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EMPIRICAL DETERMINANTS OF THE RELATIONSHIPS BETWEEN CAPITAL MARKET DEVELOPMENT AND ECONOMIC GROWTH

Abstract

In this article, a comprehensive review of empirical studies exploring the relationship between capital market development and economic growth is presented. The analysis includes a detailed examination of four theoretical approaches: causal independence, demand-following, supply-leading, and feedback loop hypotheses. Utilizing diverse econometric methods and data from various countries, the findings highlight the complexity and variability of the relationship, influenced by measurement methodologies and specific economic contexts. This study underscores the importance of capital market indicators and their differentiated impacts on economic growth, depending on the structure of the banking and stock market sectors. The results contribute to the understanding of how capital market development interacts with economic growth, offering valuable insights for both developed and developing economies. The article also emphasizes the necessity for further research that incorporates global trends, regulatory environments, and institutional frameworks to deepen our understanding of these relationships.

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Introduction

Based on the research conducted by Schumpeter (Schumpeter, 1934, p. 66), Goldsmith (Goldsmith, 1969), Shaw (Shaw, 1973), and McKinnon (McKinnon, 1973), numerous research teams over the past few decades have employed various econometric methods and datasets to investigate the relationship between capital market development and economic growth. The purpose of this article is to examine the existing empirical body of work on this subject and to attempt a classification of the degree of interrelations between capital market development and economic growth. For each category, the applied data, the research period, the studied countries, the dependent and independent variables, as well as the econometric models used will be discussed, including any pertinent remarks.

The empirical findings reveal discrepancies regarding the relationship between capital market development and economic growth. While some researchers have focused on testing the relationships and mechanisms through which capital market development influences economic growth, others have directed their studies toward the causal relationship between capital market development and economic growth variables. Diverse empirical studies have aimed to identify which capital market institutions best explain economic growth. Researchers have sought answers to numerous questions to determine whether the capital market and economic growth are interconnected and whether fostering the development of the capital market as a policy could benefit a country by stimulating economic growth.

1. Independence between the process of capital market development and economic growth

The perspective of causal independence argues that there is no causal relationship between the capital market and economic growth (Stiglitz, 1985, pp. 133-152). However, it is worth noting that the vast majority of the economies analyzed to construct this perspective pertain to developing countries located in the Middle East and North Africa (MENA) region.

R. Ram (Ram, 1999, pp. 164-174) utilized annual data from 95 countries spanning the period from 1960 to 1989. He examined the relationship between financial development, measured by the ratio of liquid liabilities to GDP, and economic growth, measured by real GDP growth, using multiple

regression analysis for both the full sample and selected countries. The primary estimated model revealed significant cross-country differences in the relationship between financial development and economic growth. Multiple regression estimates for individual countries did not indicate a positive relationship between financial development and economic growth.

S. Abu-Bader and A.S. Abu-Qarn (Abu-Bader & Abu-Qarn, 2006, pp. 6-9) identified a weak relationship between capital market development and economic growth in their empirical studies of the MENA region over the period 1960-2004, employing the vector error correction model (VECM) methodology. They concluded that there is no significant relationship between capital market development and economic growth. This finding is partly attributable to the fact that the relationship between banking development and economic growth is even negative when stock market development is taken into account.

S.E. Mohamed (Mohamed, 2008) investigated the short- and long-term relationships between financial development and economic growth in Sudan. The study, covering annual data from 1970 to 2004, applied the autoregressive distributed lag (ARDL) modeling method. The author specifically utilized two indicators of financial development: the ratio of M3 to GDP (M3Y) and credit extended to the private sector by commercial banks as a percentage of GDP (CBS). The findings revealed that financial development variables negatively affect real GDP. The M3Y coefficient was found to be negative and statistically significant at the 1% level, while the CBS coefficient was also negative but statistically insignificant. The author attributed these findings to the inefficient allocation of resources by banks, the lack of an appropriate investment climate, and the poor quality of credit sales in Sudan's banking sector.

The empirical studies of S. Ewah, A. Esang, and U. Bassey (Ewah et al., 2009, pp. 219-228) aimed to explore the relationship between the efficiency of the capital market and economic growth in Nigeria over the period 1961-2004. The authors employed multiple regression analysis and the ordinary least squares (OLS) method. They found no significant relationship between capital market development and economic growth.

