Georgia	10	22.458	0.763	21.200	23.599
Germany	10	9.969	3.512	0.000	11.260
Ghana	10	10.566	3.740	0.000	12.298
Greece	10	26.249	0.904	24.992	27.669
Guatemala	10	10.812	0.613	10.000	11.820
Honduras	10	4.899	7.906	0.000	17.344
Hungary	10	20.487	7.219	0.000	23.428
Iceland	10	24.332	4.755	21.390	37.613
India	10	6.183	5.504	0.000	12.017
Ireland	10	16.110	5.936	0.000	22.460
Israel	10	23.213	1.069	21.987	25.010
Italy	10	24.771	0.233	24.244	25.083
Japan	10	0.000	0.000	0.000	0.000
Jordan	10	14.021	5.025	0.000	17.468
Kazakhstan	10	10.943	1.695	8.300	14.193
Kenya	10	14.595	0.537	13.555	15.187
Korea, Rep.	10	15.138	1.610	13.158	18.445
Kuwait	10	0.000	0.000	0.000	0.000
Kyrgyz Republic	10	17.362	1.976	14.000	21.281
Lao PDR	10	10.761	4.013	0.000	13.830
Latvia	10	16.611	0.447	16.174	17.232
Lebanon	10	10.178	6.211	0.000	15.405
Lithuania	10	18.797	2.279	16.034	21.418
Luxembourg	10	25.628	1.480	23.322	27.797
Malaysia	10	12.568	1.276	10.900	14.841
Maldives	10	15.928	8.404	0.000	20.692
Mali	10	9.839	6.895	0.000	15.883
Malta	10	24.203	1.701	21.754	26.249
Mauritania	10	0.000	0.000	0.000	0.000
Mauritius	10	17.800	3.316	8.758	20.700
Mexico	10	12.891	1.101	10.243	14.267
Moldova	10	17.695	0.923	16.291	18.940
Mongolia	10	11.424	6.345	0.000	16.909
Montenegro	10	0.000	0.000	0.000	0.000
Morocco	10	20.274	0.769	19.437	22.109
Namibia	10	27.479	9.921	0.000	34.629

Country	Obs	Mean	SD	Min	Max
Nepal	10	13.500	7.345	0.000	19.809
Netherlands	10	23.224	1.085	21.539	24.841
New Zealand	10	25.089	8.866	0.000	29.934
Nicaragua	10	17.253	1.737	15.316	19.916
North Macedonia	10	13.532	7.147	0.000	17.575
Norway	10	24.151	3.094	21.253	31.480
Oman	10	0.000	0.000	0.000	0.000
Pakistan	10	0.000	0.000	0.000	0.000
Panama	10	7.318	3.953	0.000	10.056
Paraguay	10	9.871	0.263	9.500	10.266
Peru	10	11.654	6.242	0.000	16.721
Philippines	10	13.810	0.598	13.016	14.619
Poland	10	16.995	1.035	15.614	18.959
Portugal	10	22.708	0.314	22.260	23.173
Qatar	10	0.000	0.000	0.000	0.000
Romania	10	14.363	5.297	0.000	18.918
Russian Federation	10	11.152	1.121	9.183	13.255
Rwanda	10	13.995	0.677	12.948	15.100
Samoa	10	19.031	10.056	0.000	25.022
Saudi Arabia	10	6.238	2.763	2.734	9.673
Senegal	10	15.594	5.618	0.000	19.441
Serbia	10	19.969	7.118	0.000	23.897
Singapore	10	13.174	0.594	12.033	14.006
Slovak Republic	10	16.605	5.861	0.000	19.440
Slovenia	10	21.543	0.681	20.346	22.163
Solomon Islands	10	21.092	7.667	0.000	25.739
South Africa	10	22.404	7.907	0.000	26.005
Spain	10	14.204	0.689	13.446	15.496
Sweden	10	24.806	8.734	0.000	28.386
Switzerland	10	9.535	0.392	9.087	10.094
Tajikistan	10	3.161	5.091	0.000	10.916
Tanzania	10	11.354	0.438	10.492	11.837
Thailand	10	15.692	0.604	15.061	16.851
United Arab Emirates	10	0.396	0.331	0.042	0.972
United Kingdom	10	25.735	0.921	24.785	27.319
United States	10	10.905	0.828	9.885	12.599
Uruguay	10	18.425	1.296	17.096	21.732

Table 7. Descriptive Statistics for GDP Growth (% per year) by Country

Country	Obs	Mean	SD	Min	Max
Albania	10	3.181	3.033	-3.314	8.970
Algeria	10	2.150	2.794	-5.000	4.100
Angola	10	0.070	2.919	-5.638	4.823
Argentina	10	0.054	5.521	-9.900	10.442
Armenia	10	4.680	5.358	-7.200	12.600
Australia	10	2.455	1.125	-0.120	4.242
Austria	10	1.349	3.243	-6.318	5.278
Azerbaijan	10	1.240	3.066	-4.199	5.616
Bahrain	10	2.819	3.334	-5.911	6.180
Bangladesh	10	6.478	1.227	3.448	7.882
Belarus	10	0.366	3.091	-4.658	4.127
Belgium	10	1.710	2.793	-4.793	6.208
Belize	10	2.517	8.073	-13.903	17.746
Bhutan	10	3.666	5.176	-10.218	8.476
Bosnia and Herzegovina	10	2.927	2.664	-3.015	7.390
Botswana	10	3.127	5.891	-8.729	11.916
Brazil	10	0.575	2.976	-3.546	4.763
Brunei Darussalam	10	-0.109	2.026	-2.508	3.869
Bulgaria	10	2.695	2.751	-3.216	7.781
Cambodia	10	5.757	3.739	-3.556	8.776
Cameroon	10	3.748	1.525	0.260	5.720
Canada	10	1.888	2.890	-5.038	5.951
Chile	10	1.953	4.238	-6.143	11.315
China	10	6.039	1.932	2.340	8.570
Colombia	10	2.831	4.646	-7.186	10.801
Comoros	10	3.457	1.009	1.992	5.596
Costa Rica	10	3.392	3.102	-4.273	7.936
Cote d'Ivoire	10	6.333	2.273	0.700	9.372
Croatia	10	2.942	5.298	-8.312	12.632
Cyprus	10	4.425	4.331	-3.221	11.388
Czechia	10	2.287	3.054	-5.305	5.174
Denmark	10	2.272	2.258	-1.780	7.382
Dominican Republic	10	5.026	5.510	-7.929	14.012
Ecuador	10	1.887	5.079	-9.245	9.422
Egypt, Arab Rep.	10	4.389	1.135	2.916	6.588
El Salvador	10	2.427	4.695	-7.893	11.905
Equatorial Guinea	10	-4.069	4.168	-9.110	3.224
Estonia	10	2.262	3.346	-3.023	7.154

