Lisbon School of Economics & Management
Universidade de Lisboa

MASTER
MONETARY AND FINANCIAL ECONOMICS

MASTER´S FINAL WORK
DISSERTATION

UNDERSTANDING THE CORRELATION BETWEEN STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH

TIAGO ALEXANDRE RODRIGUES VIEIRA

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GLOSSARY

GDP – Gross Domestic Product.

GDP PC – Gross Domestic Product per capita.

V_A – Voice and Accountability.

R_L – Rule of Law

P_Stability – Political Stability

C_Corruption – Control of Corruption

Gov_Cons – Government Consumption.

ABSTRACT, KEYWORDS, AND JEL CODES

This dissertation provides new insights into the relationship between stock market development and economic growth, drawing on the foundational framework of Levine and Zervos (1998) while incorporating more recent and broader data and augmenting their model with interaction terms to do richer analysis. Using a panel of countries between 1960 and 2021, aggregated in ten-year intervals, using a cross-country growth regression model, the empirical analysis examines both the direct impact of stock market development on economic growth and the indirect, conditional effects through interaction terms with variables such as institutional quality, income level, and government consumption.

Our results support the findings of Levine and Zervos (1998) and highlight a positive correlation between stock market development and economic growth. However, our new findings indicate that this correlation is weaker in countries with larger governments or stronger institutions. Possible interpretations for these findings are also discussed in this thesis.

KEYWORDS: Economic Growth; Capital Markets; Stock Market development.

JEL CODES: C33; F21; G10; N20; O16.

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This thesis investigates the relationship between stock market development and economic growth using panel data from 1960 to 2021. Results show that stock market liquidity (turnover) is positively associated with growth, while market size(capitalization) is not. The analysis highlights heterogeneous effects, where institutional quality, income level, and government consumption influence the strength of this relationship. In countries with weaker institutions or lower income, stock markets contribute more significantly to growth. These findings suggest that stock markets may act as a substitute for the general institutional setting necessary for economic growth.

1. INTRODUCTION

Over the past several decades, stock markets have played a central role in economic discourse and policy formulation. Frequently referred to as the "engine of economic growth"(Levine 1997), capital markets are valued for their ability to allocate financial resources throughout the economy efficiently. By channeling savings into productive investments and enabling firms to raise capital, stock markets contribute to fostering innovation, productivity, and long-term economic development. Nevertheless, the extent and nature of their influence on economic growth remain subjects of ongoing academic debate. This relationship is far from universally accepted, and empirical evidence has often yielded mixed results.

A significant body of literature has studied the relationship between capital markets and economic growth to determine whether stock market development constitutes a causal factor or merely a consequence of broader economic dynamics (Levine, 2005). One of the most influential contributions in this field is the study by Levine and Zervos (1998), which provides robust evidence that well-functioning capital markets exert a positive and significant influence on economic growth. Their research emphasizes the importance of market liquidity, measured through indicators such as turnover ratio, as a critical determinant of this impact. According to their findings, higher levels of liquidity facilitate investment and risk diversification, thereby fostering economic growth. Their empirical analysis is based on a cross-country panel comprising 41 nations over the period from 1976 to 1993, utilizing macroeconomic data to assess the influence of financial indicators on growth outcomes.

Complementary to this line of research, Greenwood and Smith (1997) also highlight that the development of large and liquid stock markets can reduce the cost of mobilizing savings and enhance the efficiency of capital allocation.

These theoretical insights are increasingly relevant in the contemporary context, marked by successive financial crises, globalization, and evolving financial behavior among firms and households. In recent years, companies have increasingly diversified their sources of financing, seeking alternatives to traditional bank credit. Concurrently, individual investors have turned to capital markets in search of bigger returns and liquidity (Demirgüç-Kunt, Feyen, & Levine, 2013). A well-developed stock market, therefore, emerges as a critical institution capable of simultaneously providing firms with permanent access to equity financing and offering investors the flexibility of liquid markets.

In this context, the central research question of this study is whether stock market development is often associated with economic growth (and if so, which factor can make the correlation stronger). To address this question, we adopted the analytical framework proposed by Levine and Zervos (1998), adapting their model to incorporate a broader and more recent dataset. This study aims to review their findings using a more extensive panel of countries and updated economic indicators, thereby testing the robustness of their conclusions across time and economic contexts.

Additionally, this work seeks to explore whether correlation exists with the stock market development and whether growth varies between developed and developing economies, and whether factors such as the quality of the institutions, government size, and macroeconomic variables, enhance or moderate this relationship.

This research is of theoretical and practical significance for several reasons. First, it revisits and updates one of the foundational studies in the literature on financial development and growth. Second, it incorporates new data. Third, the findings may provide valuable insights for policymakers and central banks in shaping monetary, fiscal, and regulatory policies in response to current financial and economic challenges.

The empirical analysis reveals an overall positive correlation between stock market development and economic growth, consistent with the findings of Levine and Zervos (1998). This relationship is particularly robust when stock market development is measured through the turnover ratio, which captures market liquidity. In contrast, stock market capitalization, used to measure the market size, does not show a statistically significant association with growth. Importantly, the strength of the positive correlation between turnover and growth varies across country characteristics. The relationship tends to be weaker in high-income countries, in economies with larger government consumption relative to GDP, and in countries with stronger institutional frameworks, where alternative mechanisms for capital allocation may already be well established. Overall, these findings suggest that while stock market liquidity can contribute meaningfully to economic growth, its impact is conditional on broader structural and institutional factors and is likely more pronounced in developing or institutionally weaker economies.

The remainder of this paper is structured as follows: Chapter 2 presents a review of the relevant literature, summarizing key theoretical frameworks and empirical findings that inform our analysis. Divided into four parts, we first introduce the theoretical fundamentals. The second part discusses the main paper, the third offers a broad view of other significant papers, and the last examines papers that reach a contrary conclusion. Chapter 3 provides a brief overview of the data used. Chapter 4 describes the empirical methodology, followed by the results and the robustness tests. Lastly, Chapter 5 is the conclusion.

2. LITERATURE REVIEW

This chapter reviews the theoretical foundations and empirical findings that inform this debate, with a focus on the contribution of stock market development to long-term economic performance.

2.1. Theoretical Background

The academic literature on stock market development encompasses a broad spectrum of analyses, which can be broadly classified into two main strands. The first strand concentrates on the microeconomic effects of stock markets, particularly their impact on firm-level outcomes. The second strand addresses the macroeconomic implications, with a focus on the correlation between stock market development and long-term economic growth. This line of research explores how market size, liquidity, and integration into the broader financial system may contribute to capital accumulation, productivity, and overall economic performance. The present thesis is positioned within the macroeconomic framework, aiming to assess the extent to which stock market development is associated with economic growth across countries.

