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Private Equity and Venture Capital in Emerging Markets — Examining Investment Strategies and Performance in Rapidly Developing Middle Eastern Economies

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Master's Degree in International Management

Supervisor:
PhD, Renato Telo de Freitas Barbosa Pereira, Associate Dean, ISCTE-IUL

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BUSINESS
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Acknowledgments

I am immensely grateful to Dr. Renato Pereira, my supervisor, for his unwavering guidance and support throughout the entire duration of this project, from its inception to its culmination. I would also like to express my deepest appreciation to my family, particularly my father, for their encouragement, love, and support during these challenging years.

To my mother and grandmother, I love you and wish you could see me today.

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Resumo

Nos últimos dez anos (2013-2023), os investimentos de capital privado e capital de risco demonstraram um crescimento significativo nos mercados emergentes em termos absolutos e relativos. A presente dissertação visa examinar o portfólio de investimento e desempenho de capitais para um conjunto de dados em painel de oito países emergentes na região do Médio Oriente e Norte de África (abreviado por MENA) de 2011 a 2019.

Esta investigação compreende 12 variáveis macroeconómicas, com um modelo que revela ser crítico. Na nossa análise, os modelos de portfólio de investimento demonstraram ter um impacto superior quando comparados aos de portfólio de capital e melhor previsibilidade para uma população vasta. Uma pesquisa mais aprofundada revelou as diferenças nos determinantes de Capital Privado e Capital de Risco, na qual a variável independente *Controlo de Corrupção: Estimativa* prova ser a mais significante em três dos quatro modelos.

Foca-se em duas questões cruciais:

(i) "Quais são os determinantes das atividades de capital privado e capital de risco mais significativos, como evidenciado nos portfólios de investimento dos países do Médio Oriente e Norte de África?"

(ii) "Existe alguma correlação entre o desempenho do portfólio de um país e o seu estado histórico e atual como uma economia emergente em desenvolvimento? Se tal correlação existir, que implicações suporta?"

É importante referir que, apesar das variáveis de desenvolvimento serem consideradas parte desta análise, existe uma escassez de dados substancial nos países da região MENA, o que futuramente pode permitir uma análise mais compreensiva do estado-da-arte de investimento desta região.

Palavras-chave: Modelo de Efeitos Fixos, Médio Oriente e Norte de África, Capital Privado e Capital de Risco, Desempenho de Portfólio, Determinantes

Sistema de Classificação JEL: C33, G11

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Abstract

In the last ten years (2013-2023), private equity and venture capital investments have shown significant growth in emerging markets, both in absolute and relative terms. The present paper examines the portfolio investment and equity performance for a panel dataset of eight emerging countries in the Middle East and North Africa region (abbreviated to MENA) from 2011 to 2019.

The research encompasses 12 macroeconomic variables, with one model that is revealed to be critical. In our analysis, portfolio investment models showed a superior impact compared to portfolio equity models and better predictability for a wider population. Further investigation displayed the differences in Private Equity and Venture Capital determinants, with the independent variable *Control of Corruption: Estimate* proving significant in three out of four models.

It focuses on two crucial questions:

(i) "What are the significant determinants of private equity and venture capital activities, as evidenced in the investment portfolios of the Middle East and North African countries?"

(ii) “Is there a correlation between a country’s portfolio performance and its historical and present status as a developing emerging economy? If such a correlation exists, what implications does it hold?”

Moreover, while development variables are considered part of this analysis, there is a substantial lack of data available on all MENA countries, which could allow for a more thorough analysis of this region’s state-of-the-art investment in the future.

Keywords: Fixed-Effects Model, Middle East and North Africa, Private Equity & Venture Capital, Portfolio Performance, Determinants

JEL Classification System: C33, G11

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List of Abbreviations

Abbreviations	Definition
BoP	Balance of Payments
FDI	Foreign Direct Investment
FEM	Fixed Effects Model
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GP	General Partners
GPCA	Global Private Capital Association
HDI	Human Development Index
IPO	Initial Public Offering
IMF	International Monetary Fund
LP	Limited Partners
MENA	Middle East and North Africa
OECD	Organization for Economic Co-operation and Development
OPEC+	Organization of the Petroleum Exporting Countries Plus
PE	Private Equity
PFC	Portfolio Companies
PPP	Purchasing Power Parity
REM	Random Effects Model
SAP	Structural Adjustment Programs
USD	United States Dollar
VC	Venture Capital
VCF	Venture Capital Firm

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CHAPTER I

1. Introduction

1.1 Problem Statement and Project Goals

This research thoroughly analyzes eight emerging MENA countries based on their portfolio investment and equity performances through regression analysis in correlation with macroeconomic variables. Questions arise about whether traditional measures of country development define its advancement on private equity and venture capital. Do raw GDP values perfectly represent a country's portfolio in investment or equity? And, if so, what is the correlation with it?

Despite its constraints, the selected dataset serves as an exemplary illustration of a blend of emerging markets. Some markets are experiencing rapid development, exemplified by Egypt, while others, such as Iraq, are progressing at a slower pace.

Hence, based on the researched data, two questions will be focused. The first question is: "What are the significant determinants of private equity and venture capital activities, as evidenced in the investment portfolios of the Middle East and North African countries?" The study will consider the economic factors of these countries and what can be portrayed from the disclosed data on their portfolios.

The second research question is: "Is there a correlation between a country's portfolio performance and its historical and present status as a developing emerging economy? If such a correlation exists, what implications does it hold?" In other words, can such a connection occur between the available data and the country *per se* as an emerging market? Is the correlation strong? Can it be explained by the most relevant time-invariable characteristics in each country? Do certain countries have greater portfolio values due to their history of having superior strategies?

The paper considers whether traditional and alternative variables can resonate in a country's investment and equity portfolio and whether their investment strategies make a difference.

1.2 Thesis Overview

This thesis is organized into chapters that provide the reader with the business background necessary to understand the context of the situation. It then gives an academic overview of the topics covered, followed by an application of the issues to the research focus area:

Chapter 1 shows an overview of the problem statement, approach, and the objective of the dissertation.

Chapter 2 gives the reader an academic overview of this thesis's private equity and venture capital status quo, highlighting scholarly references on the economic factors and position of the chosen countries, PE and VC strategies, and regression models.

Chapter 3 represents the data used in this research, with an overview of the dependent and independent variables and the panel data selection, which used the Human Development Index as a criterion.

Chapter 4 specifies the methodology used for this paper, specifically the theoretical regression models, the tests conducted to choose the most suitable and statistically relevant, and the hypothesis behind that choice.

Chapter 5 reveals the study results, breaking down the statistical outcomes according to their significance and addressing the essential discussion that answers the research questions. It describes all variables according to their results, the macroeconomic implications and expectations, and their importance to the study.

Chapter 6 finishes with a synthesized conclusion of the investigation based on the research questions and the fundamental aspects of the model used.

CHAPTER II

2. Literature Review

From the early news dating back to 2012, Sayegh (2012) states, "The $23.2 billion Middle Eastern private equity industry is struggling as fund-raising gets tougher and viable exit options diminish." After the global financial crisis struck in 2008, followed by the Arab Spring three years later, there was a decline in overall VC funding and deals, a lack of incentives for businesses in the industry, and several file actions to private equity subsidiaries.

Nevertheless, the Middle East has reached international investors and increased its regional investors in the past few years, growing exponentially in the private equity and venture capital industry. According to Nagraj (2023) and a study conducted by Preqin, an investment data company, and the Dubai International Finance Centre, "65 percent of investors in the region say that they will maintain or increase exposure to PE this year, 56 percent say the same about VC". This company forecasts that private equity in the Middle East "will continue to be the biggest class of alternative investment assets under management in the medium term, growing to $7.6 trillion by 2027, up from $4.3 trillion at present."

In recent years, private equity and venture capital have become increasingly popular investment options, particularly in emerging markets. For a thriving entrepreneurial ecosystem focused on growth and a robust national innovation system, having a well-functioning venture capital market is essential (Martin & Scott, 2000; Lerner, 2009; Baumol, 2010; Ács et al., 2014; Colombo et al., 2016; Gu & Qian, 2019). Prior evidence strongly supports that PE and VC play a critical role in driving the economic growth of a region (Jeng & Wells, 2000; Cardis et al., 2001; Saxenian, 1994).

Numerous countries have embraced public regulations to promote the creation and development of VC markets due to the belief that venture capitalists are integral to the success of high-growth and state-of-the-art companies (Lerner, 2009; Rosiello et al., 2011). These regulations aim to create a stable market environment, minimize uncertainty and risk, and increase the likelihood of success for new businesses (Ahlstrom & Bruton, 2006).

Developing countries have faced considerable hurdles when using PE/VC to boost their economic growth, including a shortage of skilled entrepreneurs, insufficient regulation and legal infrastructure, and a lack of business and management expertise (North, 1990; Peng, 2001; Pruthi et al., 2003).

This paper will explore the investment strategies and performance of private equity and venture capital firms in rapidly developing Middle Eastern economies. The research and analysis may reveal new insights into how private equity and venture capital can contribute to the region's economic growth and development.

2.1 Private Equity and Venture Capital Definition

According to Fenn et al. (1995), private equity is an alternative investment class that provides individual and institutional investors with professionally managed investment vehicles for equity investing in unregistered securities of private and publicly traded companies.

Private equity firms aim to increase the value of new or existing enterprises over the short or medium run. As Fischbein (2005) and Lerner and Leamon (2008) state, private equity funds invest in buyouts, venture capital, and growth capital. Buyouts involve acquiring a significant or controlling stake in existing companies, often distressed, while venture capital investments are made in new or small companies based on technological innovations.

Growth capital, on the other hand, involves providing capital to fast-growing companies. Private equity funds usually maintain their investments for a limited time, typically three to five years, during which the portfolio company undergoes financial and operational restructuring or achieves its growth targets, as mentioned by Lerner and Leamon (2008) and Fenn et al. (1995). At the end of this period, the private equity fund exits the investment by selling the company through an initial public offering (IPO) in the stock market to other companies (trade sale) or other financial investors (secondary buyout). Private equity funds often generate considerable profits that surpass those of publicly traded companies. However, the higher returns come with increased risks and volatility, and the investments tend to be illiquid during the investment period.