Country	Obs	Mean	SD	Min	Max
Fiji	10	2.653	9.388	-17.039	19.793
Finland	10	0.841	1.795	-2.491	3.303
France	10	1.163	3.508	-7.441	6.882
Gabon	10	2.063	1.901	-1.838	4.315
Georgia	10	5.064	4.831	-6.290	10.959
Germany	10	1.162	2.134	-4.095	3.670
Ghana	10	4.172	2.290	0.514	8.129
Greece	10	1.388	4.606	-9.196	8.654
Guatemala	10	3.569	2.389	-1.786	8.042
Honduras	10	3.336	5.175	-8.965	12.565
Hungary	10	3.155	3.379	-4.339	7.223
Iceland	10	3.609	4.256	-6.940	8.979
India	10	6.150	4.488	-5.778	9.690
Ireland	10	8.431	8.079	-5.530	24.616
Israel	10	3.799	2.950	-2.022	9.388
Italy	10	1.058	4.431	-8.868	8.931
Japan	10	0.547	1.862	-4.169	2.697
Jordan	10	2.210	1.316	-1.103	3.656
Kazakhstan	10	2.930	2.340	-2.500	5.100
Kenya	10	4.653	2.001	-0.273	7.590
Korea, Rep.	10	2.483	1.347	-0.709	4.305
Kuwait	10	0.626	3.568	-4.818	6.759
Kyrgyz Republic	10	4.167	4.437	-7.149	9.013
Lao PDR	10	4.999	2.463	0.503	7.612
Latvia	10	2.495	2.692	-3.469	6.943
Lebanon	10	-3.318	7.140	-21.400	2.484
Lithuania	10	3.279	2.014	0.043	6.380
Luxembourg	10	2.018	2.537	-1.095	6.930
Malaysia	10	4.089	3.701	-5.457	8.862
Maldives	10	6.382	16.947	-32.909	37.508
Mali	10	4.498	2.365	-1.169	7.603
Malta	10	6.658	4.869	-3.358	13.300
Mauritania	10	3.878	2.572	-0.361	6.796
Mauritius	10	2.477	6.196	-14.547	8.693
Mexico	10	1.513	3.835	-8.354	6.048
Moldova	10	2.336	5.999	-8.276	13.930
Mongolia	10	4.027	3.871	-4.558	7.885
Montenegro	10	3.246	7.213	-15.307	13.043
Morocco	10	2.451	3.969	-7.178	8.155
Namibia	10	1.493	4.261	-8.101	6.093

Country	Obs	Mean	SD	Min	Max
Nepal	10	4.376	3.469	-2.370	8.977
Netherlands	10	2.099	2.718	-3.868	6.277
New Zealand	10	2.958	1.441	-0.307	4.535
Nicaragua	10	2.871	4.371	-3.363	10.454
North Macedonia	10	2.286	2.643	-4.688	4.511
Norway	10	1.544	1.515	-1.278	3.909
Oman	10	2.019	3.297	-3.380	7.986
Pakistan	10	3.797	2.675	-1.274	6.574
Panama	10	4.404	8.778	-17.821	16.467
Paraguay	10	2.851	2.337	-0.820	5.301
Peru	10	2.315	5.884	-10.933	13.363
Philippines	10	4.853	5.089	-9.518	7.581
Poland	10	3.776	2.748	-2.036	6.927
Portugal	10	2.030	4.041	-8.205	6.986
Qatar	10	1.702	2.788	-3.558	5.334
Romania	10	3.661	3.106	-3.674	8.195
Russian Federation	10	1.165	2.731	-2.654	5.866
Rwanda	10	6.677	4.046	-3.374	10.858
Samoa	10	1.146	5.383	-7.079	9.209
Saudi Arabia	10	3.170	4.165	-3.805	12.001
Senegal	10	5.317	1.803	1.342	7.407
Serbia	10	2.771	2.840	-1.804	7.949
Singapore	10	3.177	3.351	-3.815	9.757
Slovak Republic	10	2.476	2.371	-2.586	5.700
Slovenia	10	3.037	3.117	-4.085	8.390
Solomon Islands	10	2.023	2.237	-3.381	5.555
South Africa	10	0.777	2.763	-6.169	4.955
Spain	10	2.035	4.871	-10.940	6.683
Sweden	10	2.061	2.176	-2.005	5.938
Switzerland	10	1.857	1.960	-2.142	5.560
Tajikistan	10	7.182	1.353	4.400	9.400
Tanzania	10	5.374	1.495	1.992	6.867
Thailand	10	1.817	2.964	-6.050	4.223
United Arab Emirates	10	3.020	3.647	-4.957	7.510
United Kingdom	10	1.654	4.788	-10.297	8.576
United States	10	2.459	1.983	-2.163	6.055
Uruguay	10	0.000	0.000	0.000	0.000

Table 8. Descriptive Statistics for Global Cybersecurity Index (GCI), 2014–2023

Country	Obs	Mean_GCI	SD_GCI	Min_GCI	Max_GCI
Albania	10	53.245	24.676	20.600	86.510
Algeria	10	37.759	14.643	17.600	65.870
Angola	10	15.928	11.097	7.800	39.490
Argentina	10	46.814	4.077	40.700	51.510
Armenia	10	38.249	16.964	17.600	53.810
Australia	10	88.660	8.651	75.700	97.500
Austria	10	80.298	12.303	63.900	93.900
Azerbaijan	10	72.634	17.797	52.900	93.760
Bahrain	10	63.825	23.469	33.300	97.940
Bangladesh	10	63.949	24.105	29.400	96.960
Belarus	10	48.926	14.051	17.600	61.450
Belgium	10	78.550	19.510	47.500	96.810
Belize	10	18.140	6.509	10.300	32.350
Bhutan	10	25.756	15.954	11.800	60.610
Bosnia and Herzegovina	10	23.006	8.289	11.600	33.760
Botswana	10	47.694	19.029	17.600	78.600
Brazil	10	78.216	16.639	58.700	96.600
Brunei Darussalam	10	56.246	9.199	41.600	70.380
Bulgaria	10	63.813	9.706	48.300	74.560
Cambodia	10	28.496	8.821	16.100	41.200
Cameroon	10	47.489	8.600	41.200	65.530
Canada	10	89.354	6.484	82.000	97.680
Chile	10	53.279	15.351	36.700	70.230
China	10	75.180	19.626	44.100	92.500
Colombia	10	60.718	3.685	56.500	65.870
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	48.980	20.017	22.100	75.070
Cote d'Ivoire	10	52.572	20.106	23.500	78.800
Croatia	10	74.240	19.206	45.800	92.520
Cyprus	10	68.001	25.308	33.300	98.020
Czechia	10	67.560	12.588	53.300	87.940
Denmark	10	80.925	16.383	61.700	100.000
Dominican Republic	10	45.951	29.320	11.800	75.670
Ecuador	10	45.896	18.227	26.300	87.180
Egypt, Arab Rep.	10	83.658	14.981	58.800	100.000
El Salvador	10	24.762	14.157	12.400	56.460
Equatorial Guinea	10	5.994	8.839	0.000	25.440
Estonia	10	89.082	9.364	73.300	99.480
Fiji	10	26.559	15.117	5.900	53.810
Finland	10	82.848	14.213	60.800	100.000
France	10	86.831	14.373	60.800	98.980
Gabon	10	18.950	12.077	2.900	39.860
Georgia	10	77.711	13.339	50.000	91.920
Germany	10	84.437	11.811	67.900	97.410