We focus on the correlation and how this correlation depends on variables such as the quality of institutions. The literature on economic development generally suggests that well-functioning capital markets are expected to contribute to GDP per capita growth.

Traditionally, research on financial development and growth has focused on banking institutions, as they were historically perceived as the primary financial intermediaries. Banks were regarded as the sole providers of credit and upholders of savings. However, with the advent and expansion of capital markets, academic studies' attention shifted toward their complementary role in the financial system. Rather than replacing banks, capital markets began to be viewed as contributing alongside them to the efficient allocation of resources and the promotion of economic development (Demirgüç-Kunt & Levine, 2001).

Building on this perspective, capital markets have gained increasing recognition in the literature for their role in fostering economic growth. In the 2000s, various studies demonstrated how capital markets enhance growth by facilitating the mobilization of

savings and the diversification of investment risks (Levine, 2005). Levine argues that larger and more developed capital markets allow for greater risk diversification, as investors can more easily buy and sell shares, thereby encouraging higher levels of investment and, in turn, economic growth.

2.2. Empirical Evidence: The Contribution of Levine and Zervos (1998)

The main paper used to base this thesis is Levine and Zervos (1998), which is used in many other papers for the analysis of the impact of the capital markets on economic growth. In that paper, the authors used 47 countries with data between 1976 and 1993, and they analyzed the capital markets' growth by using individual stock market development indicators such as individual indicators of size, liquidity, and risk diversification. Stock market size is measured by the ratio of market capitalization to GDP, under the assumption that a larger stock market is positively associated with enhanced capital mobilization and improved risk diversification (Levine and Zervos, 1998).

The study also incorporates a model to estimate the role of risk diversification and includes several control variables such as initial income, education levels, and political instability, among others. Their findings reveal that stock market development is positively associated with indicators of financial development, even when accounting for these control variables.

2.3. Further Contributions to the Literature

Ross Levine also conducted an earlier study examining the role of financial markets in economic development, using a historical dataset that spanned over a century and included both developed and developing countries (1860–1963). He found that stock markets facilitate investment in large firms and enable portfolio diversification, allowing investors to trade shares without necessarily affecting firm-level investment. This increased liquidity can reduce investment risk, leading to higher levels of investment and, consequently, economic growth.

From the perspective of firms, the ability of investors to trade shares without requiring capital withdrawals boosts financial stability and enables firms to plan and implement long-term investments more effectively. Levine (1997) concludes that stock market development may promote economic growth; however, he finds no evidence of a causal relationship running in the opposite direction. Another relevant contribution comes from Cooray (2010), who utilized a panel dataset comprising 35 developing countries between 1992 and 2003. His findings support the notion that stock markets influence economic growth by enabling savers to acquire equity and firms to raise capital, thereby fostering firm expansion. Cooray argues that, in the long term, countries should focus on improving both the size and liquidity of their stock markets. Larger and more liquid markets tend to be less vulnerable to macroeconomic volatility and offer better risk management (Levine and Zervos, 1998). For example, highly liquid markets like those in the United States or the United Kingdom allow investors to buy and sell securities quickly, stabilizing prices during periods of uncertainty and reducing systemic risk (Demigüç-Kunt and Levine, 1996).

Nevertheless, Cooray (2010) acknowledges that stock markets alone cannot drive sustained economic growth, as numerous other structural and institutional factors also play significant roles. Structural and institutional factors, such as political stability, the quality of legal and regulatory frameworks, education levels, and infrastructure, are equally crucial. For instance, a well-developed legal system that protects property rights and enforces contracts encourages investment and entrepreneurship. Similarly, quality education systems enhance human capital, which increases productivity and innovation.

The work of Afonso and Reimers (2022) makes a significant contribution to the empirical literature on financial development by examining the relationship between the introduction of stock exchanges and economic growth in Sub-Saharan African countries. Utilizing a difference-in-differences (DiD) methodology, the authors analyze a panel dataset with 48 countries over the period from 1970 to 2018. Their identification strategy compares two different groups of countries, one consisting of 23 countries that introduced a stock exchange, and the second, the control group of 25 countries that did not. By controlling for unobserved country-specific heterogeneity and time effects, this approach allows for a more credible estimation of the average treatment effect of stock exchange introduction on GDP per capita.

The empirical findings suggest that the creation of a stock exchange is associated with a statistically significant increase in economic performance. On average, countries that established a stock exchange experienced a 42% increase in GDP per capita compared to the regional average. Notably, the impact follows an inverse U-shaped trajectory, becoming significant in the first year after the exchange is introduced, peaking around the fifth year, and gradually declining thereafter. These results indicate that the positive effects of stock exchange development on growth may be strongest in the medium term, while their persistence depends on additional structural and institutional conditions.

2.4. Critical Perspectives on the Stock Market Growth Relationship

Although Levine and Zervos (1998) are still among the most influential and widely cited studies in the field of financial development and economic growth, not all subsequent research has drawn the same conclusions. Several studies have offered critical perspectives, either by using alternative methodologies or by highlighting the significance of broader structural and institutional factors.

The assessment by Henry (2000) investigates the relationship between stock market liberalization and investment booms in emerging economies. Unlike Levine and Zervos, Henry does not concentrate on the long-term association between financial development and sustained economic growth. Instead, his analysis examines whether stock market liberalizations trigger short-term investment booms. Using a panel of 11 developing countries that liberalized their equity markets between 1977 and 1994, Henry finds that, although investment typically increases in the four years following liberalization compared to prior years, this effect is not necessarily indicative of a causal relationship.

Henry's empirical findings indicate that short-term increases often follow stock market liberalizations in investment. However, he emphasizes that these effects are transitory rather than permanent, as the evidence does not suggest long-lasting improvements in macroeconomic fundamentals such as GDP growth or productivity. Consequently, Henry (2000) warns against interpreting stock market liberalization as a sufficient or independent driver of economic development. He argues that the effectiveness of such reforms depends on both external and internal macroeconomic stability, suggesting that the positive effects of financial market development are context-

dependent and not universally applicable. This represents a substantive critique of earlier work, including Levine and Zervos (1998), by highlighting the conditional and temporary nature of the observed benefits.

Similarly, Rousseau and Wachtel (2000) provide a critical reassessment of the stock market–growth link. Using panel data from 47 countries over the period 1980–1995, their study examines whether the positive relationships noted in earlier work remain robust once macroeconomic stability, institutional quality, and instances of financial liberalization are considered. Their findings indicate that, under these stricter controls, the prior connection between stock market development and economic growth significantly weakens.

Additionally, Rousseau and Wachtel argue that in many developing economies, stock market development is often a consequence rather than a cause of economic reform and growth. Their analysis challenges the notion that equity market expansion alone can promote sustainable development, instead emphasizing the importance of broader institutional and macroeconomic foundations.