Table 2.1 – Summary of PE Phases

PE Key Subclasses	Underlying Premise	Type of Firm	Description
Venture Capital	High risk due to the target being startups.	VC	Investment made in early-stage startups, usually exchanging seed funding for a share of the business.
Growth Equity	Low risk, typically for the long term.	Small–Mid Tier	Investment opportunities for established, growing businesses in exchange for a minority share.
Buyouts	Divided into two subtypes – Management Buyouts and Leveraged Buyouts.	All Sizes	Mature and generally public companies taken private and purchased by either a PE firm or its existing management team.

Source: Harvard Business School

2.2 Emerging Markets and the Middle East and North Africa Region

The primary private equity model remains broadly consistent when comparing emerging and developed markets; however, significant differences between these geographical areas warrant consideration. The landscape of emerging markets differs substantially from that of developed markets, necessitating a tailored private equity model for these environments. Furthermore, private equity in emerging markets presents a unique opportunity to contribute to developing these nations through investments that bring about positive company transformations. These transformations, at the micro level, create job opportunities and, at the macro level, drive economic modernization.

In emerging markets, private equity deals tend to involve fewer leveraged buyouts, typically involving a change in ownership. They rely heavily on debt financing to acquire a firm to increase its value and divest it.

Table 2.2 – Private capital investment by region in emerging markets

	2022		2023	
Region	USD billions	Percent	USD billions	Percent
Asia-Pacific[1]	125,6	66,7%	69.5	74,4%
Latin America	28,5	15,2%	15,5	16,6%
Africa	6,5	3,5%	5,0	5,5%
Central and Eastern Europe	7,4	4,0%	1,7	1,8%
Middle East	19,8	10,6%	1,6	1,7%
TOTAL	188,4	100%	93,6	100%

Notes:

[1] Asia-Pacific excludes Japan, South Korea, Australia and New Zealand

[2] Africa includes North Africa

Source: GPCA, Data as of 31 December 2023

Table 2.3 – Exits and Private Capital-Backed Listings (Current USD billions)

	2022		2023	
Region	USD billions	Percent	USD billions	Percent
Asia-Pacific[1]	59,4	66,6%	49,5	77,5%
Latin America	20,1	22,5%	5,6	8,8%
Africa	7,5	8,4%	4,6	7,2%
Central & Eastern Europe	0,8	0,9%	4,1	6,4%
Middle East	1,4	1,6%	0,1	0,1%
TOTAL	89,2	100%	63,9	100%

Notes:

[1] Asia-Pacific excludes Japan, South Korea, Australia and New Zealand

[2] Africa includes North Africa

Source: GPCA, Data as of 31 December 2023

In emerging markets, private equity investors tend to acquire minority positions rather than majority positions, with value creation driven by growth rather than high leverage (Wilton, 2012). This trend is influenced by a well-documented reluctance among business owners in emerging markets to sell majority stakes in their businesses in many cases (Lerner et al., 2016; Wilton, 2012).

Moreover, the perception of limited exit opportunities, whether in the form of IPOs or M&A opportunities, suggests that a simple buy-and-dump strategy may be less effective in emerging markets. Notably, analysis by Lerner et al. (2016) indicates that exit opportunity performance in emerging markets is comparable to that in developed markets, with the primary difference being a greater reliance on IPO exits in emerging markets. In developed markets, IPO exits comprise approximately 10% of exits, as opposed to 49% in emerging markets (Lerner et al., 2016).

The prospect of acquiring a minority stake in emerging market companies may deter some investors, particularly given the existing risks associated with investing in emerging markets. Businesses in emerging markets are often hesitant to sell majority shares, raising two potential concerns: 1) businesses willing to sell larger shares may be desperate and present inferior investment opportunities, and 2) minority investors may lack the final say in strategic and operational decisions affecting the business (Lerner et al., 2016; Wilton, 2012).

In addressing these concerns, it is essential to note that emerging markets are widely recognized to face significant challenges in accessing finance for small and medium-sized enterprises (SMEs). Thus, businesses' willingness to relinquish majority shares may be more related to access to finance than indicative of potential issues with the business itself. Furthermore, by incorporating effective covenants into negotiation contracts, private equity firms can mitigate the risk of being marginalized as minority investors by the majority shareholder(s) (Lerner et al., 2016).

Concerning the Middle East and North Africa (MENA) region, this research encompasses eight of the 21 countries—according to The World Bank—under three regions: the Gulf, Levant, and North Africa. The countries are as follows: Kuwait, Qatar, and Oman in the Gulf region; Iraq and Jordan in the Levant region; and Egypt, Tunisia, and Morocco in the North Africa region. In 2022, the population of this area was approximately 388 million, with Egypt having the largest population of 110 million, followed by Iran with 88 million, and Algeria with 44 million. In 2018, the region recorded a total GDP (in PPP Dollars) of $2.777 billion. Saudi

Arabia led the way at $846 billion, the United Arab Emirates at $427 billion, and Egypt at $262 billion. Interestingly, the region accounted for over 32% of the total global oil production in the same year, with Saudi Arabia being the largest producer at 12.3 million barrels/day (13% of global production), followed by Iraq at 4.6 million barrels/day and the United Arab Emirates at 3.9 million barrels/day.

While MENA countries are commonly regarded as a region, it is essential to acknowledge that their respective economies differ significantly. For instance, countries such as Saudi Arabia, Kuwait, Qatar, Abu Dhabi, Algeria, and Libya have abundant natural resources and rely heavily on oil and gas revenues (World Bank, 2017). On the other hand, the economies of Egypt, Syria, and Morocco are more diversified, comprising a mix of agriculture/agri-business, manufacturing, and services. However, these countries are indirectly dependent on oil prices through income from expatriate labor working in oil-exporting nations, tourism, and foreign direct investments from oil-exporting countries (World Bank 2023). The economic regimes in these countries also vary. Countries like Egypt, Jordan, and Morocco have undergone several rounds of economic liberalization and Structural Adjustment Programs (SAPs) in the 1990s and early 2000s, primarily due to internal financial crises and pressures from the International Monetary Fund and the World Bank.

GCC countries are primarily market economies, but asset ownership and the ability to do business are mostly limited to nationals. The remaining countries in the region are in varying economic and financial reform stages.

2.2 VCF Investment Strategies and PFC Particularities

Experts point out that a venture capital firm (VCF) could use its knowledge and past experiences to benefit various companies in its portfolio by focusing on specific industries or stages of development (Gupta & Sapienza, 1992; Norton & Tenenbaum, 1993; De Clercq & Sapienza, 2001). Having a portfolio with a narrow focus on particular industries or stages of development can give the venture capital firm better control over how it manages the companies it invests in, leading to more effective management (Gupta & Sapienza, 1992).

Moreover, VCFs have the potential to gain a deeper understanding of the intricacies of specific industries or developmental phases, facilitating swift and continuous knowledge acquisition that can be applied broadly across multiple portfolio companies - PFCs (Sahlman,

1990; Gupta & Sapienza, 1992; Hall & Hofer, 1993; Norton & Tenenbaum, 1993; Dimov & Shepherd, 2005).

Specialization has, however, different perspectives according to their strengths and weaknesses. On the one hand, from a knowledge-sharing perspective, specialized venture capital firms may benefit from accessing complementary skills to support successful strategy execution and exit (Cumming, 2010). Despite having abundant skill sets in specific industries or development stages, management and financial expertise may still be lacking. This basis justifies why VCFs with more specialized portfolios may need to engage different investors to allocate capital to the same PFC, acquiring the necessary knowledge to oversee and manage the future affairs of their portfolio companies. This type of allocation is formally known as syndication, a "voluntary, long-term commitment by a VCF to a cooperative relationship with other VCFs, in which the firms exchange knowledge and resources" (Cumming, 2001; Wright & Lockett, 2003).

On the other hand, from a risk-sharing perspective, investing across a diverse range of industries or development stages is a compelling strategy for VCFs (Gupta & Sapienza, 1992). The VCF could come across more investment prospects and uncover more lucrative opportunities by venturing into a broader range of industries. Moreover, distributing investments among various industries enables VCFs to mitigate the risk specific to any one industry in their portfolio (Norton & Tenenbaum, 1993). Cumming (2001) states that, if this reasoning holds, VCFs that have a more comprehensive range of investments should consider utilizing syndication more frequently.

Table 2.4 – VCF Investment Strategies

Portfolio Investment Strategy	Potential Advantages	Potential Drawbacks
Industry specialization	▪ Availability to invest during the seed, early, or late stage of the startup lifecycle ▪ Deep understanding of a specific industry or domain	▪ Limited exposure and diversification to other sectors ▪ Risk of disruption, obsolescence, or saturation in the chosen industry
Stage specialization	▪ Niche investment stage that can leverage the VFC's *know-how* and support the best deals ▪ Mitigates risks that are specific to any one industry invested	▪ Miss out on opportunities available at different stages ▪ Ever-changing market conditions that affect a specific stage

2.3 Performance of Individual Venture Capital Investments

Institutional investors like endowments and pension funds are the main participants in private equity investments. These investments' inherent risk and return can be split into the performance of individual venture capital investments—General Partners (GP)—and both buyout investments and venture capital investments to or from Limited Partners (LP).

The literature aims to analyze GPs due to their increased exposure to responsibilities that correspond to those of the interviewees.

According to Ewens et al. (2003), GPs must bear a significant amount of idiosyncratic risk, which can significantly impact their performance. Therefore, it is crucial to factor in idiosyncratic risk measures as explanatory variables for fund performance.

Ewens et al. (2003) suggest a correlation between more idiosyncratic risk and higher returns in equilibrium. The rationale is that investors prefer GPs who specialize in achieving better performance. Thus, it is vital to consider idiosyncratic risk measures as explanatory variables for fund performance. *Ceteris paribus*, GPs receive further earnings when more idiosyncratic risk is involved despite facing competitive market conditions.

Regarding the relationship between fund size and performance, Kaplan and Schoar (2003) found that the performance of each of the two previous funds has a positive and significant relationship with the current fund size. According to recent findings, investment funds with consistently positive results are highly sought-after during fundraising.

As per the research above, the private equity industry's top-performing funds experience less growth in proportion to their performance increase than lower performers. Despite most limited partners claiming that the top funds are highly oversubscribed, the better funds probably opt to remain smaller voluntarily. This outcome could clarify the persistence in performance they discovered. The top funds can avoid entering areas of diminishing returns by growing at a slower rate than the market on a performance-adjusted basis.