B. Ake and R.W. Ognaligui (Ognaligui, 2005, pp. 82-88) applied Granger causality tests to examine the causal relationships between the stock market and economic growth in Cameroon using quarterly time series data from 2006 to 2010. The results indicated that the Douala Stock Exchange does not influence Cameroon's economic growth. However, the Cholesky variance decomposition (VDC) test provided evidence that market capitalization positively affects GDP. They recommended that it is time for the Cameroonian government to implement financial policies that encourage companies and foster a stock market culture, prompting firms

to initiate initial public offerings (IPOs) on the stock market rather than relying on bank loans when seeking funds to expand their investments.

2. Economic growth as a determinant of capital market development

The second group of views, often referred to as the *demand-following theory*, posits that capital market development occurs as a consequence of economic growth. According to this approach, economic growth leads to increased demand for diverse financial instruments and services, which in turn stimulates the development of the capital market (Robinson, 1952).

As the economy evolves, businesses, investors, and other economic actors seek increasingly sophisticated and flexible financial instruments to address growing financial needs. In response to this heightened demand, capital markets begin to offer a range of new services and products, such as equities, bonds, derivatives, and investment funds, which facilitate capital mobilization, risk diversification, and optimal resource allocation.

The demand-following theory also emphasizes that capital market development is a result of structural changes occurring within the economy. As the economy becomes more complex and diversified, it necessitates more efficient mechanisms for transferring capital across sectors and entities. Therefore, the development of the capital market is viewed as an outcome of meeting the rising financial needs of market participants, driven by the process of economic growth (Hugh, 1966, pp. 174-189).

Consequently, it is argued that the priority for governments should be to focus efforts on stimulating economic growth through structural reforms, such as privatization, labor market deregulation, tax system changes, and legal and regulatory reforms aimed at creating favorable conditions for private sector development. Capital market development will then follow naturally as market participants demand more advanced financial instruments to achieve their investment and financial objectives.

H. Zang and Y.C. Kim (Zang & Kim, 2007, pp. 15-19) conducted panel data tests to determine the direction of the causal relationship between capital development and economic growth. They employed Sims-Geweke causality tests on panel data consisting of seven time periods across 74 countries spanning the years 1961-1995. Their findings indicated that economic growth leads to capital market development. However, this study only considered credit market variables, which do not fully represent the capital market.

V. Athanasios and A. Antonios (Athanasios & Antonios, 2010, pp. 33-42) investigated the causal relationship between capital market development and economic growth in Italy for the period 1965-2007 using the vector error correction model (VECM). The results of Granger causality tests

demonstrated a unidirectional causal relationship running from economic growth to stock market development variables.

N. Odhiambo (Odhiambo, 2010, pp. 205-219) examined the dynamic causal relationship between capital market development, investment, and economic growth in South Africa using the autoregressive distributed lag (ARDL) model. The findings indicated that, overall, economic growth significantly influences capital market development. The study also revealed a clear unidirectional causal flow from economic growth to investment. The research recommended that the government of South Africa intensify pro-growth policies to enhance investment and capital market development.

3. Capital market development as a determinant of economic growth

According to the *supply-leading theory*, an efficiently functioning capital market plays a pivotal role in supporting economic growth through resource allocation. Capital markets facilitate the transfer of capital from economic units with surplus funds to those requiring additional resources to finance their investment or operational activities (Jung, 1986, pp. 333-346).

Empirical studies have repeatedly shown that capital market development is not only a strong predictor but also a leading driver of economic growth. The majority of findings in this field pertain to developing countries, although some studies have been conducted on developed economies as well. The analyzed periods often exceed 20 years, with time series data being the most commonly utilized. While some studies employed multidimensional vector autoregression models, others used two-dimensional models, generalized method of moments (GMM), fully modified ordinary least squares (FMOLS), and cointegration with ARDL bounds testing.

M. Leahy et al. (Leahy et al., 2001) supported the view that capital market development is crucial for stimulating economic growth through its relationship with investment, using three different indicators of capital market development: liquid liabilities, private credit extended to the private sector, and stock market capitalization. They applied an unbalanced panel dataset for 19 OECD countries from 1970 to 1997 and employed four different estimation techniques (dynamic fixed effects, mean group estimator, pooled mean group estimator, and static fixed effects estimator). Their empirical results indicated that stock market capitalization had the strongest effect, although private credit provided by deposit banks was also significant.

