

Nguyen Kim Quoc Trung

Article

Determinants of small and medium-sized enterprises performance: The evidence from Vietnam

Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Nguyen Kim Quoc Trung (2021) : Determinants of small and medium-sized enterprises performance: The evidence from Vietnam, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 8, Iss. 1, pp. 1-26, <https://doi.org/10.1080/23311975.2021.1984626>

This Version is available at:

<https://hdl.handle.net/10419/245140>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>



Determinants of small and medium-sized enterprises performance: The evidence from Vietnam

Nguyen Kim Quoc Trung |

To cite this article: Nguyen Kim Quoc Trung | (2021) Determinants of small and medium-sized enterprises performance: The evidence from Vietnam, Cogent Business & Management, 8:1, 1984626, DOI: [10.1080/23311975.2021.1984626](https://doi.org/10.1080/23311975.2021.1984626)

To link to this article: <https://doi.org/10.1080/23311975.2021.1984626>



© 2021 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.



Published online: 09 Oct 2021.



Submit your article to this journal [↗](#)



Article views: 253



View related articles [↗](#)



View Crossmark data [↗](#)



Received: 19 May 2021
Accepted: 20 September 2021

*Corresponding author: Nguyen Kim Quoc Trung, Faculty of Accounting - Auditing, The University of Finance - Marketing (UFM), 779 Nguyen Kiem Street, Ward 4, Phu Nhuan District, Ho Chi Minh City, Vietnam
E-mail: nkq.trung@ufm.edu.vn

Reviewing editor:
Albert W. K. Tan, Asia Pacific Graduate Institute, Shanghai Jiao Tong University, SINGAPORE

Additional information is available at the end of the article

BANKING & FINANCE | RESEARCH ARTICLE

Determinants of small and medium-sized enterprises performance: The evidence from Vietnam

Nguyen Kim Quoc Trung^{1*}

Abstract: This paper estimates the factors affecting Vietnamese small and medium-sized enterprises (SMEs) listed on the Hanoi Stock Exchange and the Chi Minh City Stock Exchange between 2009 and 2019. The author adopts a quantitative method (the “Generalized Method of Moments”-GMM) to investigate six statistically significant variables positively affecting SMEs’ performance at 5%. These variables include the profitability lag, firm size, leverage ratio, revenue growth, gross domestic product growth, and the quality of national governance. One of the significant contributions of this study to the literature is to consider the leverage ratio as a tool to improve SMEs’ performance, and national governance quality is a mechanism to enhance SMEs’ efficiency.

Subjects: Environment & Business; Statistics for Business, Finance & Economics; Business & Policy; Asian Business; Entrepreneurship and Small Business Management; Small BusinessManagement

Keywords: small and medium-sized enterprises (SMEs); performance; leverage; national governance quality; Generalized Method of Moments-GMM; Vietnam

Subjects: L25; L31; O12; P47.



Nguyen Kim Quoc Trung

ABOUT THE AUTHOR

Nguyen Kim Quoc Trung is currently a lecturer in the Faculty of Accounting - Auditing at the University of Finance - Marketing, Vietnam. He is interested in researching the banking sector and finance and accounting. His fields of research and teaching are banking, finance, and governance. He has written a total of some articles in various international journals and conferences, including *Productivity Management* and *Cogent Business & Management*, and has served as a reviewer for international journals listed on Scopus, such as *Cogent Economics and Finance*.

PUBLIC INTEREST STATEMENT

Small and medium-sized businesses are critical to the growth of a nation. They also play a crucial role in production, job creation, contribution to the development of the economy. However, the most crucial feature of SMEs is their contribution to economic development. Measuring performance is critical in today’s business management environment, as it provides valuable information that enables managers to effectively monitor results, progress reports, and the accurate identification of business health. This paper identifies the factors that influenced the performance of Vietnamese SMEs listed on the Ho Chi Minh City Stock Exchange (HOSE) between 2009 and 2019. The author adopts a quantitative method (the “Generalized Method of Moments”-GMM) to investigate six statistically significant variables positively affecting SMEs’ performance at 5%. These variables include the latency of profitability, firm size, leverage ratio, revenue growth, gross domestic product growth, and national governance quality.