Kaplan and Schoar (2003) evoke two reasons why superior partnerships might choose to do so. "On the demand side, it is possible that the number of good deals in the economy is limited at each point in time." Partnerships may choose to grow at a slower pace if they perceive that there are negative impacts on their deals, even if they are not at the margin of their operations and moving down the quality curve. "On the supply side, better funds might face constraints if GP human capital is not easily scalable and new qualified general partners are scarce." Superior GPs face a trade-off between staying small and achieving high returns or growing at the same pace as the market, or even faster, but potentially moving down the marginal returns curve.

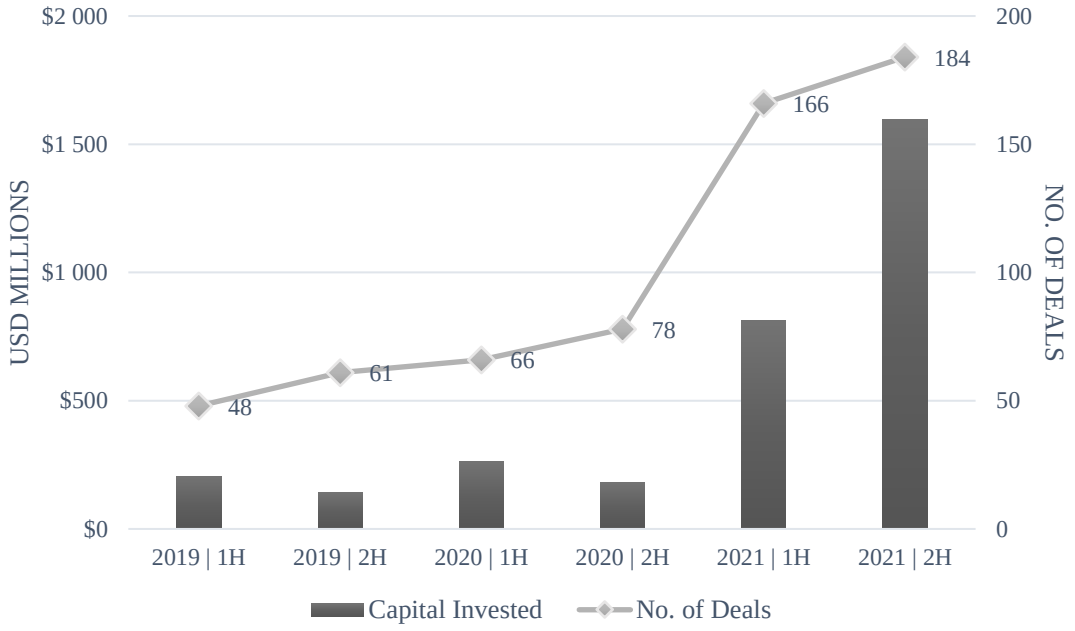

Figure 2.1 – MENA Venture Capital Investment, 1H 2019 – 2H 2021

2.4 Determinants of Private Equity and Venture Capital

2.4.1 Origin

One of the most influential works in this field is attributed to Jeng and Wells (2000), who conducted an extensive study on the determinants of venture capital (VC) financing across 21 countries. Utilizing data from 15 of those nations over a 10-year period (1986-1995), they found that the total market value of initial public offerings (IPOs) and the ratings on Accounting Standards from the Center for International Financial Analysis and Research were the most significant determinants of VC investment. Surprisingly, factors such as market capitalization and GDP growth did not show significant effects in their analysis. It is worth noting that the countries examined in their work are all developed nations with ample available data.

Similarly, Gompers and Lerner (1998) analyzed the factors influencing VC fundraising from 1972 to 1994 in the United States. Their findings indicated that regulatory policies (e.g., capital gains tax laws, clarification of the "prudent man rule" by the Department of Labor), overall economic growth, research and development (R&D) expenditure, and firm-specific performance were all influential for VC fundraising. They also underscored the importance of interest rates, noting that bonds are an alternative investment to VC. Interestingly, Gompers and Lerner's results suggested that interest rates positively impact VC funds raised and invested, contrary to the expected decrease in VC attractiveness with rising interest rates.

2.4.2 Adaptation for a Panel Dataset

Most research in this field focuses on developed nations, mainly Europe and North America. After Jeng and Wells (2000), Balboa and Martí (2003) were among the first to address the question, choosing to analyze a dataset of 17 European nations from 1987 to 2000. They found that the value of private equity investments and divestments in the previous year significantly influenced the current year's private equity capital fundraised normalized by GDP (PE Invested/GDP) and macroeconomic variables. Balboa and Martí (2003) emphasized the significance of investment and divestment in the previous year, confirming the importance of deal availability and a liquidity effect. Their results also demonstrated the significance of GDP growth and a lag of gross domestic savings on fundraising. Using Fixed Effects OLS regression, these authors employed a country fixed-effects approach.

Romain and La Potterie (2004) discussed the determinants of VC in 16 OECD countries from 1990-2000 and found that VC intensity (VC funds/GDP) is positively influenced by GDP growth. They also discovered that short- and long-term interest rates positively impacted VC intensity, alongside technological opportunity, which was represented by variables such as R&D expenditure growth rate and R&D capital stock. The impact of technological opportunity was stronger in nations with higher rates of entrepreneurship.

Félix et al. (2013) examined the determinants of VC funding across a panel of 23 European nations from 1992 to 2003. Adding to existing literature, they investigated the impact of unemployment, trade sale divestments, and the price/book ratio of individual companies. Their results revealed a positive significant impact of IPO exits and showed that interest rates and market capitalization were positively correlated with VC fundraising.

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CHAPTER III

3. Data

The data set under review includes a collection of 8 developing market nations: Egypt Arab Rep., Iraq, Jordan, Kuwait, Morocco, Oman, Qatar, and Tunisia. These countries were selected based on their classification as emerging market nations, as designated by the Global Private Capital Association (GPCA), former EMPEA. Additionally, the decision was influenced by the availability of data for Portfolio Investment and Equity and the remaining data. In the context of this dissertation, emerging markets encompass the Middle East and North Africa region.

Predictably, there is a relative lack of available Portfolio Investment and Portfolio Equity data for individual countries. Consequently, both regional and global figures are unavailable.

The information utilized was obtained from The World Bank, the International Monetary Fund (IMF), and the Organization for Economic Co-operation and Development (OECD), whose databases are the most consistent, reliable global information sources.

3.1 Dependent Variable Overview

The dependent variables this analysis relies on are the Portfolio Investment and Portfolio Equity data. To further study the impact of macroeconomic variables on private equity and venture capital, these variables were tested in two different ways to assess the impact of the independent variables. The outcome comprised four models in total:

Table 3.1 – Dependent Variable: Original and Transformation

Transformation of variables	Description	Period	Sources
Portfolio investment, net (BoP, current US$)	Portfolio investment covers transactions in equity securities and debt securities. Data are in current U.S. dollars.	2011 – 2021	IMF World Economic Outlook Database
Portfolio investment, net / GDP (Nominal, %)	Ratio of Portfolio investment divided by Nominal GDP represented as a percentage.	2011 – 2021	Transformed Variable
Portfolio equity, net inflows (BoP, current US$)	Portfolio equity includes net inflows from equity securities other than those recorded as direct investment and including shares, stocks, depository receipts (American or global), and direct purchases of shares in local stock markets by foreign investors. Data are in current U.S. dollars.	2011 – 2021	IMF World Economic Outlook Database
Portfolio equity, net inflows / GDP (Nominal, %)	Ratio of Portfolio equity divided by Nominal GDP represented as a percentage.	2011 – 2021	Transformed Variable

In previous research, numerous authors have relied solely on the Capital to GDP ratio to analyze capital flows. This method allows for consideration of countries' differing scales, and it should be considered the most important among the approaches above, as it provides a more accurate way to compare country variations.

Furthermore, this investigation utilizes Nominal GDP to (1) adjust to current market prices to maintain statistical consistency with other variables and (2) avoid conflict with the independent variables that rely on Real GDP—using a GDP deflator.

3.2 Panel Data Selection

The countries in the research dataset were also arranged according to their Human Development Index (HDI), introduced in 1990 by Pakistani economist Mahbub ul Haq (1998) and currently utilized by the United Nations (UN) to evaluate the average achievement across various vital dimensions of human development: 1) Life expectancy, 2) Education, and 3) Standard of living. The final HDI is calculated as a geometric mean of normalized indices for these three dimensions ("Human Development Index (HDI) | Human Development Reports," n.d.). The most recent HDI data is from March 2024, and it was used to determine the developmental ranking of the countries in the dataset.

In this study, the dataset being examined has an average Human Development Index (HDI) of 0,764, slightly lower than the global average of 0,774. This difference is primarily because emerging markets for private equity do not always fit the traditional definition of developing nations. Table 5 provides an overview of the HDI of countries in this dataset and their relative position compared to the OECD and the remaining countries.

Table 3.2 – 2024 HDI Scores and Rankings for Countries Selected in Dataset

HDI Ranking	**Very High Human Development**	**Avg. per Section: 0,884**
40	Qatar	0,875
49	Kuwait	0,847
59	Oman	0,819
	High Human Development	**Avg. per Section: 0,748**
99	Jordan	0,736
101	Tunisia	0,732
105	Egypt	0,728
	Medium Human Development	**Avg. per Section: 0,625**
120	Morocco	0,698
128	Iraq	0,673
Dataset Avg.: **0,764**	OECD Avg.: 0,905	Global Avg.: 0,774

Table 3.3 – Portfolio Investment, net by Country (BoP, current million USD, 2023)

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total by Country
Egypt, Arab Rep.	10 651,600	1 953,700	-3 013,300	2 111,600	-71,300	-736,100	-23 889,900	1 910,701	-10 454,410	-21 537,409
Iraq	6 530,000	5 672,000	-14 130,670	-4 326,300	-277,224	746,890	-1 779,500	3 290,740	-6 156,500	-10 430,564
Jordan	-238,169	-445,352	-1 651,408	-1 161,972	-1 295,211	-1 191,408	-953,099	182,535	1 066,761	-5 687,324
Kuwait	7 662,652	23 917,856	21 233,852	41 702,192	32 668,259	20 334,020	25 622,101	-1 984,412	34 293,690	205 450,210
Morocco	233,506	5,725	-221,288	-3 543,350	-1 315,996	327,671	112,479	781,934	-1 183,998	-4 803,317
Oman	797,103	-326,138	-353,706	776,102	-855,470	-4 999,866	-6 493,368	-6 419,246	-1 934,522	-19 809,110
Qatar	19 028,362	-2 799,341	18 310,165	19 932,967	16 548,352	-6 068,819	-9 203,297	5 324,176	-2 178,846	58 893,720
Tunisia	43,757	15,366	-80,017	-71,922	-152,680	56,843	63,858	-517,865	-66,800	-709,459
Total by Year	44 708,811	27 993,816	20 093,627	55 419,318	45 248,730	8 469,231	-16 520,724	2 568,564	13 385,374	**201 366,746**
Average per Year	5 588,601	3 499,227	2 511,703	6 927,415	5 656,091	1 058,654	-2 065,091	321,070	1 673,172	-