Taken together, these critiques suggest that the role of stock markets in fostering economic growth should be interpreted with caution. The effectiveness of stock market development is not universal but instead appears to be contingent on the presence of supportive structural conditions and institutional frameworks.

2.5. INSTITUTIONS' CORRELATION WITH FINANCIAL GROWTH AND ECONOMIC GROWTH

The institutions have been widely recognized as fundamental determinants of economic long-term growth (Fernández and Tamayo, 2015), providing a more comprehensive synthesis of the literature on institutional quality, financial development, and economic growth.

Through a careful evaluation of theoretical models, the authors identify how institutional quality influences financial market structures and decreases information asymmetries and transition costs. They then review empirical findings that measure how much institutions promote growth through financial development. Their analysis

concludes that high-quality institutions enable financial intermediation and are vital for sustaining long-term economic growth.

Building on this institutional perspective, Haini (2019) investigates the relationship between institutions, financial growth, and economic growth. Using a panel of data from 1995 to 2017 for the ASEAN economies. He concludes that financial institutions are way more significant to economic growth than financial markets. Furthermore, the development of institutions emerges as a crucial factor to promoting economic growth.

In a complementary analysis, Cepparulo, Cuestas & Intartaglia (2021), applying OLS and GMM regressions, found that financial development and the development of institutions have a statistically significant and positive impact on decreasing the poverty of the country. Consistent with the findings of this thesis, the authors also found that the impact of financial development on poverty alleviation is weaker in countries with stronger institutions. They conclude that these findings can mean that the limitations of the weaker institutions can be compensated for by the workings of the banking system. These findings underscore that the development of sustainable economic growth may depend on the development of institutions and the financial sector, namely in the banking sector.

3. DATA

This chapter outlines the dataset employed in the empirical analysis, including the data sources and the methodological choices related to data aggregation and transformation. These decisions are intended to enhance the robustness of the analysis and improve the interpretation of the long-term effects of stock market development on economic growth.

3.1. Countries and Sample Period

The analysis relies on a panel of annual data, measured at the end of every decade from 1960 to 2020. Using 10-year intervals allows for a more accurate assessment of medium- and long-term relationships, reducing the influence of short-term fluctuations, cyclical volatility, and idiosyncratic shocks that could otherwise distort the

results in annual regressions. This temporal aggregation also offers a more manageable number of observations while preserving meaningful variation across countries and time.

The dataset encompasses 213 economies worldwide, representing a diverse array of income levels and stages of financial development. All data has been sourced from the World Bank. Specifically, indicators related to stock market development, such as market capitalization and turnover ratios, are obtained from the Global Financial Development Database. The remaining macroeconomic, institutional, and control variables, including GDP growth, inflation, government consumption, and per capita income, are retrieved from the World Development Indicators (WDI) database.

After excluding observations with missing data for one or more of the key variables, the final sample comprises 75 countries.

3.2. Description of the Variables

In this section, we will outline the variables utilized in the empirical analysis and their economic definitions.

All variables in the model are lagged by one period [t–1] relative to the GDP growth period (t). This approach was chosen to mitigate potential endogeneity issues, particularly reverse causality, and to allow for a more accurate assessment of the medium- to long-term effects of the explanatory variables on economic growth. I also delete all the observations with missing data for all the variables.

When measuring stock market development, the existing literature employs a variety of indicators. In our analysis, we primarily use the turnover ratio, also used by Levine and Zervos (1998), defined as the total value of shares traded during a given period divided by the average market capitalization over that period, and as they explained a liquidity measure, even though it does not measure how easy it is to buy or sell stocks but measures the volume of trading compared with the size of the market and the economy, is associated with significantly influence on economy growth. Additionally, we conduct robustness checks using alternative indicators of stock market development, such as stock market capitalization to GDP, which measures the total value of listed shares as a percentage of gross domestic product.

TABLE 1- SUMMARY OF THE STOCK MARKET VARIABLES AND THE CONTROL VARIABLES

Variable	Mean	Std. Dev.	Obs
GDP Growth	0,165	0,173	118
Turnover Ratio	53,647	60,756	118
Stock Cap.	71,351	117,496	118
GDP per capita	9,283	1,252	118
Inflation	1,253	0,877	118
V_A	0,441	0,882	118
R_L	-0,278	1,03	76
P_Stability	-0,517	0,99	73
C_Corruption	-0,451	1,4	72
Gov_Cons	2,722	0,342	118

Source: World Bank Global Database

The dependent variable employed in this thesis is real GDP per capita growth, calculated as the first difference of the natural logarithm of real GDP per capita. Specifically, it is obtained by subtracting the logarithm of real GDP per capita in period [*t–1*] from the logarithm of real GDP per capita in period *t*, thereby capturing the growth rate between the two periods.

The set of control variables is designed to account for various determinants commonly associated with economic growth. These variables are largely consistent with those utilized in Levine and Zervos (1998) and are described as follows:

- **Real GDP per capita** represents the gross domestic product divided by the total population, expressed in constant 2015 US dollars. It is calculated without deducting the depreciation of manufactured capital or the depletion of natural resources, thereby reflecting a broad measure of economic output per person.

- **Inflation** serves as a control variable capturing nominal economic instability. It is measured by the annual percentage change in the Consumer Price Index (CPI), which reflects the average variation in the cost of a representative basket of goods and services consumed by households. In the literature, inflation is frequently interpreted as an indicator of macroeconomic stability. Higher inflation is generally associated with weaker financial market development and reduced economic growth (Marques, Fuinhas, and Marques, 2013).
- **Voice and Accountability** captures the perception of the extent to which a country´s citizens can participate in selecting their government and the perception of all types of freedom. This is also an estimated variable, so it gives the score of the country´s score on the aggregate indicator, in units of a standard normal distribution, and ranging from approximately -2.5 and 2.5.
- **Rule of Law** captures the perception of the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, property rights, policy, and the credibility of the legal system. Like the previous institutional variables, it is also an estimated variable that gives the country´s score on the aggregate indicator, in units of a standard normal distribution, and ranging from approximately -2.5 and 2.5.
- One more variable used to characterize the quality of the institutions is the **Political Stability** and the absence of violence, which measures the perception of the likelihood of political instability or the probability of politically motivated violence, including the perception of the probability of a terrorist attack. Like the previous institutional indicators, this variable is an estimate. It provides each country's score on an aggregate index, expressed in units of a standard normal distribution, and ranging from approximately -2.5 and 2.5.
- The final institutional variable used to assess institutional quality is **Control of Corruption**, which captures perceptions regarding the extent to which public power is exercised for private gain. This includes both petty and grand forms of corruption, as well as the influence of elites and private interests over public policy. Like the other institutional indicators, this variable is an estimate and

reflects each country's score on an aggregate index, measured in units of a standard normal distribution, and ranging from approximately -2.5 and 2.5.