1. Introduction

The difference between small and mid-size enterprises (SMEs) and large corporations is that the SMEs community comprises diverse businesses. SMEs can link the informal economy of family businesses and the formalized corporate sector in developing countries. SMEs produce and supply a wide range of goods to match the production and consumption needs of domestic and international markets, generate profits, and create added value for the society of each country. SMEs are the fastest growing business sector in many countries, including developing countries, because they are the growth engine of many economies, or least developed (Savlovski & Robu, 2011). The Organisation for Economic Co-operation and Development (OECD) estimates that SMEs makeup 90% of businesses and employ 63% of the world's workforce (Munro, 2013). According to the Vandenberg et al. (2016) report, SMEs account for a large proportion of the total number of businesses in a country, region, and globally, potentially employing more than 50% of the total. The number of social workers and large volumes of jobs for workers globally (up to 65%). Concerning economic growth, many statistical results worldwide show the critical role of SMEs in the economic growth of the region/country. SMEs account for approximately 50% of GDP and operate in various industries: 50% in distribution, 10% in manufacturing, 10% in services, and 30% in agriculture (Lemuel, 2009).

In emerging markets (such as Vietnam), SMEs are currently confronted with several challenges, including a lack of managerial capabilities and access to quality management and technology (Mwika et al., 2018; Wafa et al., 2005). In addition, as with other emerging and developing economies, Vietnam's SME sector faces some challenges in terms of international integration. A review of the literature reveals that, compared to large firms, there are relatively few studies on the financial structure of SMEs (Kumar & Rao, 2015), even though financial constraints have nearly twice the effect on small firms' annual growth (Ayyagari et al., 2007). Additionally, numerous studies have shown the critical role of SMEs in a country's economic development. However, in terms of empirical evaluation, most studies examined SME performance at the microeconomic (organizational) level, explaining the relationships between SME performance and internal environmental factors or a combination of internal and external factors.

This study aims to determine the factors affecting the performance of Vietnamese SMEs listed on HOSE from 2009 to 2019. To accomplish this goal, we will address the following question: "What factors influence the performance of listed SMEs on HOSE?"

2. Literature review and empirical studies

2.1. Literature review

According to international practice, small and medium enterprises include micro, small, and medium enterprises abbreviated as SMEs (Small and Medium Enterprises). According to Muriithi (2017) and Xuan et al. (2020), there is no unified definition of small and medium enterprises, and that each country and organization has a different definition based on classification criteria. However, Tewari et al. (2013) stated that identifying small and medium-sized enterprises frequently uses the following primary criteria: employee count, annual revenue/assets/level of investment, and industry of operation (ownership).

SMEs are defined in the United States by the Small Business Administration (SBA) as those with fewer than 500 employees and an annual revenue of less than \$7 million (for industry production revenue below 35.5 million). Similarly, Canada classifies businesses with fewer than 500 employees and less than \$50 million in annual revenue as SMEs. The European Union defines SMEs as those with fewer than 250 employees and an annual revenue of fewer than 50 million euros or a balance sheet of fewer than 43 million euros. These countries and organizations classify small and medium-sized businesses based on their employee count and revenue/assets. On the other hand, the World Bank classified SMEs using a broader range of loan size criteria. This organization defines small and medium-sized businesses as those with fewer than 300 employees, assets, or

annual sales of less than \$15 million, and loan amounts of less than \$1 million (less than \$2 million in advanced countries). According to the Vietnamese Government's Decree 39/2018/ND-CP dated 11 March 2018, SMEs are classified based on two sets of criteria: their field of operation and the number of employees, annual revenue, and income; or the number of employees and capital (Vietnam Government, 2018).