Table 3.4 – Portfolio Equity, net by Country (BoP, current million USD, 2023)

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total by Country
Egypt, Arab Rep.	-711,300	-983,400	-431,400	484,900	13,500	609,500	224,300	220,300	-12,000	-585,600
Iraq	169,000	7,000	55,900	25,000	-15,080	-8,890	0,800	9,200	-2,900	240,030
Jordan	109,437	53,099	158,451	-31,127	14,582	333,662	-476,479	41,268	-62,254	140,638
Kuwait	832,394	638,539	65,123	585,620	0,043	-32,443	405,467	410,121	167,454	3 072,318
Morocco	166,137	-108,309	43,103	0,000	0,000	-25,939	-33,261	-184,361	279,654	137,025
Oman	-400,260	1771,131	1280,104	798,440	995,319	130,039	499,870	-863,719	592,718	4 803,641
Qatar	-902,995	-925,385	615,934	2482,418	115,934	1728,022	290,659	2267,033	1337,363	7 008,984
Tunisia	-43,757	-15,366	80,017	71,922	152,680	-56,843	-63,858	-44,253	13,789	94,331
Total by Year	-781,344	437,309	1 867,232	4 417,173	1 276,977	2 677,108	847,498	1 855,589	2 313,824	**14 911,366**
Average per Year	-97,668	54,664	233,404	552,147	159,622	334,638	105,937	231,949	289,228	-

3.3 Independent Variables Overview

The independent variable data was obtained from diverse sources. Various economic indicators were sourced from the IMF World Economic Outlook Database and the IMF Data Portal, specifically the October 2022 version. Measures such as Portfolio investment, net (BoP, current US$), Portfolio equity, net inflows (BoP, current US$), GDP (current US$), GDP per capita (current US$), Inflation, GDP deflator (annual %), Domestic credit to private sector by banks (% of GDP), and Control of Corruption: Estimate were extracted from the IMF and covered the period from 2011 to 2021. These indicators were included due to their availability and significance in assessing an economy's well-being.

Derived indicators such as Exports of goods and services (%Δ Y-1 to Y), Population, total (%Δ Y-1 to Y), and Foreign direct investment, net inflows (% of GDP) were calculated using Exports of goods and services (current US$), Population, total, and Foreign direct investment, net inflows (BoP, current US$) as benchmarks. These processed indicators were included for their relevance in promptly illustrating year-to-year changes and their contribution to the GDP of the respective country.

Control of Corruption, as defined by Kaufmann & Kraay (2010), measures the extent to which public power is used for private gain and how elites and private interests can control the public sector. Data from the World Governance Indicators published by the World Bank Group were utilized to measure this accurately. These indicators encompass opinions from enterprises, citizens, and experts across 200 countries, rating them based on various factors such as Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The selection of Control of Corruption is rooted in its relevance to emerging markets and business in emerging markets. It is reported on a scale from -2.5 to 2.5, with most observations falling on the lower end of the spectrum, indicating weaker governance.

Even though these indicators demonstrate high potential in representing a country’s performance and investment performance, statistically, the correlation values remain relatively low, ranging from 0,06 to 0,39 in absolute values. This can be explained due to the selection of the Fixed Effects Model (FEM), with higher consistency but less efficiency. The remaining independent variable data was available from 2011 – 2021, excluding several MENA countries and years due to a lack of available data. Nonetheless, the sample dataset was considered statistically relevant after conducting the regression analysis.

Table 3.5 – Breakdown of Independent Variables

Variable	Description	Period	Sources
Gross Domestic Product (GDP) (current US$)	Monetary value of all goods and services produced, measured in USD ($)	2011–2021	IMF World Economic Outlook Database
GDP per capita (current US$)	GDP divided by population, measured in USD ($)	2011–2021	IMF World Economic Outlook Database
Exports of goods and services (%Δ Y-1 to Y)	The percentage change in the export of goods and services from last year to the current	2011–2021	IMF World Economic Outlook Database[1]
Population, total (%Δ Y-1 to Y)	Percentage growth in population	2011–2021	IMF World Economic Outlook Database[1]
Inflation, GDP deflator (annual %)	A measure of the prices of goods and services produced by an economy, measured as a % with an implicit price deflator	2011–2021	IMF World Economic Outlook Database
Foreign direct investment (FDI), net inflows (% of GDP)	Financial and income inflows, and investment positions expressed in net values divided by GDP, measured as a %	2011–2021	IMF World Economic Outlook Database[1]
Domestic credit to private sector by banks (% of GDP)	Financial resources provided to the private sector by retail banks, expressed as a % of GDP.	2011–2021	IMF World Economic Outlook Database
Control of Corruption: Estimate	The extent to which public power is used for private gain, measured on a scale from -2.5 to 2.5	2011–2021	IMF World Economic Outlook Database

[1] Transformed variables using data from the respective source.

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CHAPTER IV

4. Methodology

The methodological approach used in the present research paper is comprehensive. It consists of a quantitative method and analytical research using Regression Models, explicitly employing a Fixed-Effects Panel Data analysis. The relevance of this analysis relies on previous investigations, such as the initial study on the determinants of venture capital funding conducted by Jeng and Wells (2000), determinants of private equity investment by Bernoth and Colavecchio (2014), the internationalization of venture capital and private equity (Aizenman & Kendall, 2008), or the convergence of EMU equity portfolios conducted by Giofré (2011). Theoretically, these studies contributed to our study by (1) establishing the foundation of the statistical framework to interpret a sample of emerging markets to a larger population, (2) comparing different regression techniques according to the available data ranging from linear to non-linear regressions, and (3) selecting the appropriate dependent and independent variables to increase the statistical relevance of the research.

After conducting a Hausman Test to opt between a Fixed-Effects Model and a Random-Effects Model, the chi-square value (p-value) equaled 0,0026 on the standard calculation, 0,0403 with *sigmamore*[2] option, and 0,0231 with *alleqs constant*[3]. All results are statistically significant, assuming a confidence interval of 95%. The p-values are less than 0,05, leading to the rejection of the null hypothesis H_0, which suggests that the random effects model is appropriate with no systematic differences between the coefficients of both models. Instead, the alternative hypothesis H_1 is supported, indicating systematic differences between the coefficients of the fixed effects and random effects models. The Fixed Effects Model assumes that individual-specific attributes (e.g., country-specific) may be correlated with the independent variables. The FEM mitigates the influence of these time-invariant characteristics, thereby preventing potential bias in the estimates for the independent variables caused by these

[2] When conducting a test that requires two covariance matrices, it is essential to use a standard estimate of disturbance variance (σ2). The option "sigmamore" specifies that the covariance matrices should be based on the estimated disturbance variance from the efficient estimator. This is particularly useful for obtaining a proper estimate of the contrast variance for exogeneity tests and overidentification in instrumental-variables regression

[3] The use of the "alleqs" option specifies that all equations in the models should be utilized to conduct the Hausman test, as opposed to the default behavior where only the first equation is used. Furthermore, the "constant" option specifies that the estimated intercept(s) should be included in the model comparison, although they are excluded by default. This default behavior applies to models where the constant does not have a common interpretation across both models.

unobserved factors. This model is especially valuable when examining the effects of variables that fluctuate over time within an entity (e.g., the influence of policy changes within a country over time on investment).

The FEM is concerned with whether there is omitted variable bias when removing the influence of time-invariant characteristics (Davies et al., 2008). Therefore, our research included only variables that would avoid this correlation, albeit with less efficiency and flexibility. Four models were specified: two for Portfolio Investment and two for Portfolio Equity. For a more thorough explanation, please refer to the Data section.

The most significant models were related to Portfolio Investment, with the relationship with GDP increasing significantly. Therefore, Model 2 — Portfolio investment, net / GDP (Nominal, %) — provided the most accurate comparison between these countries. The formal model can be represented as shown:

Model 2 — Portfolio investment, net / GDP (Nominal, %):

$$y_{i,t} = GDP_{it}\beta_1 + GDPC_{it}\beta_2 + EXP_{it}\beta_3 + POP_{it}\beta_4 + INF_{it}\beta_5 + FDI_{it}\beta_6 + DC_{it}\beta_7 + CC_{it}\beta_8 + \alpha_i + u_{it} \text{ for } t = 1, \dots, T \text{ and } i = 1, \dots, N \quad (1)$$

Where:

- y_{it} – Portfolio investment, net (BoP, current US$) / GDP (Nominal, %)
- GDP – GDP (current US$)
- GDPC – GDP per capita (current US$)
- EXP – Exports of goods and services (%Δ Y-1 to Y)
- POP – Population, total (%Δ Y-1 to Y)
- INF – Inflation, GDP deflator (annual %)
- FDI – Foreign direct investment, net inflows (% of GDP)
- DC – Domestic credit to private sector by banks (% of GDP)
- CC – Control of Corruption: Estimate
- β – $k \times 1$ matrix of parameters, being k the number of independent variables
- α_i – unobserved time-invariant individual country effect, i.e., culture, history, formal institutions (Fischer, 2010)
- u_{it} – error term

Fixed-effects (within) regression — Number of obs = 72
Group variable: COUNTRY — Number of groups = 8

R-squared:
Within = 0.1780
Between = 0.4244
Overall = 0.3241

Obs per group:
min = 9
avg = 9.0
max = 9

F(8, 56) = 1.52
corr(u_i, Xb) = -0.3598 — Prob > F = 0.1727

Portfolioin~P	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
GDPcurrentUS	-3.34e-13	3.52e-13	-0.95	0.347	-1.04e-12	3.71e-13
GDPpercapit~S	2.87e-06	1.20e-06	2.38	0.020	4.59e-07	5.27e-06
Exportsofgo~s	.0118385	.0709162	0.17	0.868	-.1302236	.1539007
Populationt~Y	-.1077861	.3225786	-0.33	0.740	-.7539888	.5384165
InflationGD~l	-.0017061	.0013865	-1.23	0.224	-.0044837	.0010714
Foreigndire~i	-.093466	.5150377	-0.18	0.857	-1.125211	.9382786
Domesticcre~o	.0006558	.0009048	0.72	0.472	-.0011567	.0024684
ControlofCo~e	-.0688026	.0744611	-0.92	0.359	-.217966	.0803608
_cons	-.0279061	.083845	-0.33	0.741	-.1958679	.1400557

sigma_u	.05104871	
sigma_e	.04697145	
rho	.54152435	(fraction of variance due to u_i)

F test that all u_i=0: F(7, 56) = 2.33 — Prob > F = 0.0368

Figure 4.1 – Fixed-Effects Model: Test

Random-effects GLS regression — Number of obs = 72
Group variable: COUNTRY — Number of groups = 8

R-squared:
Within = 0.0756
Between = 0.9459
Overall = 0.5953

Obs per group:
min = 9
avg = 9.0
max = 9

Wald chi2(7) = .
corr(u_i, X) = 0 (assumed) — Prob > chi2 = .