- **Government Consumption** refers to the general government's final consumption expenditure. It encompasses all current expenditures by the government for the purchase of goods and services, including compensation of employees and consumption of fixed capital.
- The variable representing education is the **Upper Secondary Attainment Rate**, based on educational attainment among the adult population aged 25 and over. Specifically, it is measured by the percentage of individuals in this age group who have completed upper secondary education.

TABLE 2- SUMMARY OF THE PERCENTILES OF ALL CONTROL VARIABLES

Variable	10^{th} percentile	50^{th} percentile	90^{th} percentile	Obs
GDP PC	7,511	9,203	10,733	118
V_A	-0,889	0,578	1,45	118
Gov_Cons	2,274	2,808	3,105	118
R_L	-1,923	0,164	0,593	76
P_Stability	-1,68	-0,242	0,379	73
C_Corruption	-2,863	0,099	0,737	72
Education	22,03	44,875	81,13	68
Inflation	0,309	1,152	2,311	118

Source: World Bank Global Database

The previous table presents the 10^{th}, 50^{th}, and 90^{th} percentiles for the key variables used in the empirical analysis. The division into these percentiles provides a more understandable distribution of the data, helping to identify the extent of the heterogeneity

across countries in terms of institutional quality, fiscal policy, and economic performance. The percentile analysis confirms the existence of heterogeneity across the sample, thereby justifying the later implementation of interaction terms and the analysis for different percentiles.

4.EMPIRICAL STRATEGY

This chapter outlines the empirical model employed to examine the relationship between stock market development and long-term economic growth.

For the empirical analysis and to apply the model and do all the regressions, we use the StataNow SE version 18.5.

In Section 4.1, I begin by replicating the model of Levine and Zervos (1998), updating it with more recent data. Section 4.2 presents a series of robustness checks. Finally, in Section 4.3, I extend the baseline regression by incorporating interaction terms to examine whether the relationship between stock market development and economic growth is systematic across other variables or country characteristics.

4.1. Cross-Country Growth Regression Model

The general form of the regression is as follows:

$$GDP\ Growth_{i,t}=\beta \cdot STOCK_{i;t-1} + \alpha \cdot X_{i;t-1} + u_{i,t}$$

Where i is the country and t is the period:

- $GDP\ Growth_{i,t}$ denotes the growth rate of real GDP.
- $STOCK_{i;t-1}$ represents the key explanatory variable capturing stock market development (e.g., turnover ratio), is measured with one lag, that is, at year t-1,
- $X_{i;t-1}$ is a vector of control variables including inflation, government consumption, GDP per capita, and institutional quality indicators (e.g., control of corruption, political stability, or Rule of Law), all the control variables are also measured with one lag, that is, at year t-1.
- β is the estimated coefficient on the stock market variable,

- α is a vector of coefficients for the control variables,
- u is the error term.

All the following results hold after removing the outliers and removing individual countries that have few or no data.

This specification enables the analysis of the conditional correlation between stock market development and economic growth across countries. By incorporating a broader set of controls measured with lag and using the end-of-decade data, the model helps reduce errors in the results and avoids problems like short-term fluctuations or confusion about what causes what.

Table 3 summarizes the results from Model 1 on the links between stock market development and economic growth, where the dependent variable is the GDP per capita growth, as previously defined. All equations have the stock market turnover ratio as the main variable to characterize the stock market development, and the specifications progressively introduce additional control variables to account for other determinants of economic, institutional, and macroeconomic factors influencing growth.

This table is based on 118 observations. Regression 1 presents the regression results when we only include the Stock Turnover and a constant. In regressions 2 to 5, we progressively add the control variables.

Across all model specifications, the coefficient of the Stock Turnover is positive and statistically significant at the 5% level from regression 2 to 6. This can imply a consistent and economic association between higher stock market activity and increased GDP growth, as demonstrated by Demirgüç-Kunt and Levine (1996).

Although we cannot establish a causal link from these results, they provide statistical support for the previous theoretical analysis from Levine and Zervos (1998), concluding that well-functioning stock markets improve capital allocation and promote investment, resulting in higher economic growth.

To further assess the economic relevance of the relationship between stock market development and economic growth, standardized beta coefficients were computed. This approach allows for a comparison of the relative impact of the independent variable on the dependent variable in standard deviation units, thereby facilitating interpretation

across models. The standardized beta is calculated by multiplying the estimated coefficient of stock market turnover by the standard deviation of the turnover variable (as reported in Table 1) and dividing the result by the standard deviation of the GDP growth rate. All variables are expressed in logarithmic form, apart from the variables of the control of the institutions, because those can be negative, to account for non-linearities and to stabilize variance.

In Equation 1, the standardized beta coefficient is approximately 0.07, indicating that a one-standard-deviation increase in stock market turnover predicts an increase of around 0.012 in GDP growth, equivalent to roughly 7% of its standard deviation. However, since the stock turnover coefficient in this specification lacks statistical significance, this result is not emphasized in the analysis. From Equations 2 to 4, the standardized beta rises to approximately 0.21, suggesting that a one standard deviation increase in stock market turnover is associated with a 0,036 rise in GDP growth, which corresponds to about 21% of the standard deviation of GDP growth.

The Eq. 5, the standardized beta is 0,18, so this means that turnover increases by one standard deviation. This predicts an increase in GDP growth of 3% which represents 18% of the standard deviation. The last regression, the standardized beta is 0,35, so this means that turnover increases by one standard deviation. This predicts an increase in GDP growth of 6,1% which represents 35% of the standard deviation.

These results highlight that stock market turnover consistently exhibits a meaningful and economically relevant association with GDP growth. The fact that all statistically significant standardized betas exceed the 0.10 (or the 10%), threshold indicates a moderate to strong effect, suggesting that stock market activity plays a non-negligible role in explaining long-term economic performance. Therefore, these findings support the argument that well-functioning capital markets contribute to economic growth. (Levine & Zervos, 1998).

The variable initial GDP per capita, included in the second regression onwards, presents a negative and highly significant coefficient at the 1% level across all equations. This result is consistent with previous studies, which conclude that countries with higher initial GDP per capita tend to have smaller growth rates.

Inflation, included from Eq. 3 onwards, shows a positive but statistically insignificant coefficient. Although inflation is often linked to macroeconomic instability and negative effects on the stock market and the economy in general (Fischer, 1993), the lack of significance here may indicate that inflation primarily affects the short to medium term. In the long run, inflation tends to stabilize, having little impact on economic growth.

The variable representing the quality of the institutions, Voice and Accountability, was introduced in the Eq 4. It is positively associated with GDP growth and is statistically significant at a level of 5% in regressions 4 and 5 and at a level of 10% in regression 6. Although we cannot establish a causal link from these results, this finding means that the democratic government and civil liberties can contribute to the growth of the economy by enhancing transparency.