Hashim and Abdullah (2000) stated that SMEs often have the following characteristics: the board of directors is not independent (business managers are usually business owners); capital contribution by an individual or a small group of individuals with economic and blood relations; small operating area. Their size is usually minimal compared to the largest corporations in the market. As a result, SMEs often have a simple operating structure because the owner often functions as an enterprise manager (Adams et al., 2012; Lampadari, 2016). Lampadari (2016) distinguishes several characteristics of SMEs and large firms, including capital contribution, independence of the board of directors and owners, organizational structure, enterprise size, and operating market. These characteristics help SMEs gain the advantages of market penetration by timely grasping customer needs and trends (Keskin, 2006). SMEs play an essential role in helping economic and social cohesion when creating jobs for workers and supporting national economic growth (Kumar, 2017; Muriithi, 2017). SMEs will stimulate private ownership and business skills, create jobs, be flexible, and quickly adapt to changing market supply and demand conditions to diversify economic operations and contribute significantly to export activity (Keskin, 2006). In Vietnam, in recent years, SMEs have made significant contributions to socio-economic development. The number of small and medium enterprises accounts for about 97% of the total number of businesses operating in Vietnam, contributing over 45% to the national GDP, about 30% of the total budget revenue, and attracting about 5 million employees (Ministry of Planning and Investment, 2020). In addition, SMEs have a close connection, exploit and mobilize all the potentials of localities, creating a healthier competitive market, creating a positive spillover effect for the economy (Xuan et al., 2020).

Businesses currently recognize that to compete in rapidly changing environments, it is necessary to monitor and understand their performance (Taticchi et al., 2010b) in order to not only satisfy stakeholders but also to manage their growth over time and achieve high operational levels (Cocca & Alberti, 2010; Sharma & Bhagwat, 2007). Performance measurement is a critical factor in managing and improving a firm's performance (Carpinetti et al., 2008; Hudson et al., 2001; Surjan & Srivastava, 2019). Performance measurement is a strategy used by businesses to increase their competitiveness (Chalmers et al., 2012). Performance can be defined as a business's capacity to generate optimal returns. "Success" is frequently used in business studies to refer to a firm's performance (Islam et al., 2011). However, entrepreneurial success depends on both individual and contextual factors (Owoseni & Akanbi, 2010). We have traditionally used profit as a proxy for business success or performance. However, young firms may not generate profits during their first few years of operation because of high-interest payments and startup costs that make it difficult to define success or performance in terms of profit (Brush & Vanderwerf, 1992; Chandler & Hanks, 1993; Perez & Canino, 2009). Jauch and Glueck (1998) quantified business performance in terms of sales, profitability, return on capital, rate of turnover, and market share gained, whereas Lee and Tsang (2001); Li et al. (2005) quantified business performance using three indicators: efficiency, growth, and profit.

It is necessary to study performance characteristics; it is also necessary to mention research that focuses on the factors that affect the performance of SMEs. Firms must strategically deploy and combine their physical, human, and organizational assets to thrive and survive in a potentially harsh environment. As a result, they will achieve long-term competitive advantages and, as a result, superior performance (Lonial & Carter, 2015). Because of their limited resources, SMEs must identify and utilize alternative means of increasing their competitiveness and performance. The literature discusses a variety of external and firm-specific factors that may influence the performance of SMEs. The factors affecting a firm's profitability can be examined from various aspects, using various

methodologies and theoretical frameworks. All variables in this study were chosen based on relevant and essential theories, empirical research, and data availability. The following paragraphs discuss the theoretical basis for each of the variables included in the analysis.

2.2. Theoretical framework

This article will discuss the relevant theoretical framework, which will enable the platform to identify factors affecting the performance of SMEs. First, many researchers have classified the agency problem into three categories. The third type of agency conflict occurs between owners and creditors; this conflict occurs when owners make riskier investment decisions in opposition to creditors' interests. Both the managers and creditors of the firm are significant stakeholders, but their earnings are limited because managers are concerned with their compensation, whereas creditors are only concerned with return on stockholders' equity. It becomes the cause of the agency problem, which limits the firm's profitability (Panda & Leepsa, 2017).