R. Czupryn and Ł. Wójtowicz (Czupryn & Wójtowicz, 2021, pp. 5-14) investigated the impact of the capital market on economic growth in the United States between 1975 and 2019. Using annual data and advanced econometric models, the authors demonstrated a significant impact of stock market capitalization and the number of listed companies

on GDP growth dynamics. Their findings indicated that capital market development promoted effective capital allocation, contributing to economic growth. The authors emphasized that the mature and deep U.S. capital market played a crucial role in creating economic value, forming the foundation for long-term economic growth.

Mishra (Mishra, 2010, pp. 130-138) examined the effect of capital market efficiency on economic growth in India using quarterly time series data on market capitalization, total market turnover, and stock price indices from 1991 to 2010. The application of multiple regression models indicated that the Indian capital market has the potential to contribute to economic growth. This potential stems from the market's high capitalization and relatively high liquidity. Mishra suggested that market organization and regulations should attract a large number of domestic and foreign investors, enabling optimal resource allocation to ensure sustainable national development.

A. Wong and X. Zhou (Wong & Zhou, 2011, pp. 111-115), based on their empirical research, suggested that stock market development in China, the USA, the UK, Japan, and Hong Kong exhibits a strongly positive correlation with economic growth. Using a panel data model for the period 1988-2008, the authors concluded that stock market development is a key driver of economic growth in both developed and developing countries, regardless of their financial system modes, stages of economic development, or economic system types.

The study by N. Ellahi and M.A. Khan (Ellahi & Khan, 2011, pp. 76-91) analyzed the relationship between financial sector development and economic growth in four major South Asian Association for Regional Cooperation (SAARC) countries-Bangladesh, India, Pakistan, and Sri Lanka. Using annual time series data from 1975 to 2009, the study applied the ARDL approach to test for long-term relationships between financial development and economic growth. The findings showed that financial reforms undertaken by these countries effectively enhanced savings and capital accumulation. Moreover, a strong positive relationship between financial sector development and economic growth was observed for India, Pakistan, and Sri Lanka, while for Bangladesh, the relationship was negative and significant.

In their study, U.B. Alajekwu and A.A. Achugbu (Alajekwu & Achugbu, 2012, pp. 51-70) examined the role of stock market development in Nigeria's economic growth using 15 years of time series data from 1994 to 2008. Employing the ordinary least squares (OLS) method, they found that market capitalization and value turnover ratios exhibited a weak negative correlation with economic growth, while the turnover ratio showed a strong positive correlation. Market capitalization also displayed a strong positive correlation with stock turnover ratios. These findings suggested that liquidity tends

to stimulate economic growth in Nigeria and that market capitalization influences market liquidity. However, the authors cautiously concluded that stock market size is not a significant determinant of economic growth due to collinearity in the applied data.

A. Weinert and R. Czupryn (Weinert & Czupryn, 2023, pp. 137-145) analyzed the impact of the capital market on Austria's economy from 1975 to 2020 using econometric methods with historical data. Their study confirmed that capital market development, including the growth of stock market capitalization and investment activity, had a significant impact on Austria's economic growth. The authors highlighted that the capital market acted as a catalyst for long-term investments, supporting enterprises in implementing development projects. They also emphasized that stable institutional frameworks and the increasing role of the capital market enabled more efficient resource allocation, thereby fostering sustainable economic growth.

4. Bidirectional interdependence between economic growth and capital market development

The feedback loop hypothesis posits the existence of a bidirectional causality between capital market development and economic growth (Hugh, 1966, pp. 174-189). According to this approach, a country with a well-developed capital market can stimulate substantial economic expansion through technological advancements and innovations in products and services, which in turn increase the demand for financial institutions. When financial institutions effectively respond to this demand by facilitating the financing of new projects and reducing transaction costs, these changes further enhance economic performance.

As a result, both the capital market and economic development exhibit a positive interdependence, mutually reinforcing one another and contributing to long-term economic growth (Majid, 2007, pp. 161-184). Numerous empirical studies have focused on developing countries, where the potential for capital market development is particularly critical for economic growth. Researchers frequently employ advanced econometric techniques, such as ARDL cointegration and VAR models, to examine the existence of such feedback mechanisms (Al-Yousif, 2002, pp. 131-150).