Government consumption, introduced in Equations 5 and 6, harms economic growth, and it is statistically significant at a level of 1%, which means that the increase in government spending can be inefficient to the economy and highly harmful to the economic growth rates.

Finally, the education variable was included because it was used by Levine and Zervos (1998). Although we chose not to include it in the main model due to a significant drop in the number of observations (from the full sample to just 68), we tested it separately in this table. The coefficient is positive but not statistically significant. Despite this, we recognize that human capital is widely considered important for economic growth (Romer, 2012). These results may reflect the lack of data or the need for rougher indicators of education quality and attainment.

TABLE 3- GDP GROWTH AND STOCK MARKET DEVELOPMENT

Regressions							
Independent Variables	GDP Growth	(1)	(2)	(3)	(4)	(5)	(6)
Constant		0,155***	0,848***	0,78***	0,953***	1,148***	1,627***
		(0,022)	(0,085)	(0,106)	(0,111)	(0,117)	(0,237)
Stock Turnover		0,0002	0,0006**	0,0006**	0,0006**	0,0005**	0,001**
		(0,0002)	(0,0002)	(0,0002)	(0,0003)	(0,0003)	(0,004)
GDP per capita			-0,077***	-0,072***	-0,093***	-0,081***	-0,112***
		-	(0,009)	(0,01)	(0,012)	(0,012)	(0,023)
Inflation				0,015	0,017	0,016	-0,042
		-	-	(0,016)	(0,015)	(0,016)	(0,034)
Voice and Accountability					0,051**	0,059**	0,052*
		-	-	-	(0,024)	(0,024)	(0,031)
Government Consumption						-0,112***	-0,189***
		-	-	-	-	(0,042)	(0,059)
Education							0,001
		-	-	-	-	-	(0,001)
R^2		0,0042	0,292	0,296	0,336	0,371	0,412
Number of Observations		118	118	118	118	118	68

Note: Source: World Bank Databank. We used a cross-country regression. The robust standard errors are in brackets. The P-values have the following definition: ***significant at a 1% level; **significant at a 5% level; *significant at a 10% level.

The explanatory power of the model improves with each additional variable, as indicated by the increase in the R-squared from 0,0042 to 0,371. This progression suggests that institutional and economic variables enhance the model´s capacity to explain cross-country variations in growth.

In sum, the empirical relationship between stock market development and economic growth remains strong even after adding the control variables.

These results align with a broad body of literature emphasizing a comparatively strong link between the development of the stock markets and economic growth.

4.2 Robustness Test

This chapter aims to verify the robustness of the empirical results obtained in the previous chapter.

Given the cross-sectional nature of the dataset and the decade-based aggregation of observations, it is particularly important to ensure that the results are not unduly sensitive to model specification, including the inclusion of specific explanatory variables.

Several alternative specifications of the model are tested using different controlled variables.

These exercises are intended to strengthen the empirical credibility of the main findings and contribute to a more nuanced and reliable interpretation of the relationship between institutions, capital markets, and economic growth.

4.2.1 Alternative measure of stock market development

Here I use an alternative measure for the development of the stock market, the stock capitalization, which, unlike the turnover ratio, which reflects the market liquidity, the stock capitalization captures the size of the market compared to the size of the economy, by doing this robustness test the objective is to verify whether the relationship between stock market development and economic growth holds under a different metric.

Table 4 presents a robustness test in which stock market capitalization is employed as an alternative measure for stock market development, replacing stock turnover used in the main specification. The stock capitalization is only statistically significant (at a 1% level) in the first equation when it is the only variable along with GDP growth, despite having a negative coefficient, which indicates that stock capitalization negatively affects

economic growth. However, this relationship diminishes and becomes statistically insignificant as more control variables are added, implying that the initial negative effect might be due to omitted variables.

The GDP per capita remains consistently negative in all the regressions and statistically significant at a level of 1% through Equations 2 to 5 and in Equation 6 at a level of 5%.

TABLE 4-GDP GROWTH AND STOCK MARKET CAPITALIZATION

Regressions							
Independent Variables	GDP Growth	(1)	(2)	(3)	(4)	(5)	(6)
Constant		0,202***	0,742***	0,687***	0,887***	1,129***	1,528***
		(0,023)	(0,098)	(0,111)	(0,123)	(0,127)	(0,28)
Stock Capitalization		-0,0007***	-0,00002	0,00002	0,00004	-0,0003	-0,0005
		(0,0002)	(0,0003)	(0,0003)	(0,0003)	(0,0003)	(0,0004)
GDP per capita			-0,063***	-0,059***	-0,083***	-0,06***	-0,068**
		-	(0,011)	(0,012)	(0,014)	(0,016)	(0,032)
Inflation				0,014	0,013	0,008	-0,053
		-	-	(0,015)	(0,015)	(0,016)	(0,036)
Voice and Accountability					0,051**	0,06**	0,034
		-	-	-	(0,024)	(0,025)	(0,043)
Government Consumption		-	-	-	-	-0,158***	-0,269***
						(0,048)	(0,076)
Education							0,001
		-	-	-	-	-	(0,001)
R^2		0,0535	0,21	0,215	0,257	0,319	0,334
Number of Observations		125	125	125	125	125	69

Note: Source: World Bank Databank. We used a cross-country regression. The robust standard errors are in brackets. The P-values have the following definition: ***significant at a 1% level; **significant at a 5% level; *significant at a 10% level.

The inflation is always statistically insignificant, meaning that, within this sample or this model, inflation does not have a robust or systematic effect on long-term economic growth, following the same results as the ones obtained in Table 3.

The institutional variable Voice and Accountability variable is positive and statistically significant at a level of 5% in Equations 4 and 5, reinforcing the importance of institutional quality for growth, and statistically insignificant in Equation 6, likely because of the decline in the size of the sample.

Government consumption is negatively and significantly at a level of 1%, supporting the idea that the excess of government spending may crowd out the private sector.

Lastly, the education variable is not statistically significant, and as we saw in Table 3, the number of observations abruptly declines, which may affect the reliability of estimates in that specification.

This table shows a robustness test with a different measure for stock market development. Overall, the results indicate that the link between stock market development and GDP is not consistent for this variable because it becomes barely statistically significant once control variables are included, suggesting its explanatory power is limited when other variables are considered. Aside from this change, the other results remain consistent with those in Table 3, reaffirming the negative and significant impact of government consumption, the importance of institutional quality, and the convergence pattern indicated by GDP per capita.

The results suggest that the size of the stock market relative to the GDP does not correlate with economic growth. However, there is a correlation between the turnover ratio and economic growth. One possible interpretation of these results is that the efficiency or liquidity of the financial market, rather than its size, is more relevant for supporting economic development. The liquidity of the market eases the investment in large and long-term projects, giving investors the ability to diversify risk, increasing economic growth (Levine and Zervos, 1998).