This article will discuss the relevant theoretical framework, which will enable the platform to identify factors affecting the performance of SMEs. First, numerous researchers have classified the agency problem into three categories. The third type of agency conflict occurs between owners and creditors; this conflict occurs when owners make riskier investment decisions in opposition to creditors' interests. Both the managers and creditors of the firm are significant stakeholders that monitor the firm's activities. Managers are concerned with their compensation, whereas creditors are only concerned with the return on stockholders' equity. It becomes the cause of the agency problem, which limits the firm's profitability (Panda & Leepsa, 2017).

Second, according to the assumptions of stakeholder theory and a business sustainability perspective performance (Freeman, 1984), the firm is a system whose survival depends on its environment (Caputo et al., 2018; Manzaneque-Lizano et al., 2019; Saviano & Caputo, 2013). Contrary to what agency theory posits, the firm's purpose is to create and distribute value among shareholders and provide value to other stakeholders and generate net wealth in the long term. Because collaboration among stakeholders contributes to creating added value, and profitability is critical for the firm's long-term survival. SMEs have distinct characteristics that set them apart from large and multinational firms, affecting their interactions with stakeholders and increasing their reliance on outside assistance (Fraser et al., 2002; Gallo, 2004; Mutezo, 2013). Because of SMEs' scarcity of critical resources, they rely on external resources, such as loans from their customers and the banks (Fiegenger et al., 2000; Manzaneque-Lizano et al., 2019). As a result, decision-makers in SMEs should be more concerned with stakeholders' influence on the firm, as they can help reduce uncertainty issues.

Third, institutional theory examines the relationship between an organization and a collection of external factors. This theory presumes that various external pressures constrain organizational choices to establish legitimacy and acceptance of external stakeholders. The institutional theory describes adopting practices deemed acceptable and legitimate within its organizational field (Scott, 1995). The institutional theory asserts that organizations operate within a social framework defined by policy, norms, values, and presumptions about appropriate behavior (Oliver, 1997; Scott, 1995).

SMEs rely heavily on other actors in the environment to obtain resources. Additionally, because SMEs have a more significant number of business connections and are more receptive to knowledge from external actors than larger firms (Acs & Yeung, 1999), researchers expect SMEs to be strongly influenced by behavior.

2.3. Empirical studies

Similarly, Vätavu (2014) used OLS, fixed and random effect models, and the Generalized Method of Moments (GMM) to discover that size affects firm profitability positively, whereas debt to equity has a negative effect. Berger and Di Patti (2006) provided evidence that increased leverage has a beneficial effect on firms' profitability in the US banking sector.

Abdissa and Fitwi (2016) have determined the factors affecting the performance of SMEs in the manufacturing, trade, and service sectors in the Bench Maji, Sheka, and Kefa zones. Their results show that the nine following factors were statistically significant: Political; Social; Land available; Technological factor, Infrastructural factor; Marketing factors; Financial factor; Management factor; Entrepreneurial factors. Odusanya et al. (2018) conducted a GMM analysis on 114 non-financial firms in Nigeria between 1998 and 2012. The research found a positive relationship between size and profitability but a negative relationship between leverage and profitability.

Matar et al. (2018) examined the impact of macroeconomic and firm-specific factors on corporate performance. The findings indicated that GDP and INF influence corporate performance, whereas the interest rate has a negligible effect. Additionally, Ibhagui and Olokoyo (2018) stated that the adverse effect of debts on performance is most significant for small businesses, and the evidence of a negative impact diminishes as the business grows.

Cicea et al. (2019) examined the effect of specific economic and social factors on SMEs' short- and long-term performance. Their findings showed variables, such as the Corruption Perceptions Index (CPI), Funds absorption rate (FAR), Unemployment (UR), and GDP affecting SMEs' performance that had established unidirectional causal relationships with it. Cointegration relationships occur more frequently, especially in the long-term, and the coefficients that result from the estimation of regression equations applied to the residuals can be interpreted with a confidence level of 90% to 95%.

Tunyi et al. (2019) investigated the relationships between firms' internal capabilities, national governance quality (NGQ), and performance in Africa. Their study has shown the interconnections between firms' internal and external environments influence corporate performance. Specifically, they discovered that the firms' internal capabilities (as measured by financial resource availability and growth prospects) are critical factors to enable performance in weak and strong institutional environments.