Country	Obs	Mean_GCI	SD_GCI	Min_GCI	Max_GCI
Ghana	10	60.482	29.997	29.400	99.270
Greece	10	65.141	29.201	24.100	97.110
Guatemala	10	21.441	8.758	11.400	39.990
Honduras	10	7.784	9.118	0.000	28.070
Hungary	10	77.584	14.282	53.400	91.280
Iceland	10	59.515	27.915	26.600	99.100
India	10	82.637	13.991	68.300	98.490
Ireland	10	69.570	23.759	23.300	90.900
Israel	10	81.185	10.641	69.100	93.600
Italy	10	80.425	18.583	56.600	100.000
Japan	10	87.554	10.517	73.300	97.820
Jordan	10	55.465	29.579	20.600	98.600
Kazakhstan	10	64.333	33.309	17.600	94.040
Kenya	10	71.008	20.410	41.200	98.590
Korea, Rep.	10	88.033	11.273	73.300	100.000
Kuwait	10	42.959	30.680	5.000	75.070
Kyrgyz Republic	10	37.091	19.269	11.800	65.590
Lao PDR	10	23.772	9.416	5.900	39.200
Latvia	10	79.481	11.057	68.300	97.280
Lebanon	10	23.759	6.961	17.200	32.370
Lithuania	10	76.586	23.174	49.100	97.930
Luxembourg	10	79.248	21.559	49.100	98.720
Malaysia	10	77.240	31.630	8.800	98.820
Maldives	10	6.649	4.324	0.400	14.820
Mali	10	12.671	7.859	6.000	29.480
Malta	10	62.676	23.503	39.900	92.960
Mauritania	10	20.060	9.386	10.700	39.330
Mauritius	10	85.579	14.687	58.800	100.000
Mexico	10	66.692	18.461	32.400	85.770
Moldova	10	57.896	15.713	38.200	75.800
Mongolia	10	37.602	10.297	22.800	56.360
Montenegro	10	53.940	13.130	38.200	74.830
Morocco	10	68.541	19.400	42.900	97.500
Namibia	10	13.484	11.838	0.000	36.930
Nepal	10	38.961	18.447	11.800	69.760
Netherlands	10	86.084	12.896	67.500	99.220
New Zealand	10	79.054	4.564	71.800	84.040
Nicaragua	10	14.162	3.133	9.000	20.560
North Macedonia	10	60.940	26.358	14.700	89.900
Norway	10	87.637	9.820	75.800	97.010
Oman	10	89.137	7.527	76.500	97.010
Pakistan	10	54.125	26.049	17.600	96.690
Panama	10	42.948	11.355	29.400	66.540
Paraguay	10	48.912	20.080	20.600	74.770

Country	Obs	Mean_GCI	SD_GCI	Min_GCI	Max_GCI
Peru	10	50.646	18.305	32.400	83.740
Philippines	10	66.538	19.348	35.300	93.490
Poland	10	78.155	16.639	56.600	93.860
Portugal	10	72.685	26.995	35.000	99.860
Qatar	10	83.005	15.049	64.100	100.000
Romania	10	67.044	15.860	47.100	91.620
Russian Federation	10	81.032	16.653	50.000	97.900
Rwanda	10	60.761	33.003	0.600	98.080
Samoa	10	25.928	13.546	4.800	43.080
Saudi Arabia	10	75.354	28.778	29.400	100.000
Senegal	10	36.780	15.543	17.600	67.170
Serbia	10	62.984	30.900	26.500	96.820
Singapore	10	90.255	10.794	68.300	99.860
Slovak Republic	10	73.315	21.538	36.200	94.440
Slovenia	10	59.741	28.568	21.600	96.480
Solomon Islands	10	8.707	4.440	2.900	17.700
South Africa	10	45.487	34.318	0.000	86.250
Spain	10	85.049	15.482	63.300	99.740
Sweden	10	83.476	13.205	65.800	99.310
Switzerland	10	73.673	18.994	36.600	91.260
Tajikistan	10	26.272	10.615	14.700	50.200
Tanzania	10	62.590	33.042	20.600	99.260
Thailand	10	75.334	19.703	41.200	99.220
United Arab Emirates	10	75.767	25.094	39.100	100.000
United Kingdom	10	89.163	11.755	73.300	100.000
United States	10	94.121	5.972	84.100	100.000
Uruguay	10	74.050	10.726	64.700	94.690

Table 9. Descriptive Statistics for Legal Measures, 2014–2023

Country	Obs	Mean_Legal	SD_Legal	Min_Legal	Max_Legal
Albania	10	13.973	6.220	5.400	20.000
Algeria	10	12.492	3.954	5.800	19.180
Angola	10	6.574	3.665	3.200	13.670
Argentina	10	13.097	1.859	11.100	16.960
Armenia	10	10.651	4.896	4.900	17.220
Australia	10	18.760	1.856	15.000	20.000
Austria	10	18.514	1.058	16.200	20.000
Azerbaijan	10	16.280	3.729	11.900	20.000
Bahrain	10	17.460	2.872	13.400	20.000
Bangladesh	10	11.924	4.234	5.500	17.440
Belarus	10	12.528	4.125	4.500	18.610
Belgium	10	17.770	2.144	15.000	20.000
Belize	10	8.793	2.420	5.800	14.130
Bhutan	10	8.126	3.346	3.700	14.180
Bosnia and Herzegovina	10	8.217	2.940	4.100	12.080
Botswana	10	13.158	4.934	4.900	19.520
Brazil	10	16.390	3.299	12.400	20.000
Brunei Darussalam	10	14.355	2.181	10.000	17.200
Bulgaria	10	16.487	2.683	12.200	20.000
Cambodia	10	6.592	2.918	3.300	11.820
Cameroon	10	11.618	2.801	9.800	17.920
Canada	10	18.473	1.673	15.000	20.000
Chile	10	12.368	3.543	8.500	17.200
China	10	16.320	4.264	9.600	20.000
Colombia	10	6.338	5.612	0.000	13.370
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	12.528	5.040	5.700	18.680
Cote d'Ivoire	10	13.511	5.057	6.100	19.430
Croatia	10	18.000	2.582	15.000	20.000
Cyprus	10	16.440	3.728	10.200	20.000
Czechia	10	16.875	2.290	14.400	20.000
Denmark	10	17.163	4.022	8.100	20.000
Dominican Republic	10	10.534	6.808	2.700	18.480
Ecuador	10	12.604	3.028	10.000	19.210
Egypt, Arab Rep.	10	17.210	3.029	12.100	20.000
El Salvador	10	9.680	3.647	5.100	17.290
Equatorial Guinea	10	1.870	2.318	0.000	6.620
Estonia	10	19.960	0.070	19.800	20.000
Fiji	10	6.113	3.773	1.300	13.420
Finland	10	16.800	4.250	10.000	20.000
France	10	19.760	0.430	18.800	20.000
Gabon	10	8.764	6.039	1.300	20.000
Georgia	10	16.965	2.905	10.900	20.000
Germany	10	17.670	3.830	9.100	20.000