4.2.2 Alternative measures of the quality of the institutions

This chapter explores the robustness of the main empirical findings by incorporating alternative indicators of institutional quality. While the previous analyses have relied only on the Voice and Accountability index, institutions are multifaceted and cannot be fully captured by a single dimension. Therefore, this section broadens the analysis by including additional institutional variables such as Rule of Law, Political Stability, and Control of Corruption.

The purpose of this approach is to assess whether the relationship between institutional quality, stock market development, and economic growth remains consistent with the different variables. By doing so, the analysis seeks to provide a more comprehensive understanding of how institutional environments influence the effectiveness of financial markets in promoting long-term economic performance.

Table 5 presents the regression results between economic growth and stock market development and a set of control variables. This analysis is split across three regressions, each incorporating a different alternative institutional variable.

Stock turnover is positive in all 3 regressions, and significant in Eq 1, at a level of 10%, Eq 2 at a level of 1% and in Eq 3 at a level of 5%. This suggests that stock market development may be a strong driver of economic growth, which aligns with some findings in the literature suggesting that its effect may be conditional on other factors.

GDP per capita is negative and statistically significant at a level of 1% in all regressions; these results align with the previous results from Table 3. These results suggest that countries with higher GDPs tend to have smaller growth rates.

The inflation coefficient is positive in all regressions but is insignificant in all regressions, suggesting that inflation has a very limited correlation with economic growth.

TABLE 5-GDP GROWTH AND ALTERNATIVE QUALITY OF THE INSTITUTIONS

Regressions				
Independent Variables	GDP Growth	1	2	3
Constant		1,316***	1,287***	1,251***
		(0,161)	(0,164)	(0,177)
Stock Turnover		0,0005*	0,0007***	0,0005**
		(0,0003)	(0,0002)	(0,0003)
GDP per capita		-0,105***	-0,101***	-0,101***
		(0,019)	(0,019)	(0,022)
Inflation		0,023	0,016	0,02
		(0,017)	(0,017)	(0,018)
Government Consumption		-0,098**	-0,092**	-0,087**
		(0,041)	(0,041)	(0,043)
Rule of Law		0,086***	-	-
		(0,030)		
Political Stability		-	0,07***	-
			(0,023)	
Control of Corruption		-	-	0,062**
				(0,027)
R^2		0,373	0,39	0,354
Number of Observations		118	118	118

Note: Source: World Bank Databank. We used a cross-country regression. The robust standard errors are in brackets. The P-values have the following definition: ***significant at a 1% level; **significant at a 5% level; *significant at a 10% level.

The Government Consumption has a negative coefficient and is statistically significant in all regressions, at a level of 5%. These results support the previous ones.

Each regression includes a different indicator of institutional quality. The first is the Rule of Law, which is positive and statistically significant at the 1% level, suggesting that countries with a stronger legal system are associated with faster growth. Political Stability is also positive and significant at the 1% level, indicating that a stable political

environment promotes economic growth. Finally, Control of Corruption is positive and statistically significant at the 5% level, suggesting that reducing corruption contributes to better growth outcomes. These results reinforce the idea that institutional quality is positively associated with long-term economic growth. This supports a growing body of research (Acemoglu 2005) that emphasizes the importance of strong institutions in promoting investment and ensuring an efficient allocation of resources.

The results presented in this table reinforce the central role that institutional quality plays in economic growth. While the effect of stock market development remains weak and statistically inconsistent, it depends on the variable of the quality of the institutions used. The alternative institutional indicators consistently show a correlation with GDP growth. One possible interpretation is that well-functioning institutions not only provide a stable environment for economic activity but may also be important to financial development.

The persistent negative coefficients of the government consumption suggest the distortive role of excessive state intervention on economic growth.

4.3 Heterogeneous effects

The preceding chapter established a general relationship between capital market development, institutional quality, and economic growth. However, these relationships may not be uniform across all countries. In this chapter, we explore the heterogeneous effects of stock market development on economic growth, recognizing that the impact of financial systems may differ depending on a country's structural characteristics, such as GDP per capita, government spending, or the quality of its institutions.

To examine this possibility, we re-estimate the baseline models for subgroups of countries. This disaggregated approach allows us to assess whether the observed aggregate relationships hold across different contexts or whether they are driven by specific country groups.

We assess these effects by introducing some interaction on the model as follows:

$$GDP\ Growth_{i,t}=\beta \cdot STOCK_{i;t-1} + \gamma Z_{i,t-1} + \delta Z_{i,t-1} \times STOCK_{i;t-1} + \alpha \cdot X_{i;t-1} + u_{i,t}$$

Where i is the country and t is the period:

- $GDP\ Growth_{i,t}$ denotes the average growth rate of real GDP.
- $STOCK_{i;t-1}$ represents the key explanatory variable capturing stock market development (e.g., turnover ratio),
- $X_{i;t-1}$ is a vector of control variables including inflation, government consumption, GDP per capita, and institutional quality indicators (e.g., control of corruption, political stability, or Rule of Law).
- $Z_{i,t-1}$ is a control variable of interest, not included in X
- $Z_{i,t-1} \times STOCK_{i;t-1}$ is the interaction term
- β is the estimated coefficient on the stock market variable,
- δ is the estimated coefficient on the interaction variable
- α is a vector of coefficients for the control variables,
- u is the error term.

Table 6 explores the heterogeneous effects of stock market development on economic growth through the inclusion of interaction terms between the stock market development and the control variables.

Overall, Stock turnover is positive and statistically significant in the first 3 regressions (respectively, at a 10% level, and then 1% level in the other two) and without any significance in the Eq 4.

The GDP per capita is negative and statistically significant at a level of 1% in all 4 regressions, suggesting that countries with a lower initial income level grow faster. Now the interaction between GDP per capita and stock turnover is negative and statistically significant at a level of 10%. This result implies that the effect of the stock market development diminishes as the countries become wealthier. One possible interpretation for this result is that in countries with more developed economies, there can be less scope for high growth, and hence the development of a stock market can have a lower impact or return.

The inflation is positive and statistically insignificant in all the regressions. Following the previous results, within this database or model, inflation does not exhibit a significant correlation with long-term economic growth. The interaction follows the same analysis, because it is also positive and insignificant. This can suggest that the inflation in the long term has a small to no effect on the economy. Overall, the inflation is controlled by the countries to stay within the same range (around the 2% mark), so with a broad dataset as this one, the spikes of inflation in some years do not affect the long-term.

The government consumption exhibits a negative coefficient and is significant at a 1% level, except in Eq. 2, which is insignificant. These results may reflect inefficiencies in public resource allocation. The interaction term is now negative and statistically significant at the 5% level. This result suggests that in countries with a higher dependence on government spending—and thus a lower reliance on the private sector—the positive impact of stock market development on economic growth is reduced. In other words, in more fiscally interventionist economies, the stock market plays a smaller role in driving growth, and further stock market development may even have a negative effect on economic performance.