Besides, Qalati et al. (2021) mentioned that the dynamic business environment had increased SMEs' competition, causing active interaction between owners and internal, external stakeholders. The study's findings point out technology, organization, and environment all contribute significantly to SME performance. More importantly, social media adoption positively mediates the relationship between technology, organization, environment, and performance of small and medium-sized businesses. The study assists organizations in recognizing the benefits of social media use and clarifies the rationale for an organization's investment in social media.

3. Methodology and proposed model

3.1. Methodology

In the practical studies, McDonald (1999) demonstrated that lagged profitability is the primary determinant of profitability. Stierwald (2009) also discovered that lagged profitability has a positive effect on profitability. Again, Vijayakumar (2011) examines the relationship between past profitability and current profitability. According to Salman and Yazdanfar (2012), Yazdanfar (2013), the studies revealed how a firm had lagged profitability on profitability. Also, according to Santarelli and Tran (2012), national governance is considered an endogenous variable.

Endogeneity exists in the research model because of the latency of the dependent variable, and a two-way relationship between dependent and independent variables. The pooled OLS, FEM, and REM estimates are biased and inconsistent with a dynamic panel data model. Therefore, the endogeneity needs to be eliminated by applying Arellano-Bond's two-step GMM estimation (Arellano & Bond, 1991). GMM is the suggested method of moments estimation for locating valuable instruments with significantly higher Sargan p-values and Hansen p-values to solve the endogeneity and test the validity of model specifications.

In the research, *xtabond2* will be concerned with dealing with endogenous variables by using instrument variables. “A crucial assumption for the validity of GMM is that the instruments are exogenous. If the model is exactly identified, detection of invalid instruments is impossible” (Roodman, 2009). Sargan and Hansen’s tests are also used to test the instruments’ overall validity in a statistical model. In this case, the Hansen test coincides with the Sargan (1958) test. However, suppose that non-sphericity is suspected in the errors, as in robust two-step GMM. In that case, Sargan/Hansen statistics can be applied to test the validity of subsets of instruments via a “difference-in-Sargan” test. The difference-in-Sargan test is, of course, only feasible if this unrestricted regression has enough instruments to be identified (Roodman, 2009).

According to Roodman (2009), one rule of thumb in GMM is that the “number of instruments should not be larger than the number of groups” (Roodman, 2009). Besides, AR(1) and AR(2) are the Arellano-Bond tests for first-and second-order autocorrelations of the residuals. One should reject the null hypothesis of no first-order serial correlation and not reject the null hypothesis of no second-order serial correlation of the residuals. The test for AR(2) errors shows that the endogeneity problem is solved at the AR(2) level. According to the Sargan test statistics, the null hypothesis is that the over-identifying restrictions are valid. The models’ test results do not reject the null hypothesis of valid instruments (prob χ^2 is greater than 0.05).

In this model, the Sargan test and Arellano-Bond test are applied to test its results’ reliability. The author uses the SGMM method adopted and developed by Blundell and Bond (1998). The advantage of the quantitative research method (SGMM) is to determine the strong instruments that have better Sargan p-value and Hansen p-value significantly to solve the endogeneity and test the validity of the model specifications. Therefore, an efficient two-step SGMM estimator is suitable for obtaining reliable and unbiased results in small samples.

3.2. Sample size

Small and medium enterprises will be classified according to different criteria in each country. In Vietnam, however, an SME is defined as follows: annual average number of employees contributing to Social Insurance and total capital or total revenue, according to Decree 39/2018/ND-CP issued by the government on 11 March 2018 (Appendix 1).

The number of SMEs collected from the FiinPro database is 173 because of the availability of information connected to SMEs listed on the Hanoi Stock Exchange (HNX) and Ho Chi Minh City Stock Exchange (HOSE). The Arellano Bond estimator, according to Arellano and Bond (1991), is also appropriate for a dataset with a large number of enterprises and a limited number of years. Our research was based on secondary data from 173 SMEs (spatial range-N) between 2009 and 2019 (time range-T), with $T < N$. As a result, after deleting some missing data, the total number of observations is 1715.