Country	Obs	Mean_Legal	SD_Legal	Min_Legal	Max_Legal
Ghana	10	12.925	6.274	6.300	20.000
Greece	10	15.375	4.021	10.000	20.000
Guatemala	10	5.124	1.281	2.800	6.990
Honduras	10	5.138	5.606	0.000	17.440
Hungary	10	17.773	1.924	14.100	20.000
Iceland	10	14.810	3.949	9.100	20.000
India	10	16.880	2.842	14.000	20.000
Ireland	10	15.760	4.869	10.000	20.000
Israel	10	17.369	3.246	10.100	20.000
Italy	10	15.937	4.713	7.100	20.000
Japan	10	19.290	0.970	17.200	20.000
Jordan	10	12.903	6.494	4.900	20.000
Kazakhstan	10	13.760	7.116	3.800	20.000
Kenya	10	15.924	4.267	9.400	20.000
Korea, Rep.	10	18.890	1.703	15.100	20.000
Kuwait	10	10.410	7.741	0.000	17.740
Kyrgyz Republic	10	9.755	4.976	3.100	16.710
Lao PDR	10	10.463	3.856	2.700	17.900
Latvia	10	17.250	4.078	8.200	20.000
Lebanon	10	8.350	2.557	6.000	12.080
Lithuania	10	18.395	1.955	14.200	20.000
Luxembourg	10	17.120	3.594	11.200	20.000
Malaysia	10	15.710	6.429	1.800	20.000
Maldives	10	1.544	1.419	0.000	4.520
Mali	10	6.001	3.180	2.900	12.360
Malta	10	14.910	5.325	5.300	20.000
Mauritania	10	10.733	3.930	5.900	17.390
Mauritius	10	17.057	2.934	11.700	20.000
Mexico	10	13.379	3.850	6.500	18.390
Moldova	10	14.029	3.923	9.100	18.280
Mongolia	10	12.846	3.492	7.800	19.180
Montenegro	10	14.259	3.295	10.100	18.940
Morocco	10	14.750	3.998	9.300	20.000
Namibia	10	2.436	1.882	0.000	5.660
Nepal	10	12.073	5.242	3.700	19.210
Netherlands	10	17.930	2.180	15.000	20.000
New Zealand	10	18.323	1.810	14.200	20.000
Nicaragua	10	8.060	2.061	4.700	12.330
North Macedonia	10	14.932	6.375	3.500	20.000
Norway	10	19.710	0.351	19.100	20.000
Oman	10	18.338	1.505	15.800	20.000
Pakistan	10	12.257	5.536	4.000	20.000
Panama	10	10.855	1.923	7.600	14.020
Paraguay	10	11.907	4.830	5.000	17.810

Country	Obs	Mean_Legal	SD_Legal	Min_Legal	Max_Legal
Peru	10	15.150	4.497	10.000	20.000
Philippines	10	15.940	4.310	8.600	20.000
Poland	10	17.592	3.330	10.100	20.000
Portugal	10	16.240	4.075	9.100	20.000
Qatar	10	18.220	2.132	15.000	20.000
Romania	10	15.590	3.458	11.000	20.000
Russian Federation	10	16.950	3.520	10.400	20.000
Rwanda	10	13.910	7.389	0.100	20.000
Samoa	10	8.273	4.083	1.600	12.000
Saudi Arabia	10	15.110	5.772	5.900	20.000
Senegal	10	8.304	3.626	4.000	15.560
Serbia	10	13.220	6.467	5.600	20.000
Singapore	10	18.800	1.843	15.000	20.000
Slovak Republic	10	16.650	4.792	6.100	20.000
Slovenia	10	14.240	6.473	4.100	20.000
Solomon Islands	10	3.166	1.396	1.100	5.780
South Africa	10	10.092	7.722	0.000	20.000
Spain	10	18.970	1.636	15.300	20.000
Sweden	10	17.600	2.362	15.000	20.000
Switzerland	10	14.247	3.526	10.000	20.000
Tajikistan	10	14.792	5.983	8.300	28.400
Tanzania	10	12.724	6.697	4.200	20.000
Thailand	10	16.021	4.056	8.800	20.000
United Arab Emirates	10	17.870	2.123	15.000	20.000
United Kingdom	10	19.620	0.684	18.100	20.000
United States	10	20.000	0.000	20.000	20.000
Uruguay	10	15.390	2.962	11.400	20.000

Table 10. Descriptive statistics for Technical scores, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	11.068	5.186	4.300	18.380
Algeria	10	3.777	2.342	1.100	8.570
Angola	10	0.436	0.596	0.000	1.780
Argentina	10	11.971	1.142	10.200	13.800
Armenia	10	9.014	4.305	4.100	13.900
Australia	10	17.443	1.886	13.200	19.200
Austria	10	16.174	4.395	6.600	20.000
Azerbaijan	10	15.443	3.432	11.200	19.200
Bahrain	10	10.887	5.279	3.300	20.000
Bangladesh	10	13.067	5.041	6.000	20.000
Belarus	10	6.716	3.104	2.400	11.200
Belgium	10	16.168	3.478	10.000	20.000
Belize	10	0.000	0.000	0.000	0.000
Bhutan	10	6.548	4.463	3.000	16.430
Bosnia and Herzegovina	10	3.580	1.573	1.800	6.600
Botswana	10	7.701	4.137	2.800	16.530
Brazil	10	15.963	3.109	12.100	20.000
Brunei Darussalam	10	12.670	3.541	6.600	17.200
Bulgaria	10	11.109	2.213	7.840	14.490
Cambodia	10	2.452	1.104	1.200	4.560
Cameroon	10	6.780	0.862	6.100	8.500
Canada	10	18.185	1.469	15.300	20.000
Chile	10	8.581	2.935	5.800	13.810
China	10	14.382	3.720	8.500	17.900
Colombia	10	16.042	0.889	15.000	17.600
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	4.716	4.046	0.700	9.310
Cote d'Ivoire	10	10.865	4.035	4.900	15.300
Croatia	10	15.845	2.871	12.100	19.540
Cyprus	10	12.836	6.477	3.300	19.380
Czechia	10	15.527	1.877	13.300	19.000
Denmark	10	15.993	3.819	10.200	20.000
Dominican Republic	10	10.550	6.681	2.700	18.400
Ecuador	10	11.743	2.816	9.300	17.890
Egypt, Arab Rep.	10	15.875	3.005	11.100	20.000
El Salvador	10	0.428	0.420	0.000	1.390