Portfolioin~P	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
GDPcurrentUS	8.35e-14	1.40e-13	0.60	0.552	-1.91e-13	3.58e-13
GDPpercapit~S	2.30e-06	6.77e-07	3.40	0.001	9.75e-07	3.63e-06
Exportsofgo~s	-.0768335	.0644362	-1.19	0.233	-.2031262	.0494591
Populationt~Y	.2630817	.267955	0.98	0.326	-.2621005	.7882639
InflationGD~l	.0006254	.0011861	0.53	0.598	-.0016993	.00295
Foreigndire~i	-.0559682	.5076275	-0.11	0.912	-1.0509	.9389634
Domesticcre~o	.0025719	.0004275	6.02	0.000	.0017341	.0034097
ControlofCo~e	-.1142695	.0252417	-4.53	0.000	-.1637423	-.0647966
_cons	-.2008382	.0344401	-5.83	0.000	-.2683395	-.1333369
sigma_u	0					
sigma_e	.04697145					
rho	0	(fraction of variance due to u_i)				

Figure 4.1 – Random-Effects Model: Test

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
GDPcurrentUS	-3.34e-13	8.35e-14	-4.18e-13	3.23e-13
GDPpercapi~S	2.87e-06	2.30e-06	5.65e-07	9.93e-07
Exportsofg~s	.0118385	-.0768335	.0886721	.0296155
Population~Y	-.1077861	.2630817	-.3708678	.1796026
InflationG~l	-.0017061	.0006254	-.0023315	.0007181
Foreigndir~i	-.093466	-.0559682	-.0374978	.0870529
Domesticcr~o	.0006558	.0025719	-.001916	.0007975
ControlofC~e	-.0688026	-.1142695	.0454669	.0700522

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 20.16
Prob > chi2 = 0.0026
(V_b-V_B is not positive definite)

Figure 4.2 – Hausman Test

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CHAPTER V

5. Results

Among the tested models, the most significant is the one that standardizes the Portfolio Investment net absolute amounts in current USD by dividing them by the respective country's nominal GDP, shown in percentage in Model 2. This homogenizes the relative size of the research countries, enabling a more accurate comparison between them and providing a better prediction of the population's determinants — the MENA region.

The R^2 for the models varies from 0,21159 to 0,59434, with Model 2 being the highest. For Portfolio Investment (Model 1 and Model 2), GDP per capita (current US$), Domestic credit to private sector by banks (% of GDP), and Control of Corruption: Estimate proved to be significant, while for Portfolio Equity (Model 3 and Model 4), Population, total (%Δ Y-1 to Y), Foreign direct investment, net inflows (% of GDP), and Control of Corruption: Estimate demonstrated its importance with lower p-values.

The dependent variable, Domestic credit to the private sector by banks (% of GDP), proved the most significant in this research, as the p-values were markedly below 0,01, representing a significant statistical finding.

Moreover, when interpreting the data, it is essential to verify the units of measurement to understand the conveyed information accurately: Models 1 and 3 are measured in USD. In contrast, Models 2 and 4 are measured in percentages.

The full results for all regressions and correlations among each variable are displayed in Tables 9 and 10, respectively, below:

Table 5.1 – Portfolio Investment and Equity Regression Models

Regression Models	1. Portfolio investment, net (BoP, current US$)	2. Portfolio investment, net / GDP (Nominal, %)	3. Portfolio equity, net inflows (BoP, current US$)	4. Portfolio equity, net inflows / GDP (Nominal, %)
R^2 (Between)	0,53809	**0,59434**	0,21159	0,21588
GDP (current US$)	0,00203 (0,92645)	8,24E-14 (0,55934)	2,60E+08 (0,52221)	1,79E-15 (0,89194)
GDP per capita (current US$)	**3,73E+05***** **(0,00078)**	**2,30E-06**** **(0,00120)**	5,35E-04 (0,74624)	-6,87E-08 (0,28203)
Exports of goods and services (%Δ Y-1 to Y)	-8,18E+09 (0,41859)	-0,07668 (0,23936)	462,451 (0,95376)	-0,00195 (0,74764)
Population, total (%Δ Y-1 to Y)	4,24E+10 (0,31424)	0,26655 (0,32640)	-3,45E+08 (0,64955)	**0,04849*** **(0,05750)**
Inflation, GDP deflator (annual %)	1,47E+07 (0,93703)	6,24E-04 (0,60140)	3,68E+09 (0,24576)	1,30E-05 (0,90681)
Foreign direct investment, net inflows (% of GDP)	4,90E+10 (0,53829)	-0,05785 (0,90981)	7,80E+05 (0,95549)	**-0,09172*** **(0,05788)**
Domestic credit to the private sector by banks (% of GDP)	**3,16E+08***** **(1,256E-05)**	**0,00257***** **(1,05E-07)**	-1,48E+06 (0,76847)	-1,48E-05 (0,71305)
Control of Corruption: Estimate	**-1,62E+10***** **(0,00011)**	**-0,11433***** **(2,77E-05)**	4,05E+08 (0,17671)	**0,00477**** **(0,04680)**
N	72	72	72	72

p-values in parentheses

$^{*}p < 0,10$; $^{**}p < 0,05$; $^{***}p < 0,01$

Table 5.2 – Correlation Data Analysis for Model 2

	Portfolio investment, net (BoP, current US$) / GDP (Nominal, %)	*GDP (current US$)*	*GDP per capita (current US$)*	*Exports of goods and services (%Δ Y-1 to Y)*	*Population, total (%Δ Y-1 to Y)*	*Inflation, GDP deflator (annual %)*	*Foreign direct investment, net inflows (% of GDP)*	*Domestic credit to private sector by banks (% of GDP)*	*Control of Corruption: Estimate*
Portfolio investment, net (BoP, current US$) / GDP (Nominal, %)	**1**								
GDP (current US$)	**0,076344**	1							
GDP per capita (current US$)	**0,388697**	0,154548	1						
Exports of goods and services (%Δ Y-1 to Y)	**-0,13389**	0,079302	0,097008	1					
Population, total (%Δ Y-1 to Y)	**0,120458**	-0,04228	0,460922	0,031647	1				
Inflation, GDP deflator (annual %)	**-0,22356**	0,237563	-0,10294	0,781068	-0,12085	1			
Foreign direct investment, net inflows (% of GDP)	**-0,26505**	-0,40407	-0,26456	0,16194	0,009699	0,316151	1		
Domestic credit to the private sector by banks (% of GDP)	**0,372866**	-0,6241	0,229996	-0,16766	0,005426	-0,21345	0,399716	1	
Control of Corruption: Estimate	**0,055018**	-0,38316	0,657101	-0,04778	0,342226	-0,09839	0,340009	0,608487	1

5.1 Discussion

5.1.1 GDP (current US$)

The Gross Domestic Product (GDP), expressed in current U.S. dollars — illustrated in Figure 5.1 — exhibits low statistical significance across every model, where the *p-value* ranges from 0,522 to 0,926. It has a low correlation with Portfolio Investment in Model 2 — see Table 5.2 — however, it has a moderate positive correlation with Control of Corruption: Estimate indicating that the higher GDP of an emerging market creates a higher value in this indicator and, consequently, more robust governance in that country. Our results, which align with traditional economic theory, suggest that a higher GDP indicates a more steady economy.

When considering how this would impact a larger dataset, the GDP might not effectively represent the overall economic situation of an emerging country. This research indicates that this factor alone cannot reliably predict more than 52.2% of the potential outcomes for changes in portfolio equity and only 92.6% for portfolio investment, which is considered a random error. Notably, many sources in existing literature do not incorporate GDP as a factor in their analysis, as their effort to standardize GDP might produce insignificant conclusions. Conversely, Wilton (2012) refers to GDP as a reliable indicator, as the size of an economy is one of the crucial factors that can create a positive environment for attracting private equity investments.

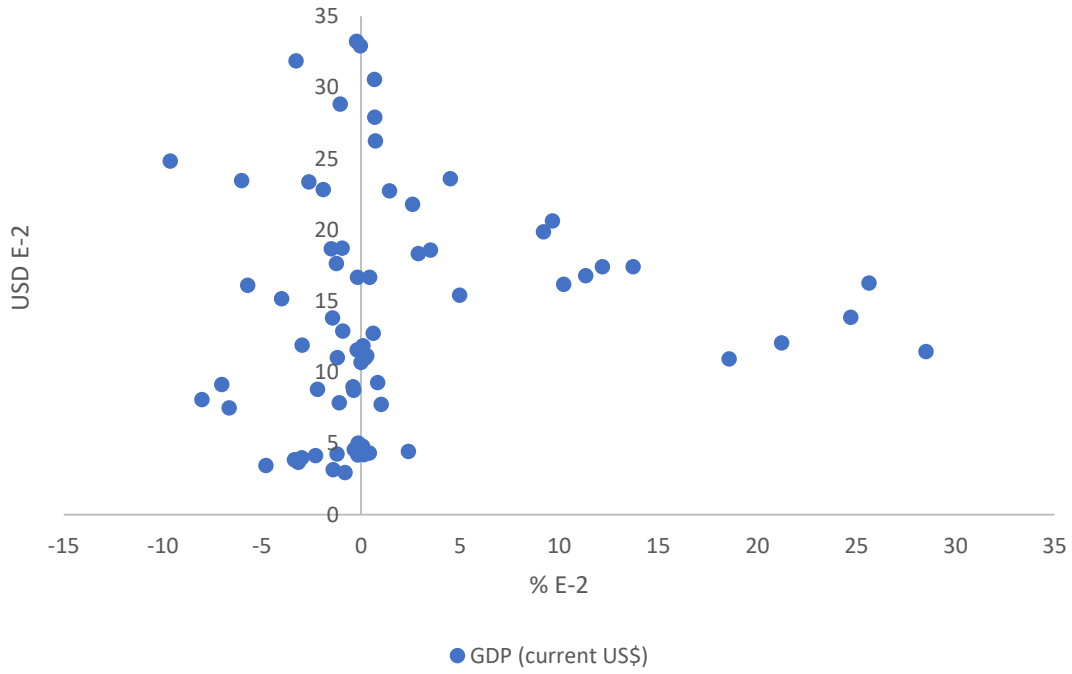

Figure 5.1 – Non-linear scatter chart – GDP (current US$)

5.1.2 GDP per capita (current US$)

Notably, GDP per capita — displayed in Figure 5.2 — demonstrated statistical significance in the Portfolio Investment models (Models 1 and 2) but not in the remaining ones. The coefficient's significance level fell in the one-percent range for the former models, most specifically 0,0008 to 0,0012, whereas in the latter models, it exceeded 28 percent. This proves that a transformed variable using GDP expressed in dollars is suited to the absolute numbers and percentage models.