3.3. Proposed model

3.3.1. Proposed model

The proposed model is as follows:

$$roe_{it} = \alpha_0 + \sum^{\alpha_i} smes_specific_variables_{it} + \sum^{\alpha_k} macroeconomics_{it} + \varepsilon \quad (1)$$

The dependent variable used for the study is firm performance measured by an accounting-based measurement; Return on equity (ROE) is defined as the Net Income divided by total equity.

The proposed model [1] is modified as follows (The details of each variable are presented in Table 1).

Table 1. Variables in the model

No.	Variable(s)	Index	Explanation	Sources
Dependent variable				
1	Return on equity	roe	$\text{netprofit} / \text{totalstockholders' equity}$.	
Independent variables				
1	Logged (return on equity)	lroe		McDonald (1999); Stierwald (2009); Vijayakumar (2011); Salman and Yazdanfar (2012); Yazdanfar (2013); Margaretha and Supartika (2016)
2	firm age	age	Age is calculated as Logarithm the difference between the investigation year and the firm's birth year.	Stierwald (2009); Salman and Yazdanfar (2012); Mehari & Aemiro (2013); Tunyi et al. (2019)
3	firm size	size	The Logarithm of the firm's assets.	Lee (2009); Vijayakumar & Tamizhselvan (2010); Tunyi et al. (2019)
4	leverage ratio	lev	Totaldebts/Totalassets	Booth et al. (2001); Onaolapo and Kojola (2010); Tan (2012); Salim and Yadav (2012); Iavorskyi (2013); Matar et al. (2018); Vaidya and Patel (2019); Ho and Mohd-Raff (2019)
5	liquidity ratio	liq	Measured by current ratio (currentassets/ currentliabilities)	Fama and Jensen (1983); Myers and Rajan (1995), Ang (1991); Honjo and Harada (2006); Deloof (2003); Yang et al. (2019); French & Tabora, (2017); Matar et al. (2018); Tunyi et al. (2019)
6	Investment on fixed assets	ppe	Cashflowfrominvestmentonfixedassets/Totalassets	Beneish et al. (2001); Fairfield et al. (2003); Gautam (2008); Khalid (2012); Matar et al. (2018); Tunyi et al. (2019),
7	Revenue growth of firm	rev	Logarithm differences of firm's sales revenues between last year and current year	Khatab et al. (2011); Bseides, Lechner et al. (2016); Parida (2016); Feng et al. (2017); Ghazali et al. (2018); Matar et al. (2018); Hang and Thuy Linh (2020)
8	gross domestic product growth	gdp	$\text{gdp} = \frac{\text{gdp}_t - \text{gdp}_{t-1}}{\text{gdp}_{t-1}}$	Matar et al. (2018); Tunyi et al. (2019); Hallegebreel (2016); Pham Anh Tuyet (2017); Hang and Thuy Linh (2020)

(Continued)

Table 1. (Continued)

No.	Variable(s)	Index	Explanation	Sources
9	inflation rate	inf	$\text{inf} = \frac{\text{inf}_t - \text{inf}_{t-1}}{\text{inf}_{t-1}}$	Matar et al. (2018); Tunyi et al. (2019); Ho and Mohd-Raff (2019); Sitharam and Hoque (2016) and Ipinnaie et al. (2017)
10	interest rate spread	interest	Logarithm difference between lending rate and borrowing rate	Bekeris (2012); Nyumba et al. (2015), Abdullahi and Sulaiman (2015); Ozgur and Gorus (2016); Matar et al. (2018)
11	national governance quality	pic	Provincial Competitiveness Index (PCI)	Davidsson and Henrekson (2002); Stenholm et al. (2013); Charron and Lapuente (2013); J. Du and Mickiewicz (2016); Nguyen et al. (2017); Tunyi et al. (2019)