Country	Obs	Mean	SD	Min	Max
Equatorial Guinea	10	0.308	0.484	0.000	1.390
Estonia	10	16.713	2.147	13.300	20.000
Fiji	10	2.039	1.096	0.500	4.100
Finland	10	17.380	2.842	13.300	20.000
France	10	16.002	5.687	3.300	19.300
Gabon	10	0.363	0.265	0.000	0.700
Georgia	10	16.363	2.805	10.500	19.250
Germany	10	18.157	1.265	16.100	20.000
Ghana	10	12.578	6.163	6.100	20.000
Greece	10	12.895	4.712	6.600	20.000
Guatemala	10	1.324	1.078	0.000	3.770
Honduras	10	0.000	0.000	0.000	0.000
Hungary	10	15.410	2.650	12.100	19.400
Iceland	10	12.552	5.104	6.600	20.000
India	10	16.408	2.851	13.500	20.000
Ireland	10	13.899	5.058	3.300	19.540
Israel	10	15.944	1.520	13.300	17.870
Italy	10	14.883	4.346	6.600	20.000
Japan	10	17.273	2.344	13.300	19.600
Jordan	10	9.610	5.605	3.500	19.380
Kazakhstan	10	11.370	8.922	0.800	19.500
Kenya	10	14.941	4.079	8.700	19.070
Korea, Rep.	10	17.303	2.527	13.300	20.000
Kuwait	10	6.638	5.312	0.000	14.250
Kyrgyz Republic	10	7.089	4.215	2.200	14.870
Lao PDR	10	4.093	1.693	1.000	6.700
Latvia	10	15.777	1.810	13.300	19.210
Lebanon	10	1.935	0.645	1.390	3.300
Lithuania	10	15.413	4.779	6.600	19.540
Luxembourg	10	15.767	4.552	6.600	19.540
Malaysia	10	15.268	6.280	1.700	20.000
Maldives	10	0.000	0.000	0.000	0.000
Mali	10	1.292	1.422	0.000	4.560
Malta	10	13.295	4.099	9.200	20.000
Mauritania	10	0.428	0.420	0.000	1.390
Mauritius	10	17.450	2.960	12.000	20.000
Mexico	10	14.870	4.168	7.200	19.600
Moldova	10	10.382	3.681	6.680	16.900

Country	Obs	Mean	SD	Min	Max
Mongolia	10	6.230	1.142	3.900	8.000
Montenegro	10	9.218	2.991	6.400	15.300
Morocco	10	13.958	3.663	8.800	18.120
Namibia	10	0.908	1.169	0.000	3.540
Nepal	10	5.672	2.932	1.700	11.090
Netherlands	10	16.533	3.782	10.000	20.000
New Zealand	10	14.125	1.507	11.100	16.600
Nicaragua	10	0.000	0.000	0.000	0.000
North Macedonia	10	8.335	3.616	2.000	12.400
Norway	10	17.630	2.183	13.300	20.000
Oman	10	16.002	1.518	13.700	18.390
Pakistan	10	10.208	4.918	3.300	18.210
Panama	10	11.342	1.964	7.900	14.490
Paraguay	10	7.588	2.958	3.300	10.900
Peru	10	9.350	2.949	6.100	13.510
Philippines	10	12.282	3.977	6.400	19.110
Poland	10	15.102	5.511	6.600	20.000
Portugal	10	16.270	3.921	10.000	20.000
Qatar	10	17.070	1.408	15.400	20.000
Romania	10	13.858	2.880	10.000	18.400
Russian Federation	10	15.346	3.148	9.500	19.100
Rwanda	10	10.736	6.058	0.100	18.980
Samoa	10	1.685	1.365	0.300	4.560
Saudi Arabia	10	14.894	5.714	5.800	20.000
Senegal	10	9.172	3.238	4.500	14.410
Serbia	10	12.735	6.178	5.400	19.000
Singapore	10	18.173	2.241	13.300	20.000
Slovak Republic	10	15.760	4.328	9.100	20.000
Slovenia	10	11.679	3.920	6.600	19.220
Solomon Islands	10	0.418	0.430	0.000	1.390
South Africa	10	9.459	7.216	0.000	18.570
Spain	10	16.703	3.435	12.200	20.000
Sweden	10	16.820	2.538	13.300	20.000
Switzerland	10	15.625	4.459	6.600	19.600
Tajikistan	10	0.000	0.000	0.000	0.000
Tanzania	10	12.549	6.607	4.100	19.690
Thailand	10	14.247	3.959	7.700	20.000
United Arab Emirates	10	14.627	5.214	6.600	20.000

Country	Obs	Mean	SD	Min	Max
United Kingdom	10	17.843	2.445	13.300	20.000
United States	10	18.920	1.196	16.600	20.000
Uruguay	10	16.082	2.778	12.400	20.000

Table 11. Descriptive statistics for Organization scores, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	11.362	5.419	4.400	19.470
Algeria	10	3.908	3.309	0.600	11.020
Angola	10	1.460	1.923	0.000	5.800
Argentina	10	8.795	1.695	6.300	12.080
Armenia	10	3.059	1.469	1.400	4.900
Australia	10	18.690	1.194	17.200	20.000
Austria	10	15.891	2.566	10.200	17.640
Azerbaijan	10	13.094	3.121	9.500	18.050
Bahrain	10	11.935	5.800	2.500	20.000
Bangladesh	10	13.119	4.907	6.000	20.000
Belarus	10	8.355	2.605	3.000	11.970
Belgium	10	13.170	4.989	5.000	19.510
Belize	10	6.517	2.672	3.000	12.380
Bhutan	10	5.305	3.552	2.400	13.140
Bosnia and Herzegovina	10	2.132	1.700	1.000	5.950
Botswana	10	10.410	4.137	3.800	15.120
Brazil	10	14.826	3.087	11.200	19.000
Brunei Darussalam	10	9.160	3.125	2.500	11.350
Bulgaria	10	13.155	2.833	10.000	17.240
Cambodia	10	3.179	2.275	1.600	8.300
Cameroon	10	7.419	2.391	5.700	12.860
Canada	10	18.340	2.295	14.200	20.000
Chile	10	11.156	3.401	7.500	15.800
China	10	14.101	3.782	8.200	18.340
Colombia	10	7.819	1.350	6.700	10.910
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	7.700	6.948	1.200	18.120
Cote d'Ivoire	10	10.522	4.428	4.600	17.890
Croatia	10	13.535	4.785	5.000	19.340
Cyprus	10	14.085	5.192	7.500	20.000
Czechia	10	13.923	3.200	10.200	20.000
Denmark	10	16.490	3.634	10.000	20.000
Dominican Republic	10	11.266	7.163	2.900	18.500
Ecuador	10	6.630	5.254	0.000	18.600
Egypt, Arab Rep.	10	17.210	3.029	12.100	20.000
El Salvador	10	6.062	5.588	0.000	18.810