According to this paper, this independent variable could successfully predict a portfolio investment's performance for emerging countries; however, many scholars found that GDP per capita was not a significant factor when mixing developed and developing countries and analyzing PE and VC.

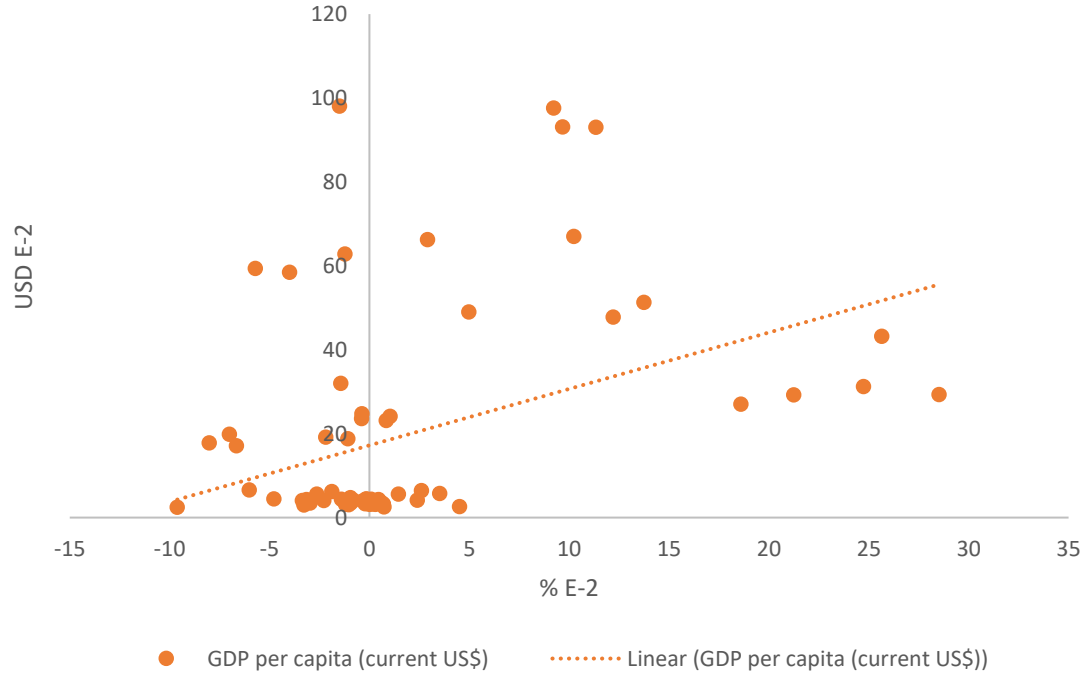

Figure 5.2 – Non-linear scatter chart: GDP per capita (current US$)

5.1.3 Exports of goods and services (%Δ Y-1 to Y)

The percentage change in the volume of exports of goods and services—exemplified in Figure 5.3—did not show statistical significance in any of the models, with the *p-value* ranging between 0,239 and 0,954. An upsurge in exports that indicated that businesses were expanding and more investment opportunities were emerging could be expected; however, it does not translate into a better portfolio, with the correlation for Model 2's dependent variable at -0,17

percent. Authors Groh and Wallmeroth (2015) concluded that exports significantly attract venture capital, even though primarily in developed economies, as their analysis involved a mix of developed and emerging economies. As our panel data comprises countries with mostly negative net Portfolio Investment YoY and low absolute Portfolio Equity YoY values, it is reasonable to accept that exports might not be relevant for emerging MENA countries.

Nonetheless, this indicator showed a high correlation with Inflation, at 78 percent, which follows a country's economic baseline.

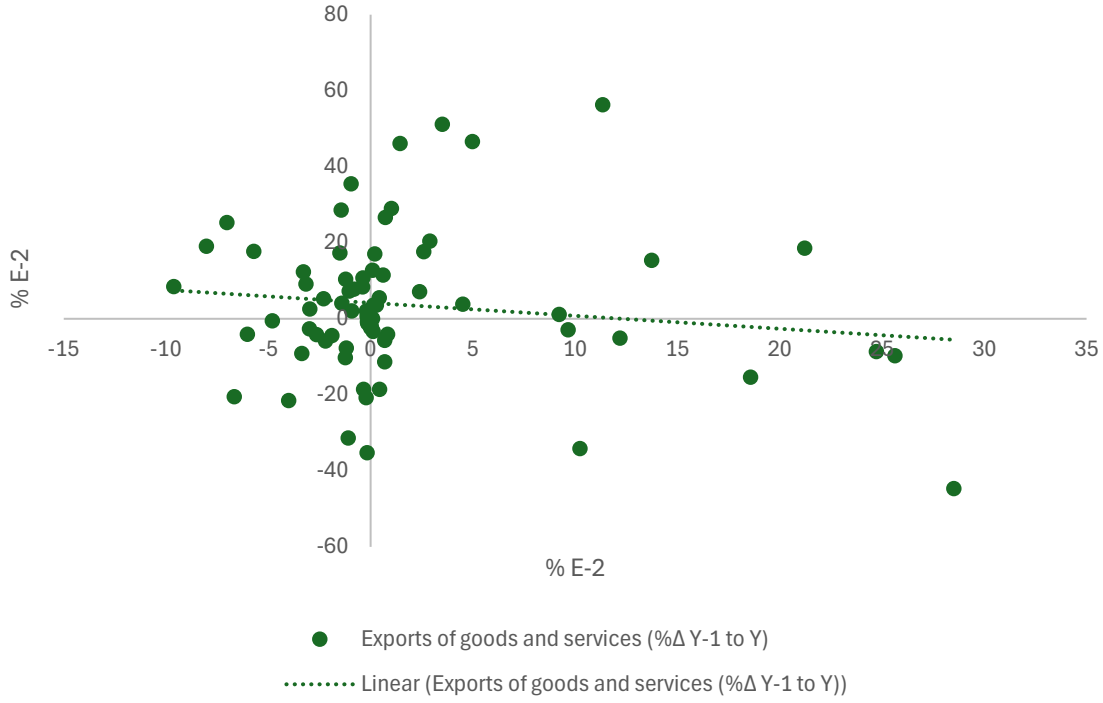

Figure 5.3 – Non-linear scatter chart: Exports of goods and services (%Δ Y-1 to Y)

5.1.4 Population, total (%Δ Y-1 to Y)

The research found population growth — illustrated in Figure 5.4 — to have some degree of statistical significance in Model 4, with a *p-value* of 0,058. There is often a relationship between population and the size of an economy, as a larger population provides more opportunities for scale and a greater pool of human capital. Developing countries typically experience higher population growth rates, especially as many developed nations grapple with the challenges of an aging population. Nonetheless, our analysis found that all countries mainly experienced a crescent population growth YoY. Therefore, in this analysis, the premise was that a lower population growth rate could be correlated with more PE capital, suggesting that countries that

are more interested in private equity are relatively more developed. A suggestion of example would be, when comparing Oman and Tunisia, the highest and lowest holders of portfolio equity, respectively, the former has, on average, more than four times the rate of population growth than the latter, supporting the assumption above.

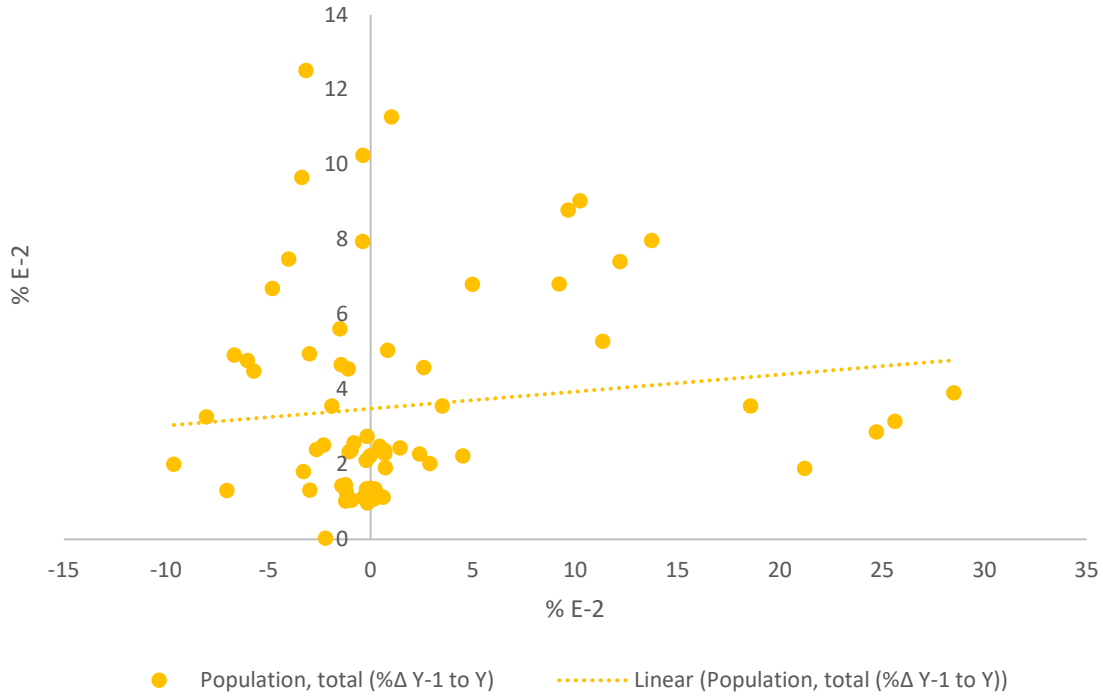

Figure 5.4 – Non-linear scatter chart: Population, total (%Δ Y-1 to Y)

5.1.5 Inflation, GDP deflator (annual %)

It is interesting to note that inflation, as shown in Figure 5.5, was insignificant across all models, ranging from 0,246 to 0,937, according to Table 5.2. In many cases, interest rates and inflation are often mentioned together, and in much of the literature, interest rates were positively correlated with venture capital and private equity fundraising. This conclusion was also reached by Félix et al. (2013), Gompers and Lerner (1998), and Romain and La Potterie (2004). On the other hand, Bernoth and Colavecchio (2014) also found that inflation is negatively related to private equity investment.