Source: Author's collection

$$\begin{aligned} \text{roe}_{it} = & \alpha_0 + \alpha_1 \text{roe}_{it-1} + \alpha_2 \text{age}_{it} + \alpha_3 \text{size}_{it} + \alpha_4 \text{lev}_{it} + \alpha_5 \text{liq}_{it} + \alpha_6 \text{ppe}_{it} + \alpha_7 \text{rev}_{it} + \alpha_8 \text{gdp}_{it} \\ & + \alpha_9 \text{inf}_{it} + \alpha_{10} \text{interest}_{it} + \alpha_{11} \text{pic}_{it} + \varepsilon \end{aligned} \quad (2)$$

Where:

3.4. Roe_{it} : return on equity of firm i at time t

Measuring performance is critical in today's business management environment (Koufopoulos et al., 2008; U.S. Bititci et al., 1997; Umit Bititci et al., 2012), as it provides valuable information that enables managers to effectively monitor results, progress reports, and the accurate identification of business problems (Waggoner et al., 1999).

For a long time, managers worldwide have used financial evaluation (from an accounting point of view) as a measure of representing corporate performance (Alshehhi et al., 2018). Many researchers often use profitability indicators when measuring business efficiency, namely financial performance, including Return on Assets (ROA) and Return on Capital. Equity (ROE), Return on sales (ROS), Return on invested capital (ROI) ...

However, in this paper, the author uses ROE as a measurement of SMEs' performance. This figure represents the total return on equity capital and demonstrates the firm's ability to profit from equity investments. In other words, it quantifies the profits generated by each dollar of shareholders' equity. A company with a high stable ROE can be interpreted as demonstrating effective capital allocation. ROE is an effective metric for determining how much profit a business can generate on the equity capital invested by investors, and it can be applied over time to evaluate changes in a business's financial situation (Calamar, 2016). Monteiro (2006) stated that the ROE ratio is perhaps the most critical ratio an investor should consider.

3.5. Roe_{it-1} : return on equity of firm i at time $t-1$

Stierwald (2009) asserts that lagged profitability has a significant positive effect on profitability. Additionally, Vijayakumar's (2011) study examined the relationship between past and present profitability. McDonald (1999), Salman and Yazdanfar (2012), and Yazdanfar (2013) have all demonstrated results that are consistent with those of the aforementioned authors. Based on previous research studies, the following hypothesis is proposed: lagged profitability positively affects profitability.

3.6. Age_{it} : firm age at time t

Age refers to the duration of a being or thing's existence. We defined firm age as the number of years since the company's incorporation (Shumway, 2001). Stierwald (2009) has demonstrated that firm age has a positive effect on profitability. Other studies by Salman and Yazdanfar (2012) and Mehari and Aemiro (2013) showed the age of a firm has an inverse relationship with profitability.

The nature of this relationship varies depending on the market, and the size of the firm examined. For example, in the Asian market, larger firms are more productive but less profitable, while older enterprises are less productive and more profitable (Majumdar, 1997). Their findings show that older enterprises can better convert sales growth into subsequent growth in productivity and profitability.

While some reported a positive and significant relationship between age and profitability (Akinyomi & Olagunju, 2013; Halil & Hasan, 2012; Papadogonas, 2007). Others have reported negative relationships (Coad et al., 2013; Dogan, 2013; Majumdar, 1997).

Based on previous research, the following hypothesis is that firm age positively affects SMEs' performance.

3.7. $Size_{it}$: firm size at time t

The term “firm size” refers to “a firm’s capability and a number of manufacturing capabilities or the quantity/ variety of services that a firm can offer its customers concurrently” (Luttmer, 2010). According to Hall and Weiss (1967), size is indeed associated with higher profit rates. Many authors (Gschwandtner, 2005; Hardwick, 1997; Winter, 1994; Wyn, 1998) assert that increased firm size is necessary to raise profitability. Lee (2009); Vijayakumar and Tamizhselvan (2010) also discovered a positive correlation between firm size and profitability.

From the above discussions, the proposed hypothesis is Size has positively affected SMEs’ profitability.