Country	Obs	Mean	SD	Min	Max
Equatorial Guinea	10	1.406	2.245	0.000	6.430
Estonia	10	19.250	1.034	17.000	20.000
Fiji	10	6.981	4.429	1.500	15.710
Finland	10	16.175	1.881	14.000	20.000
France	10	16.397	4.671	10.000	20.000
Gabon	10	2.681	1.673	0.400	5.510
Georgia	10	13.967	2.365	9.000	16.350
Germany	10	17.310	2.516	12.500	20.000
Ghana	10	12.298	6.087	6.000	20.000
Greece	10	12.456	6.544	2.500	19.220
Guatemala	10	7.787	2.487	4.200	12.580
Honduras	10	0.792	1.046	0.000	3.160
Hungary	10	15.826	2.827	11.100	18.960
Iceland	10	11.613	7.044	0.000	19.400
India	10	15.579	2.618	12.900	18.490
Ireland	10	12.694	7.154	0.000	19.670
Israel	10	14.219	2.493	11.000	18.340
Italy	10	16.250	4.338	10.100	20.000
Japan	10	17.240	2.100	15.000	20.000
Jordan	10	11.544	5.977	4.300	19.220
Kazakhstan	10	11.326	8.809	0.700	18.500
Kenya	10	12.565	4.165	7.200	20.000
Korea, Rep.	10	17.860	1.519	16.000	20.000
Kuwait	10	6.729	5.387	0.000	11.880
Kyrgyz Republic	10	10.021	4.999	3.200	16.320
Lao PDR	10	1.984	1.672	0.000	5.520
Latvia	10	15.432	3.714	9.200	19.340
Lebanon	10	5.783	2.352	4.000	10.520
Lithuania	10	15.957	3.809	9.000	20.000
Luxembourg	10	15.310	4.643	10.000	20.000
Malaysia	10	14.852	6.081	1.700	19.000
Maldives	10	3.251	1.430	0.200	4.880
Mali	10	0.820	0.906	0.000	2.900
Malta	10	11.406	4.509	5.000	18.680
Mauritania	10	5.957	2.452	3.200	10.590
Mauritius	10	16.588	2.913	11.400	20.000
Mexico	10	12.618	3.632	6.100	17.340
Moldova	10	11.423	3.267	7.400	15.510

Country	Obs	Mean	SD	Min	Max
Mongolia	10	7.117	3.051	3.100	13.620
Montenegro	10	12.422	3.107	8.800	17.610
Morocco	10	11.927	4.183	7.300	20.000
Namibia	10	4.150	5.414	0.000	16.350
Nepal	10	8.892	4.459	2.700	16.920
Netherlands	10	18.210	1.171	17.000	20.000
New Zealand	10	16.624	0.918	15.200	17.500
Nicaragua	10	2.414	1.610	0.000	5.970
North Macedonia	10	14.542	6.236	3.400	19.470
Norway	10	16.878	2.645	12.800	19.310
Oman	10	18.490	1.544	15.900	20.000
Pakistan	10	10.201	5.347	3.300	20.000
Panama	10	6.017	3.165	2.400	13.150
Paraguay	10	11.368	4.706	4.800	17.660
Peru	10	8.087	4.585	4.900	18.270
Philippines	10	11.867	4.110	6.200	19.510
Poland	10	14.698	1.345	12.500	16.660
Portugal	10	13.530	6.658	2.500	20.000
Qatar	10	16.093	4.043	10.000	20.000
Romania	10	8.722	3.840	5.800	17.300
Russian Federation	10	16.318	3.457	10.000	20.000
Rwanda	10	12.421	6.680	0.100	19.340
Samoa	10	9.359	4.651	1.800	13.700
Saudi Arabia	10	15.110	5.772	5.900	20.000
Senegal	10	5.798	2.045	2.800	9.060
Serbia	10	12.841	6.269	5.400	19.220
Singapore	10	18.150	1.741	15.000	20.000
Slovak Republic	10	16.123	3.408	10.000	20.000
Slovenia	10	10.966	6.147	0.000	18.160
Solomon Islands	10	1.200	1.187	0.000	3.900
South Africa	10	7.518	5.720	0.000	14.840
Spain	10	17.010	2.658	12.500	20.000
Sweden	10	16.521	2.398	12.500	19.310
Switzerland	10	12.989	4.990	5.000	17.540
Tajikistan	10	6.357	2.785	3.620	12.500
Tanzania	10	11.960	6.431	3.900	20.000
Thailand	10	15.028	3.856	8.200	19.220
United Arab Emirates	10	14.170	5.948	5.000	20.000

Country	Obs	Mean	SD	Min	Max
United Kingdom	10	18.000	2.582	15.000	20.000
United States	10	19.180	1.082	17.500	20.000
Uruguay	10	14.253	3.311	10.100	19.510

Table 12. Descriptive statistics for Capacity Development scores, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	9.008	3.991	3.500	12.110
Algeria	10	9.809	2.724	4.600	13.910
Angola	10	0.742	0.961	0.000	2.910
Argentina	10	3.134	0.668	1.880	4.400
Armenia	10	6.435	2.948	3.000	10.350
Australia	10	18.785	0.919	17.500	20.000
Austria	10	15.836	3.611	9.100	19.130
Azerbaijan	10	13.477	3.532	9.800	17.690
Bahrain	10	12.212	5.843	5.100	20.000
Bangladesh	10	12.977	4.989	6.000	19.520
Belarus	10	7.444	2.104	2.700	9.000
Belgium	10	14.892	5.386	7.500	20.000
Belize	10	0.882	0.410	0.000	1.500
Bhutan	10	3.897	2.622	1.800	9.710
Bosnia and Herzegovina	10	2.764	1.019	1.400	4.410
Botswana	10	9.617	3.661	3.500	13.320
Brazil	10	15.296	3.649	10.200	19.500
Brunei Darussalam	10	10.316	1.906	7.500	12.850
Bulgaria	10	12.197	2.923	7.500	16.000
Cambodia	10	3.253	1.486	1.600	6.120
Cameroon	10	10.313	1.888	8.900	14.240
Canada	10	18.654	1.224	16.400	20.000
Chile	10	8.871	2.318	6.300	11.520
China	10	15.346	3.982	9.000	19.000
Colombia	10	13.820	0.867	12.900	15.140
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	6.213	5.326	1.000	12.160
Cote d'Ivoire	10	8.265	3.025	3.700	11.500
Croatia	10	14.757	4.813	7.500	19.890
Cyprus	10	11.464	5.216	2.500	18.640
Czechia	10	11.151	3.674	7.000	18.360
Denmark	10	16.253	3.826	10.000	20.000
Dominican Republic	10	6.242	4.001	1.600	10.640
Ecuador	10	8.579	2.345	6.500	13.780
Egypt, Arab Rep.	10	16.752	2.989	11.800	20.000
El Salvador	10	2.602	1.914	0.700	6.950
Equatorial Guinea	10	0.466	0.744	0.000	2.130
Estonia	10	17.179	3.326	10.000	19.740
Fiji	10	5.761	2.735	1.300	8.750
Finland	10	15.773	3.229	10.000	20.000
France	10	18.790	1.719	15.000	20.000
Gabon	10	1.866	1.488	0.300	4.900
Georgia	10	14.633	2.408	9.500	16.320
Germany	10	16.773	2.888	12.500	19.920
Ghana	10	11.188	5.687	5.400	19.270