Typically, rising interest rates lead to decreased consumer spending and economic contraction, which is associated with decreasing inflation. Conversely, this rationale is not clearly represented in our research, which might be due to a low correlation a priori, with -0,223 against Model 2. A few causes of this could be due to (1) some of the analyzed countries with

low Investment/Equity portfolios having comparatively lower inflation, and (2) other countries with high Investment/Equity portfolios having too high of inflation and sudden decreases.

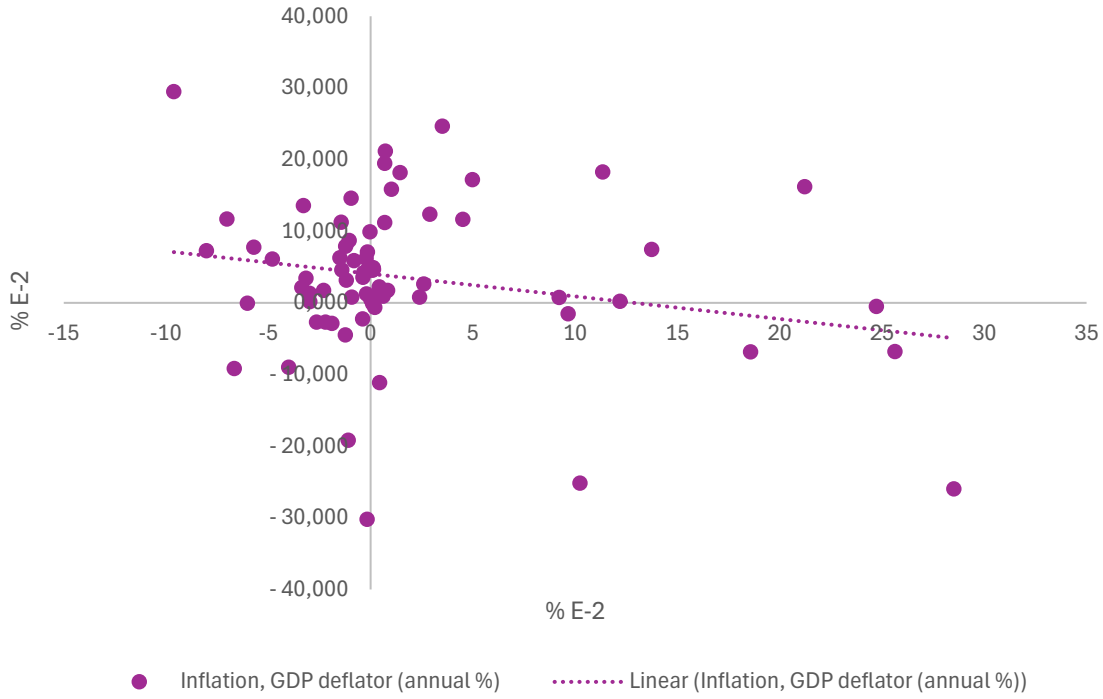

Figure 5.5 – Non-linear scatter chart: Inflation, GDP deflator (annual %)

5.1.6 Foreign direct investment, net inflows (% of GDP)

The apparent lack of significance of FDI, as evidenced in Table 5.6, is somewhat unexpected. Our first idea was that it would have an evident correlation and implication with private equity as a component. Model 4, which had the most significance, exhibited a chi-square value of 0,058. The prevailing consensus in academic literature and the industry suggests that private equity capital tends to drift into regions where opportunities exist. Therefore, the increased inflow of FDI could be a reasonable indicator of how a particular country is making cross-border investments and, consequently, should result in a relative upsurge in private equity capital. Notably, no other authors have examined or tested this variable.

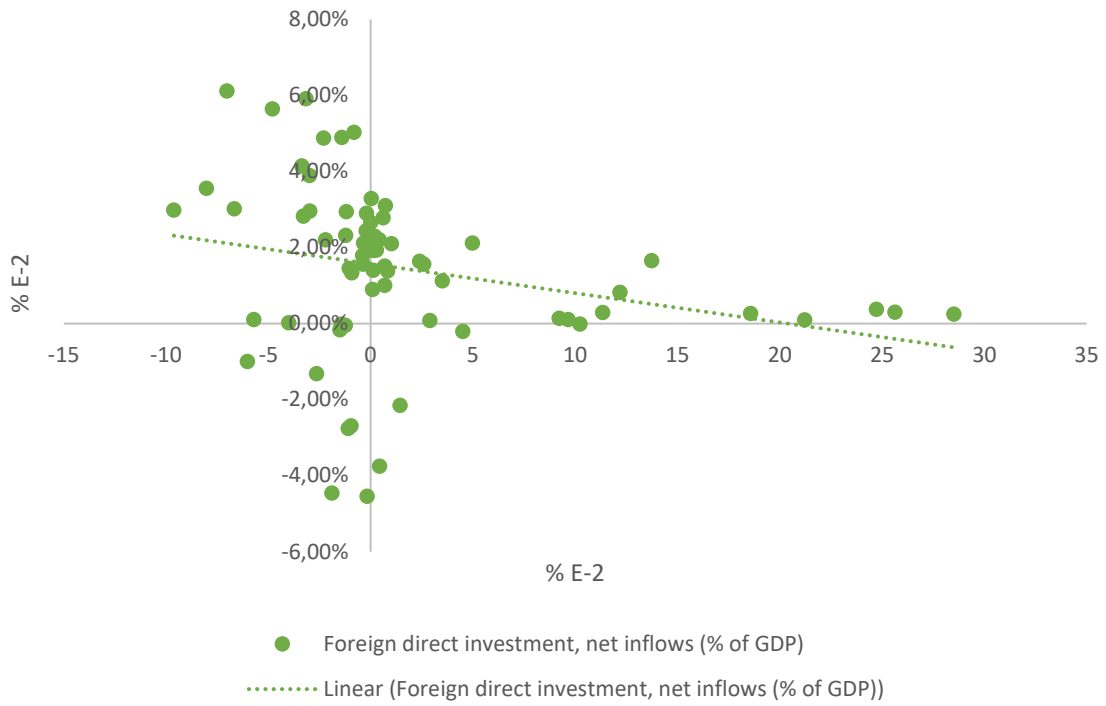

Figure 5.6 – Non-linear scatter chart: Foreign direct investment, net inflows (% of GDP)

5.1.7 Domestic credit to the private sector by banks (% of GDP)

The variable representing Domestic Credit to the Private Sector as a percentage of GDP — illustrated in Figure 5.7 — exhibited statistical significance in Models 1 and 2, which measure the monetary resources financed to the private sector by retail banks. The coefficient is statistically significant at the 1 percent level, specifically 1,256E-05 for Model 1 and 1,05E-07 for Model 2. Hence, this indicator demonstrates that a 1 percent increase in *Domestic credit to the private sector by banks (% of GDP)* would lead to a 0,257 percent increase in a country's share of portfolio investment. With this in consideration and the fact that (1) in developing countries, small businesses are often considered risky assets for banks, (2) typically, governments have partial or complete intervention in banking activities by incentivizing them to raise their lending activities, and (3) equity financing is costlier than debt financing, an increase in bank lending to the private sector creates more exposure to viable investment opportunities, benefiting both businesses by diversifying how they resort to financing and banks/governments in reducing credit risks.

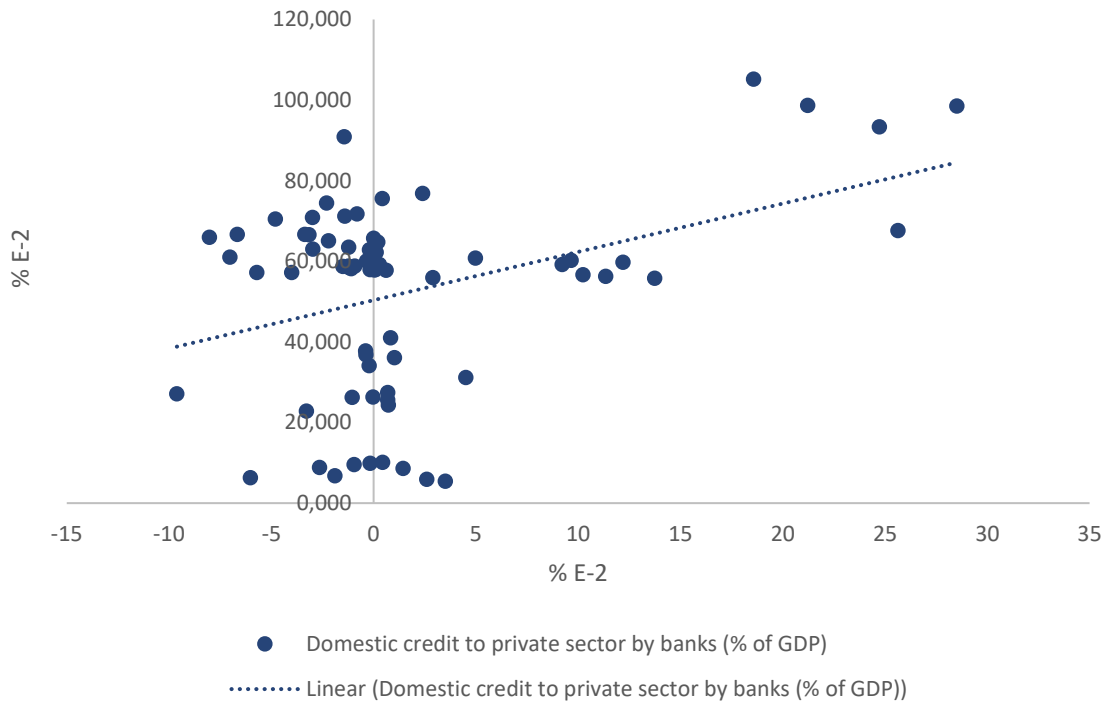

Figure 5.7 – Non-linear scatter chart: Domestic credit to the private sector by banks (% of GDP)

5.1.8 Control of Corruption: Estimate

The control of corruption, presented in Figure 5.8, was statistically significant at the 1 percent level for Models 1 and 2 and the 5 percent level for Model 4, emerging as the most important variable for our research. The control of corruption is assessed on a scale from -2.5 to 2.5 in units of a standard normal distribution, with higher ratings indicating less corruption in the nation. The coefficient suggests that, in Model 2, a one-unit increase on the Control of Corruption scale would result in an 11,433% decrease in the Portfolio Investment as a percentage of the GDP ratio for a given country. Our results imply that a country with high levels of corruption tends to allocate more capital to the private sector for its own interest.