The institutional variable, voice and accountability, is positive and statistically significant in all regressions (at a level of 1% in the first 3 and at a level of 5% in Eq 4), although this analysis does not establish a definitive causal relationship, one possible interpretation is that stronger institutional frameworks are associated with higher levels of economic growth. This is consistent with the findings of Acemoglu, Johnson, and Robinson (2001), who argue that institutions—particularly those that enforce property rights and the rule of law—play a fundamental role in shaping long-term economic performance. But when we analyze the interaction, it is negative and significant at a level of 1%, we draw other conclusions because this result may suggest that the effect of the stock market development is stronger in countries with a weaker institutional environment. This may be because in countries with lower institutional quality, the stock market is perceived as a relatively safer and more transparent environment for allocating financial resources. As a result, individuals and investors may view the stock market as a more trustworthy alternative for safeguarding their capital compared to other parts of the economy.

TABLE 6-GDP GROWTH AND STOCK MARKET DEVELOPMENT AND THE INTERACTIONS

Regressions					
Independent Variables	GDP Growth	1	2	3	4
Constant		0,99***	0,962***	1,15***	1,16***
		(0,142)	(0,152)	(0,116)	(0,122)
Stock Turnover		0,004*	0,005***	0,001***	0,0004
		(0,002)	(0,002)	(0,0002)	(0,0004)
GDP per capita		-0,062***	-0,079***	-0,082***	-0,0813***
		(0,015)	(0,013)	(0,012)	(0,012)
Inflation		0,016	0,017	0,01	0,011
		(0,017)	(0,017)	(0,017)	(0,019)
Government Consumption		-0,116***	-0,0478	-0,116***	-0,113***
		(0,041)	(0,052)	(0,04)	(0,042)
Voice and Accountability		0,062***	0,063***	0,12***	0,06**
		(0,023)	(0,025)	(0,02)	(0,025)
GDP PC* Turnover		-0,0004*			
		(0,0002)	-	-	-
Gov. Cons.*Turnover			-0,002**		
		-	(0,0007)	-	-
V_A* Turnover				-0,001***	
		-	-	(0,0002)	-
Inflation*Turnover					0,0001
		-	-	-	(0,0002)
R^2		0,395	0,389	0,475	0,373
Number of Observations		118	118	118	118

Note: Source: World Bank Databank. We used a cross-country regression. The robust standard errors are in brackets. The P-values have the following definition: ***significant at a 1% level; **significant at a 5% level; *significant at a 10% level.

The results presented in Table 6 underscore the importance of considering the contextual and structural heterogeneity when evaluating the relationship between stock market development and economic growth. While the stock turnover ratio generally exerts a positive and statistically significant correlation with GDP growth, this

relationship is not uniform across all regressions. Including interaction terms reveals that the marginal impact of financial development varies systematically with a country's level of income, institutional quality, and fiscal characteristics.

Specifically, the negative and significant interaction between GDP per capita and stock turnover suggests that the growth role of stock markets is stronger in lower-income countries, potentially due to greater marginal returns on financial development. Notably, the interaction between voice and accountability and stock turnover suggests that the benefits of financial development may be more pronounced in countries with weaker institutional environments, where markets can serve as substitutes for underdeveloped political or legal institutions.

To further interpret the results of the interaction terms, we analyze how their effects vary across the distribution of key variables by focusing on the 10th, 50th, and 90th percentiles presented in Table 2, then adding the coefficient of turnover alone. Firstly, we examine the interaction between GDP per capita and stock market turnover by multiplying the estimated interaction coefficient by the respective percentile values. The resulting marginal effects of stock market turnover on economic growth are approximately 0,001 at the 10th percentile, 0,0003 at the median (50th percentile), and –0,0003 at the 90th percentile of GDP per capita.

Although the variation in magnitude is relatively small, the results suggest a modest pattern: as GDP per capita increases, the marginal effect of stock market development on growth becomes slightly negative. One possible interpretation is that in more economically developed countries, the stock market plays a smaller role in driving growth, possibly due to a more diversified set of growth drivers, such as innovation, human capital, or access to international financial markets (Levine 2005).

To understand the interaction between Voice and Accountability and the stock market development, we evaluate the marginal effects by multiplying the coefficient by the 10th,50th, and 90th percentiles of Voice and Accountability, then adding the coefficient of turnover alone. The computed effects are approximately 0,121 in the 10th, 0,1194 at the 50th percentile, and 0,1185 at the 90th percentile, indicating a decreasing marginal effect of the turnover ratio on economic growth as the quality of the institutions increases. These results align with the previous assumptions, which suggest that countries with

lower quality of institutions have a stronger correlation with economic growth, possibly because capital markets serve as a more transparent and safer alternative for investments. Conversely, in countries with higher institutional quality, the marginal contribution of stock markets to growth appears to diminish, likely because such economies benefit from a broader and more efficient set of financial and governance institutions, reducing dependence on capital markets alone (Beck & Levine, 2004). In conclusion, these results underscore the importance of the institutional context when assessing the effectiveness of financial markets in promoting economic growth.

To further understand the interaction between Government consumption and stock market development, we assess the marginal effects. The calculated effects are approximately -0,052 in the 10th, -0,053 in the 50th, and -0,054 at the 90th percentile.

While the differences across percentiles are relatively small, all values are decreasing, suggesting a clear pattern. These findings imply that higher levels of government consumption are associated with a reduced contribution of stock market development to economic growth. One possible explanation is that excessive government spending may crowd out private investment, thereby weakening the role of capital markets in resource allocation. In environments where the public sector absorbs a substantial share of national resources, incentives and opportunities for private sector development, including participation in stock markets, tend to shrink. This can reduce investor confidence and lower overall economic growth potential.

In conclusion, the results support the potential hypothesis that a more interventionist fiscal stance, characterized by high government consumption, may undermine the effectiveness of stock market development as a driver of long-term growth. These results reinforce the view that fiscal discipline and a balanced public-private sector dynamic are essential to harness the full potential of financial markets in promoting sustainable economic development (Levine, 2005)

This analysis of institutional and macroeconomic heterogeneity examines how the marginal effects of stock market development on economic growth vary across different percentiles of the main contextual variables, and we do not use the variable inflation due to its lack of significance in the regressions. These results show that the impact of the

financial market development is not uniform across countries, but it depends on structural and institutional characteristics.

Specifically, the negative interaction between GDP per capita and stock market development suggests that wealthier countries are less influenced by the expansion of the capital markets, possibly due to already mature financial systems integrated in the country's growth models. Similarly, the interaction with Voice and Accountability reveals a negative correlation between stock market and economic growth as institutional quality improves, reinforcing the possibility that countries with weaker institutions rely more on the capital markets as an alternative mechanism of trust for allocation of financial resources. Lastly, the negative interaction across percentiles of government consumption supports the hypothesis that higher public sector involvement may reduce the importance of the private sector and may reduce the importance of the stock market.