P. Demetriades and K. Hussein (Demetriades & Hussein, 1996, pp. 387-411) conducted causality tests on the relationship between financial development and real GDP for 16 countries: Costa Rica, El Salvador, Greece, Guatemala, Honduras, India, Korea, Mauritius, Pakistan, Portugal, South Africa, Spain, Sri Lanka, Thailand, Turkey, and Venezuela. They discovered a bidirectional causal relationship between financial development and real GDP. The authors suggested that economic policy is country-specific and depends

on the effectiveness of the institutions implementing it. Therefore, the view that "finance leads growth" cannot be universally accepted, nor can the notion that "finance follows growth" be entirely embraced.

Majid (Majid, *op. cit.*) further examined the short- and long-term dynamics between capital market development, inflation, and economic growth during the financial crisis in Thailand after 1997 using time series data. Based on ARDL modeling, the study demonstrated long-term equilibrium among financial depth, inflation, and growth. Granger causality tests within a VECM framework revealed a bidirectional causality between financial growth and economic growth in Thailand, consistent with the "feedback hypothesis." The results indicated that changes in economic growth largely depend on its own innovations. The author recommended prioritizing long-term policies to promote growth, including strengthening existing financial institutions in both the banking sector and stock markets while maintaining low inflation rates.

Al-Malkawi, Marashdeh, and Abdullah (Al-Malkawi et al., 2012, pp. 105-117) investigated the empirical relationship between financial development and economic growth in the United Arab Emirates from 1974 to 2008 using ARDL cointegration analysis. The results revealed a negative and statistically significant relationship between financial development, measured by broad money supply (M2/GDP) and bank credit to the private sector, and economic growth. The study also found evidence of bidirectional causality among the three variables.

S.I. Bukowski (Bukowski, 2012, pp. 39-52) analyzed the interdependence of financial market development and economic growth in 12 eurozone countries (Italy, Austria, Portugal, Belgium, Germany, Finland, Luxembourg, France, Ireland, Greece, the Netherlands, and Spain). Employing a multi-equation model of independent equations, the analysis revealed statistically significant and observable bidirectional effects of stock market and corporate bond market capitalization on real GDP growth. However, the author noted that the strength of this bidirectional relationship could vary depending on the economic situation and the structure of a country's financial market.

Ł. Wójtowicz and R. Czupryn (Wójtowicz & Czupryn, 2023, pp. 175-185) analyzed the impact of the capital market on economic growth in Luxembourg for the period 1975-2020. Using advanced econometric models, they accounted for the complexity of the relationships between the capital market and GDP. The study demonstrated that capital market development, expressed through increased stock market capitalization and capital investments, played a significant role in shaping economic dynamics. The findings highlighted a strong bidirectional relationship in Luxembourg, where economic growth supports capital market development, and a dynamically evolving capital market positively influences

the economy. The authors emphasized that such interactions are particularly critical in highly developed economies that benefit from both internal economic activity and international financial integration.

Athapathu and Jayasinghe (Athapathu & Jayasinghe, 2012, pp. 83-92) explored the causal relationship between stock market performance and economic growth in Sri Lanka using time series data for the period 1997-2008. The analysis employed econometric methods such as cointegration analysis, error correction mechanisms, and Granger causality tests. Their findings aligned with the feedback hypothesis. Despite the authors' assumption that economic growth is driven by stock market performance, the results indicated evidence of reverse causality, where economic activity also influences stock market performance.

5. Partial dependence between the process of capital market development and economic growth

Numerous studies (Filer et al., 2003, pp. 753-773; Arestis et al., 2001, pp. 16-41; Yartey & Adjasi, 2007) have explored the mixed findings concerning the relationship or causality between capital market development and economic growth in terms of the type of capital market. According to these studies, bank-based and stock market-based development significantly and differently affect economic growth. This distinction may explain why some countries exhibit a positive relationship between capital market development and economic growth, while others do not.