Country	Obs	Mean	SD	Min	Max
Greece	10	11.265	7.119	2.500	19.740
Guatemala	10	4.382	1.987	2.300	8.680
Honduras	10	0.346	0.456	0.000	1.380
Hungary	10	13.424	4.268	6.000	18.600
Iceland	10	8.285	7.270	0.000	19.700
India	10	16.880	2.842	14.000	20.000
Ireland	10	14.081	3.331	7.500	17.710
Israel	10	16.683	1.857	15.000	19.240
Italy	10	16.913	2.928	12.500	20.000
Japan	10	17.076	2.869	12.500	20.000
Jordan	10	10.077	5.805	3.700	20.000
Kazakhstan	10	9.837	7.678	0.600	16.360
Kenya	10	13.549	4.120	7.800	20.000
Korea, Rep.	10	17.420	2.898	12.500	20.000
Kuwait	10	9.446	6.275	2.000	16.050
Kyrgyz Republic	10	2.213	1.593	0.700	5.530
Lao PDR	10	1.443	0.570	0.400	2.400
Latvia	10	15.334	2.715	10.000	19.090
Lebanon	10	5.320	1.564	4.000	8.300
Lithuania	10	13.039	8.029	2.500	20.000
Luxembourg	10	15.249	5.255	7.500	19.740
Malaysia	10	15.710	6.429	1.800	20.000
Maldives	10	1.082	0.988	0.000	3.160
Mali	10	0.218	0.249	0.000	0.790
Malta	10	12.572	5.139	5.000	18.760
Mauritania	10	0.328	0.331	0.000	1.090
Mauritius	10	17.194	2.943	11.800	20.000
Mexico	10	13.193	3.671	6.400	17.050
Moldova	10	8.977	2.656	6.000	13.100
Mongolia	10	4.739	2.595	1.200	10.430
Montenegro	10	3.494	0.965	2.500	5.280
Morocco	10	13.090	3.864	8.200	19.380
Namibia	10	1.998	1.521	0.000	4.570
Nepal	10	7.798	3.501	2.400	13.090
Netherlands	10	15.799	3.564	11.000	19.220
New Zealand	10	15.654	1.612	12.500	17.710
Nicaragua	10	0.000	0.000	0.000	0.000
North Macedonia	10	11.205	5.252	2.800	18.600
Norway	10	17.579	0.892	16.160	19.040
Oman	10	18.136	1.495	15.600	20.000
Pakistan	10	12.785	5.641	4.200	20.000
Panama	10	5.990	0.931	4.200	7.140
Paraguay	10	7.385	3.625	3.000	14.030
Peru	10	6.994	3.725	4.300	15.160
Philippines	10	11.548	3.535	6.100	17.170

Country	Obs	Mean	SD	Min	Max
Poland	10	15.734	3.591	11.000	19.770
Portugal	10	13.195	6.664	2.500	19.860
Qatar	10	17.190	2.952	12.500	20.000
Romania	10	12.584	3.568	8.700	19.430
Russian Federation	10	16.534	3.402	10.200	20.000
Rwanda	10	12.312	6.675	0.100	19.760
Samoa	10	2.036	2.147	0.000	6.830
Saudi Arabia	10	15.110	5.772	5.900	20.000
Senegal	10	4.930	2.178	2.300	9.310
Serbia	10	11.240	5.747	4.700	19.220
Singapore	10	18.781	1.747	15.000	20.000
Slovak Republic	10	12.327	6.377	5.000	18.450
Slovenia	10	11.900	6.866	2.500	19.100
Solomon Islands	10	0.248	0.237	0.000	0.790
South Africa	10	7.965	5.858	0.000	15.400
Spain	10	17.545	2.715	12.500	20.000
Sweden	10	16.028	3.871	11.000	20.000
Switzerland	10	14.574	4.468	5.000	18.270
Tajikistan	10	1.205	0.594	0.350	2.400
Tanzania	10	12.286	6.496	4.000	19.570
Thailand	10	14.884	3.958	8.100	20.000
United Arab Emirates	10	15.900	4.696	10.000	20.000
United Kingdom	10	18.240	2.018	15.000	20.000
United States	10	19.841	0.289	19.100	20.000
Uruguay	10	15.637	3.517	10.000	19.450

Table 13. Descriptive statistics for Cooperation scores, 2014–2023

Country	Obs	Mean	SD	Min	Max
Albania	10	7.844	4.536	3.000	16.580
Algeria	10	7.763	2.907	3.600	13.190
Angola	10	6.706	4.230	3.300	15.330
Argentina	10	9.817	0.993	8.410	11.600
Armenia	10	9.130	4.198	4.200	14.740
Australia	10	14.968	4.157	8.800	19.410
Austria	10	13.882	3.438	10.000	17.700
Azerbaijan	10	14.330	5.120	7.000	20.000
Bahrain	10	11.352	4.460	5.000	17.940
Bangladesh	10	12.862	4.982	5.900	20.000
Belarus	10	13.903	4.211	5.000	19.110
Belgium	10	16.550	3.815	10.000	20.000
Belize	10	1.928	1.835	0.000	5.840
Bhutan	10	1.910	2.334	0.000	7.150
Bosnia and Herzegovina	10	6.303	2.165	3.200	8.600
Botswana	10	6.808	3.506	2.500	14.110
Brazil	10	15.721	3.615	11.000	20.000
Brunei Darussalam	10	9.764	3.597	4.120	16.180
Bulgaria	10	10.876	3.807	2.500	14.000
Cambodia	10	3.870	1.473	1.900	6.220
Cameroon	10	11.349	1.589	10.000	14.330
Canada	10	15.712	3.843	10.000	20.000
Chile	10	12.293	3.543	8.500	16.800
China	10	15.031	3.905	8.800	18.900
Colombia	10	12.909	1.500	10.230	15.900
Comoros	10	0.000	0.000	0.000	0.000
Costa Rica	10	8.353	7.192	1.300	16.800
Cote d'Ivoire	10	9.439	3.765	4.200	15.070
Croatia	10	12.092	4.847	5.000	18.290
Cyprus	10	13.187	5.522	5.000	20.000
Czechia	10	10.084	3.679	5.000	14.280
Denmark	10	15.015	3.145	10.000	20.000
Dominican Republic	10	7.369	4.710	1.900	12.440
Ecuador	10	6.300	5.001	0.000	17.700
Egypt, Arab Rep.	10	16.631	2.987	11.700	20.000
El Salvador	10	5.980	2.760	3.100	12.020
Equatorial Guinea	10	1.944	3.094	0.000	8.870
Estonia	10	15.990	4.183	10.000	20.000
Fiji	10	5.655	4.182	1.200	14.540
Finland	10	16.700	3.871	10.000	20.000
France	10	15.882	3.547	12.200	20.000
Gabon	10	5.286	2.985	0.800	9.450
Georgia	10	15.793	2.935	10.100	20.000
Germany	10	14.527	3.856	10.000	19.410
Ghana	10	11.453	5.879	5.500	20.000