Together, these findings underscore the importance of accounting for contextual heterogeneity in empirical growth models. The interaction effects observed across different percentiles provide more complete evidence of the contribution of the stock market to economic growth, conditionally on the countries' institutional, fiscal structure, and income level.

4.4 Alternative measures of the quality of institutions

This section advances the analysis by incorporating alternative indicators of institutional quality and examining their interactions with the turnover ratio.

Prior models have considered the independent effects of institutions and the stock market on economic growth, and a growing body of literature suggests that these two dimensions may not operate in isolation; instead, the effectiveness of financial markets in promoting growth may depend on the quality of the institutions.

To capture this conditional relationship, we include interaction terms between stock market development and all the alternative institutional variables. These interaction terms enable us to evaluate whether the contribution of the stock market to economic growth is increased or decreased at different levels of institutional quality.

Table 7 re-estimates the baseline model using each of the alternative institutional variables separately. Additionally, an interaction term between each institutional variable and the stock market development indicator is included to examine whether the effect of financial market development on economic growth depends on institutional quality. These variables represent all the different aspects of institutional quality, and they are used in this table to determine whether specific areas of institutional quality have a greater influence on stock market development or if all areas are equally important.

The rule of law is a positive and statistically significant coefficient at a level of 1%, consistent with the results obtained for the main variable. However, the interaction between the Rule of Law and the stock turnover is negative and statistically significant at a level of 1%, which indicates that countries with a higher level of rule of law, which means that the positive effect of the stock market development on economic growth reduces as the quality of the rule of law increases.

Similarly, political stability is positive and statistically significant at a level of 1%. This variable also follows the result of the previous variable and the main variable. The interaction between this variable and the stock market turnover is negative and statistically significant at a level of 5%, following the same result as the previous variable.

The Control of Corruption also yields positive and significant results at a level of 1%, reinforcing the same conclusion as the other variables of the quality of the institutions. The interaction between the control of corruption and the stock market turnover is also negative and statistically significant at a level of 1%.

All these variables characterize different parts of the quality of the institutions, but with these robustness tests, we confirm that either variable will reach the same conclusion.

TABLE 7-THE INTERACTIONS WITH THE MEASURES OF THE QUALITY OF THE INSTITUTIONS

Regressions				
Independent Variables	GDP Growth	1	2	3
Constant		1,305*** (0,167)	1,267*** (0,164)	1,256*** (0,186)
Stock Turnover		0,001*** (0,0004)	0,0007*** (0,0002)	0,0009*** (0,0003)
GDP per capita		-0,105*** (0,019)	-0,097*** (0,019)	-0,102*** (0,023)
Inflation		0,018 (0,019)	0,013 (0,018)	0,018 (0,019)
Government Consumption		-0,1** (0,041)	-0,096** (0,042)	-0,085** (0,043)
Rule of Law		0,123*** (0,03)	-	-
Political Stability		-	0,092*** (0,025)	-
Control of Corruption		-	-	0,101*** (0,031)
Rule of Law*Turnover		-0,0008*** (0,0003)	-	-
Political Stability*Turnover		-	-0,0005** (0,0003)	-
Control of Corruption*Turnover		-	-	-0,0007*** (0,0002)
R^2		0,417	0,412	0,395
Number of Observations		118	118	118

Note: Source: World Bank Databank. We used a cross-country regression. The robust standard errors are in brackets. The P-values have the following definition: ***significant at a 1% level; **significant at a 5% level; *significant at a 10% level.

These effects across the three variables of institutional quality suggest a substitutability between institutional quality and stock market growth, meaning that the

stock market may have a relatively more significant role in economic growth in countries with weaker legal institutions and higher risks of corruption or violence. In this context, capital markets can serve as a safe alternative for allocating financial resources when legal enforcement is lacking. Conversely, in countries with stronger legal systems and higher institutional quality, the additional contribution of financial markets to growth might be less noticeable, as institutions already promote efficient capital allocation. While these findings challenge some of the previous results in the literature, they are consistent with Cepparulo, Cuestas & Intartaglia (2021).

5- DISCUSSION AND FINAL CONSIDERATIONS

This thesis set out to re-examine the relationship between stock market development and economic growth, drawing on the foundational framework of Levine and Zervos (1998) while incorporating more recent data, broader institutional dimensions, and extending the analysis to obtain a richer characterization of the correlation between stock market development and economic growth. Using a panel of countries over several decades, the empirical analysis focused on both direct effects and interaction terms, highlighting the role of institutional quality and macroeconomic context in shaping the effectiveness of capital markets in economic growth.

The findings reveal that stock market liquidity, represented by the turnover ratio, shows a positive and statistically significant association with economic growth in most model specifications, reaffirming earlier studies that emphasize the importance of financial market efficiency. In contrast, stock market size, measured by capitalization, is not consistently significant or positive, suggesting that market activity rather than size is the more relevant dimension of development.

Furthermore, the analysis demonstrates that the impact of stock market development is not uniform across countries. The interaction effects show that this relationship is stronger in countries with weaker institutional environments, lower government consumption, and lower levels of income per capita. One possible explanation of the heterogeneous effects is that in economies where institutions are fragile or the public sector dominates resource allocation, capital markets may serve as relatively more

important mechanisms for channeling investment and promoting growth. Conversely, in more institutionally developed or fiscally expansive environments, the marginal contribution of financial development appears to diminish.

By applying standardized beta coefficients and percentile-based analysis and other robustness tests, the thesis further quantifies the economic significance of the findings, showing that increases in market liquidity can meaningfully affect growth outcomes under certain conditions.

In conclusion, this research emphasizes the importance of stock market development for economic growth but underscores that its effectiveness depends heavily on a country's institutional and macroeconomic context. Accordingly, efforts to promote capital market development through stock market development should be complemented by prudent fiscal governance, particularly in the context of emerging economies, even though we cannot affirmatively find causality, but the results associated with these economies with a bigger effect. The results contribute to the broader literature on finance and growth by offering a more nuanced, conditional view of the finance–growth nexus and provide practical implications for policymakers seeking to leverage capital markets as instruments of sustainable development.

The results suggest that stock market development can be especially beneficial for countries at earlier stages of economic and institutional development, perhaps because the establishment of stock markets is often accompanied by the introduction of institutional frameworks that support economic growth. These findings should not be interpreted as diminishing the importance of strong institutions. On the contrary, they highlight the essential role that robust institutional foundations play in fostering sustained economic development.

For further research, we suggest the study of different control variables, such as the openness of the country, as well as a different variable representing the stock market, for example, a variable representing the volatility of the market.

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