The reasoning and significance of this variable across three out of four tested models align favorably with the numerous instances in the literature where solid governance has been emphasized as a variable to be included in the analysis.

To further support our findings, we explored the academic literature on the correlation between law and finance. La Porta et al. (1998) conducted empirical research linking a country's legal system to the level of investor protection provided. Gompers and Lerner (1998) identified significant regulatory policies influencing venture capital fundraising in the United

States. In the realm of private equity capital determinants, Groh and Wallmeroth (2015) concluded that good governance is a crucial factor for venture capital funds, a finding also supported by Bernoth and Colavecchio (2014).

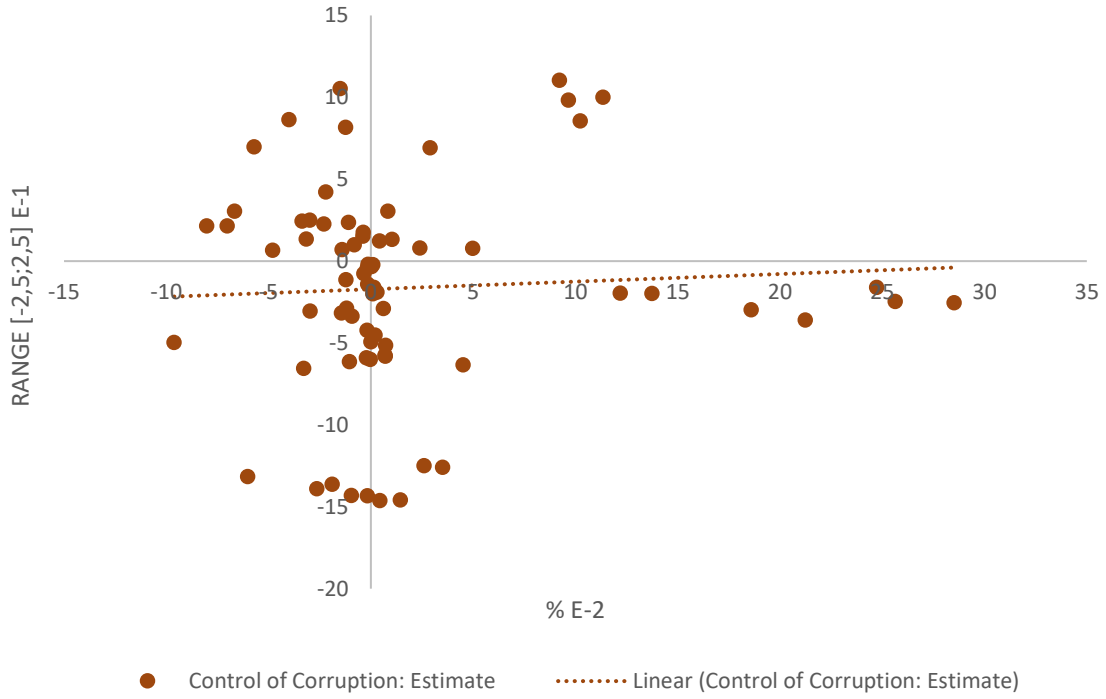

Figure 5.8 – Non-linear scatter chart - Control of Corruption: Estimate

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CHAPTER VI

6. Conclusion

In this research, an analysis was conducted to examine the macroeconomic factors influencing private equity and venture capital portfolios in MENA's emerging market countries. The study encompassed both portfolio investment and portfolio equity, with Domestic credit to the private sector by banks (% of GDP) and Control of Corruption: Estimate identified as the most crucial variables for the two types of portfolios, respectively, and the tested models overall. Additionally, other significant variables included GDP per capita (current US$) for portfolio investment. In contrast, for portfolio equity, significant variables were Population, total (%Δ Y-1 to Y), and Foreign direct investment, net inflows (% of GDP).

Investments in emerging markets have proven rewarding for many investors, including those aiming to make a positive impact through their investments, facilitating financing and job creation within a community. Private equity capital, in particular, has the potential to contribute to the professionalization of firms in emerging markets and, by extension, to the overall economies due to the high standards to which PE portfolio firms are held and the additional non-financial value created by private equity investors.

6.1 Research Questions

The research problem of this investigation can be defined by examining investment strategies and portfolio performances to comprehend PE and VC in Middle Eastern and North African economies. Nevertheless, questions surged regarding this ever-changing topic.

To ultimately answer these research questions, our vision and objective tended to grasp portfolio investment and equity performances. We used regression analysis methods to determine what indicators best represented private equity portfolios in emerging markets and whether they are reliable for future research. Hence, our objective is to ascertain the determinants of private equity capital.

(i) "What are the significant determinants of private equity and venture capital activities, as evidenced in the investment portfolios of the Middle East and North African countries?"

The determinants for private equity and venture capital activities, as evidenced in the investment portfolios of the Middle East and North African countries, include Domestic credit to the private sector by banks (% of GDP) and Control of Corruption: Estimate, which were identified as the most crucial variables for the portfolio investment and portfolio equity, respectively, and the tested models overall. For the variable Domestic credit, the p-values for Models 1 and 2 were 1,256E-05 and 1,05E-07, respectively. With an indicator whose values are so close to 0, it is doubtful that the observed difference is due to chance, as the test result is statistically significant.

Control of Corruption also showed high statistical significance at the one-percent level in portfolio investment models, with p-values of 0,0001 for Model 1 and 2,77E-05 for Model 2, and statistical significance at the five-percent level, with a p-value of 0,0468 for portfolio equity Model 4. Additionally, other significant variables included GDP per capita (current US$) for portfolio investment. In contrast, for portfolio equity, significant variables were Population, total (%Δ Y-1 to Y), and Foreign direct investment, net inflows (% of GDP). The former has p-values of 0,0008 to 0,0012 for Models 1 and 2, which lies within the one-percent range, while Population has a p-value of 0,05750 for Model 4 and FDI a value of 0,05788.

(ii) “Is there a correlation between a country’s portfolio performance and its historical and present status as a developing emerging economy? If such a correlation exists, what implications does it hold?”

The research indicates that the most statistically significant correlation lies with Model 2, which demonstrates the relationship between GDP per capita (current US$) and Domestic credit to the private sector by banks (% of GDP) with Portfolio Investment, as illustrated in Table 5.2. GDP per capita correlates to 0,389, while Domestic credit correlates to 0,373. Consequently, based solely on this model, there is a moderate positive correlation between a country’s portfolio performance and its classification as a developing emerging economy when using GDP per capita (current US$) and Domestic credit to the private sector by banks (% of GDP) as indicators. The way both these indicators correlate is that having higher individual wealth and access to credit from retail banks for the private sector suggests that the country is well-developed and has enhanced access to private capital.

Conversely, the independent variable Inflation, GDP deflator (annual %), exhibited a low-to-moderate negative correlation with Model 2, with a value of -0,224. In this case, it still aligns with what most economic literature relies on. According to Vukovic et al. (2022), their investigation verifies that under low and moderate inflation conditions, the investor's portfolio generates the highest absolute returns—including borrowed funds; for the case of higher inflation, there is a preference for a minimum variance portfolio.

Our research has proven appropriate determinants with a significant model, statistically acceptable variables, and relevant correlation levels to analyze the portfolio performance in several emerging markets.

6.2 Contributions to the Field

The present study offers a well-established perspective on private equity and venture capital within an emerging region. It aims to identify successful and unsuccessful factors in predicting portfolio performance in MENA countries. The study is underpinned by theoretical frameworks and existing academic literature, which are broadly consistent with our research.

Future research could benefit from a mixed-methods approach to gain a more comprehensive understanding. For instance, combining surveys of private equity and venture capital firms in the Middle East and North Africa region could offer insights into their perspectives, supported by practical experience, on key determinants and the optimal portfolio composition for their respective countries.

6.3 Implications for Practice and Policy

The information obtained from this research significantly impacts legislators and financial institutions striving to establish appropriate incentives, regulations, and initiatives for prospective investors in their countries and businesses. Industry leaders and regulators can use these outcomes to anticipate the performance of their investment portfolios and to secure or mobilize additional funds.

6.4 Limitations of the Study

The study's limitations are crucial to acknowledge. Firstly, by using the FEM and omitting time-invariant variables, as recommended by the Hausman Test, there is a risk of significantly biasing the results that include FDI data (Davies et al., 2008). Secondly, the lack of data from other unmentioned MENA countries has led to inconsistencies in our regression analysis.

Regarding the methodological approach, while the quantitative method provides robust statistical findings, it is important to recognize its limitations, particularly its reliance on available data.

6.5 Final Thoughts

In light of this, our study promptly answered these questions and accomplished the objectives outlined in Chapter I. We identified the determinants defining the portfolios analyzed in the chosen dataset and examined their correlation with the countries' portfolio performance *status quo*.

The attraction of private equity capital can help professionalize an economy, starting at the level of individual firms. With the rigorous criteria that many private equity investors follow, the presence of PE and VC could indicate to other investors the potential opportunities in a particular region.

This research clarified that portfolio investment and equity are distinct subjects, each with its determinants. By highlighting this difference, we underline the necessity for further research to address the development of such an important topic and delve into the intricacies of the MENA region, which has recently experienced a surge in private equity and venture capital. By comprehensively defining the current PE landscape in these emerging markets, conducting additional analysis with new data could prove immensely valuable.

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