Most empirical studies have focused on developing countries where both stock markets and banking sectors coexist. These studies predominantly employed VAR and VECM methodologies. The dependent variable in most studies was an economic growth indicator, typically real GDP or total factor productivity (TFP). Independent variables included both banking sector and stock market indicators, with some studies incorporating additional variables such as inflation rates, government consumption, and human capital indices. Stock market liquidity and the M3/GDP ratio were commonly used as proxies for stock market and banking sector indicators, respectively. However, it is challenging to identify a universally preferred measure of capital market development, as different empirical studies utilized distinct indicators. Notably, both banking and stock market development indicators were used separately, resulting in mixed findings.

A.A. Bolbol, A. Fatheldin, and M.M. Omran (Bolbol et al., 2005, pp. 171-194) examined the financial structure of Egypt and its relationship with total factor productivity (TFP) from 1974 to 2002. Their findings indicated that bank-based indicators had a negative effect on TFP unless tied to a threshold income level, while market-based indicators positively impacted TFP through private net resource inflows. The study emphasized that expanding

the financial sector to include a securities market benefited TFP and growth in Egypt.

M. Kar and E.J. Pentecost (Kar & Pentecost, 2000) investigated the direction of causality between financial development and economic growth in Turkey, using annual data from 1963 to 1995. Causality analysis conducted via a bivariate VECM revealed unidirectional causality from economic growth to financial development. Notably, the causality direction depended on the choice of financial development indicator. For instance, when financial development was measured by the money-to-income ratio, the direction of causality ran from financial development to economic growth. However, using alternative indicators such as bank deposits, private credit, and domestic credit, the findings indicated an increasing influence of financial development on the economy.

D. Sinha and J. Macri (Sinha & Macri, 2009) analyzed the relationship between financial development and economic growth using time series data for eight Asian countries. First, they estimated augmented production functions that included a financial development variable. Second, they conducted multivariate causality tests between income growth rates and financial development variables. Regression results revealed a positive and significant relationship between income and financial variables for India, Malaysia, Pakistan, and Sri Lanka. Multivariate causality tests showed bidirectional causality between income and financial variables for India and Malaysia, unidirectional causality from financial variables to income for Japan and Thailand, and reverse causality for Korea, Pakistan, and the Philippines. Thus, their findings did not universally confirm a clear and positive relationship between financial development and economic growth.

C. Dritsaki and M. Dritsaki-Bargiota (Dritsaki & Dritsaki-Bargiota, 2005, pp. 113-127) used a trivariate VAR model to examine the causal relationship between stocks, the credit market, and economic growth in Greece. Employing monthly data from January 1988 to December 2002, the results revealed unidirectional causality from economic growth to the stock market and bidirectional causality between economic growth and the banking sector. No causal relationship was observed between stock market performance and the banking sector.

A.E. Akinlo and T. Egbetunde (Akinlo & Egbetunde, 2010, pp. 17-28) investigated the long-term causal relationship between financial development and economic growth in ten Sub-Saharan African countries from 1980 to 2005. Using VECM, the study demonstrated a correlation between financial development and economic growth in the selected countries. The findings indicated that financial development drives economic growth in the Central African Republic, the Republic of Congo, Gabon,

and Nigeria, while economic growth drives financial development in Zambia. Bidirectional causality between financial development and economic growth was found in Kenya, Chad, South Africa, Sierra Leone, and Swaziland. The results underscored the need for financial sector development through appropriate regulatory and macroeconomic policies.

Conclusion

The article provides a comprehensive review of empirical studies examining the relationship between capital market development and economic growth. Based on an established research classification, four main approaches are discussed: causal independence, demand-following, supply-leading, and feedback loop hypotheses. The analysis highlights the diverse findings of these studies, which stem from varying methods of measuring capital market development and the unique economic contexts of the countries studied.

The article underscores the critical role of capital market development indicators, which can have differing impacts on economic growth depending on the characteristics of the banking and stock market sectors. These differences may explain why a positive relationship between capital market development and economic growth is observed in some countries but not in others.

The authors emphasize the need for further research that accounts for the diversity of economic models, institutional frameworks, and levels of financial regulation. Comparative analyses between countries at different stages of economic development are particularly valuable, as they could provide insights into the factors that foster synergy between capital market development and economic growth.

Future research should also consider global trends, such as shifts in monetary policy, financial crises, and increasing international market integration. These factors can significantly influence the functioning of capital markets and their relationship with economic growth, making them critical components of any comprehensive analysis of these dynamics.

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