Country	Obs	Mean	SD	Min	Max
Greece	10	13.150	7.480	2.500	20.000
Guatemala	10	2.814	2.270	0.000	7.970
Honduras	10	1.518	2.020	0.000	6.090
Hungary	10	15.140	4.404	10.000	19.410
Iceland	10	12.235	5.524	5.000	20.000
India	10	16.880	2.842	14.000	20.000
Ireland	10	13.135	5.161	2.500	20.000
Israel	10	16.950	3.568	10.000	20.000
Italy	10	16.442	3.657	10.000	20.000
Japan	10	16.685	2.822	12.500	20.000
Jordan	10	11.291	6.007	4.200	20.000
Kazakhstan	10	11.310	9.037	0.800	20.000
Kenya	10	14.069	4.130	8.100	20.000
Korea, Rep.	10	16.550	3.815	10.000	20.000
Kuwait	10	9.745	6.478	2.000	15.900
Kyrgyz Republic	10	8.013	3.898	2.600	12.160
Lao PDR	10	5.799	2.576	1.400	9.610
Latvia	10	15.697	2.958	10.000	20.000
Lebanon	10	2.381	0.722	1.700	3.360
Lithuania	10	13.782	6.450	5.000	20.000
Luxembourg	10	15.802	4.252	10.000	20.000
Malaysia	10	15.710	6.429	1.800	20.000
Maldives	10	0.762	0.718	0.000	2.260
Mali	10	4.320	2.284	2.100	8.870
Malta	10	10.484	5.824	4.000	17.440
Mauritania	10	2.634	2.715	0.000	8.870
Mauritius	10	17.290	2.937	11.900	20.000
Mexico	10	12.622	3.413	6.300	17.300
Moldova	10	13.075	3.612	8.500	16.580
Mongolia	10	6.660	1.222	4.200	8.600
Montenegro	10	14.567	3.097	10.500	17.700
Morocco	10	14.786	4.004	9.300	20.000
Namibia	10	3.972	2.687	0.000	6.810
Nepal	10	4.506	2.519	1.300	9.450
Netherlands	10	17.602	2.712	12.500	20.000
New Zealand	10	14.329	2.126	10.000	17.000
Nicaragua	10	3.698	0.644	2.260	4.300
North Macedonia	10	11.916	5.671	2.900	20.000
Norway	10	15.830	4.526	10.000	20.000
Oman	10	18.161	1.550	15.600	20.000
Pakistan	10	8.684	4.980	2.700	18.480
Panama	10	8.734	4.025	4.300	17.740
Paraguay	10	10.664	4.459	4.500	16.800
Peru	10	11.075	3.633	7.200	16.800
Philippines	10	14.921	3.980	8.100	19.400

Country	Obs	Mean	SD	Min	Max
Poland	10	15.050	5.500	5.000	20.000
Portugal	10	13.460	6.444	5.000	20.000
Qatar	10	14.442	5.548	6.600	20.000
Romania	10	16.290	3.482	11.600	20.000
Russian Federation	10	15.874	3.262	9.900	20.000
Rwanda	10	11.352	6.397	0.100	20.000
Samoa	10	4.605	2.742	0.800	9.340
Saudi Arabia	10	15.110	5.772	5.900	20.000
Senegal	10	8.596	4.709	4.000	18.830
Serbia	10	12.948	6.356	5.400	20.000
Singapore	10	16.360	3.749	10.000	20.000
Slovak Republic	10	12.455	4.057	6.000	16.220
Slovenia	10	10.975	6.501	2.500	20.000
Solomon Islands	10	3.685	1.401	1.300	5.840
South Africa	10	10.453	7.910	0.000	20.000
Spain	10	14.810	6.015	5.000	20.000
Sweden	10	16.507	2.585	12.500	20.000
Switzerland	10	16.238	2.901	10.000	19.410
Tajikistan	10	3.918	2.466	0.000	8.090
Tanzania	10	13.061	6.841	4.300	20.000
Thailand	10	15.134	3.965	8.300	20.000
United Arab Emirates	10	13.200	7.225	2.500	20.000
United Kingdom	10	15.470	4.548	10.000	20.000
United States	10	16.190	3.853	10.000	20.000
Uruguay	10	12.689	1.928	10.000	16.580

List of developed countries

- Australia
- Austria
- Bahrain
- Belgium
- Brunei Darussalam
- Canada
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Israel
- Italy
- Japan
- Kuwait
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- New Zealand
- Norway
- Poland
- Portugal
- Qatar
- Singapore
- Slovakia
- Slovenia
- South Korea
- Spain
- Sweden
- Switzerland
- United Arab Emirates
- United Kingdom
- United States
- Uruguay

List of emerging countries

- Albania
- Algeria
- Angola
- Argentina
- Armenia
- Azerbaijan
- Bangladesh
- Belarus
- Belize
- Bhutan
- Bosnia and Herzegovina
- Botswana
- Brazil
- Bulgaria
- Cambodia
- Cameroon
- Chile
- China
- Colombia
- Comoros
- Costa Rica
- Côte d'Ivoire
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Equatorial Guinea
- Fiji
- Gabon
- Georgia
- Ghana
- Guatemala
- Honduras
- India
- Jordan
- Kazakhstan
- Kenya
- Kyrgyzstan
- Lao P.D.R.
- Lebanon
- Malaysia
- Maldives
- Mali
- Mauritania
- Mauritius
- Mexico
- Moldova
- Mongolia
- Montenegro
- Morocco
- Namibia
- Nepal
- Nicaragua
- North Macedonia
- Oman
- Pakistan
- Panama
- Paraguay
- Peru
- Philippines
- Romania
- Russian Federation
- Rwanda
- Samoa
- Saudi Arabia
- Senegal
- Serbia
- Solomon Islands
- South Africa
- Tajikistan
- Tanzania
- Thailand