3.8. Lev_{it} : leverage ratio of firm i at time t

The leverage ratio indicates optimal capital structure, showing that banks have equity ratios and creditors. Leverage ratios are used to determine the degree of financial risk assumed by a business. The debt-to-assets ratio indicates the proportion of assets financed by debt by comparing total liabilities (short-term + long-term debt) to total assets (Drake & Fabozzi, 2010). The ratio of total liabilities to total assets can be viewed as a complement to equity holders’ residual claims. However, leverage may not be a reliable indicator of a firm’s near-term default risk (Rajan & Zingales, 1995).

According to research conducted in developing countries, such as Booth et al. (2001), Onaolapo and Kajola (2010), Salim and Yadav (2012), and Iavorskyi (2013), there is a relationship between leverage ratio and the financial performance of a firm. The widespread belief is that financial leverage is beneficial for improving a company’s performance. However, depending on the circumstances of a particular country, the coefficient of linear expansion of leverage ratio on firm performance may be positive or negative. As a result, the author proposes the hypothesis that leverage ratios have a positive effect on the performance of SMEs.

3.9. Liq_{it} : liquidity ratio of firm i at time t

Liquidity ratios provide insight into a business’s ability to meet its immediate obligations. Liquidity measures a company’s ability to meet its short-term obligations using the assets that can be converted into cash the quickest. The current and quick ratios are two of the most frequently used liquidity ratios (Drake & Fabozzi, 2010).

According to Fama and Jensen (1983) and Myers and Rajan (1995), when firms have an excess of liquidity, managers can invest in projects that maximize their gains, reducing the firm’s profitability. However, Ang (1991) concludes that excessive liquidity negatively influences SME profitability because of SMEs’ ownership and management.

Increased liquidity can be especially beneficial for SMEs to make the most efficient use of the various investment opportunities that arise, resulting in increased profitability (Honjo & Harada, 2006). From the above discussions, the liquidity ratio affects SMEs’ performance positively.

3.10. Ppe_{it} : Investment on fixed assets of firm i at time t

According to Matar et al. (2018) and Tunyi et al. (2019), investment in property, plant, and equipment is measured by cash flows from investment on fixed assets divided by the total assets of SMEs. Firms’ productive capacity is enhanced through investment in fixed assets such as land, buildings, plant and machinery, fixtures and fittings, and motor vehicles. Profits can be generated by investing in these assets over the long term. This category of assets does not change frequently, and they are acquired to increase production and sales. Therefore, assets play a significant role in determining a firm’s efficiency and profit margin. Since a business acquires plant and machinery, as well as other productive fixed assets, in order to generate sales (Olatunji & Adegbite, 2014).

Berger and DeYoung (1997) indicated that the majority of research on bank efficiency places a premium on cost efficiency; Alayemi (2013) also placed a premium on the cost-efficiency of

small and mid-sized banks in Taiwan. Several studies, including those by Beneish et al. (2001), Fairfield et al. (2003), and Gautam (2008), have established a relatively strong negative relationship between investment intensity and profitability.

The hypothesis is proposed: investment in PPE has an inverse relationship to SMEs' performance.

3.11. Rev_{it} : revenue growth of firm i at time t

Revenue growth can be defined as increasing the average annual sales of a business's products or services (Matar et al., 2018). Revenue growth is a necessary condition for businesses to succeed. It is the process of amassing assets such as capital, labor, facilities, and investment to expand business activities. That includes increasing sales, diversifying consumption markets, attracting new customers, and improving overall business efficiency. Businesses with rapid revenue growth frequently perform well because of their ability to profit from their investments. As can be seen, enterprises with higher revenue growth rates than the industry average are typically those with industry leadership, large-scale assets, and, as a result, stable profitability and increased activity (Hang & Thuy Linh, 2020).

Khatab et al. (2011) demonstrated that revenue growth increases ROA and Tobin's Q while decreasing ROE. Besides, Lechner et al. (2016), Parida (2016), and Feng et al. (2017) all support the conclusion that revenue growth influences firm performance.

The author hypothesizes the following relationship between revenue growth and firm performance based on a number of related studies: Revenue growth benefits the performance of SMEs.

3.12. Gdp_{it} : gross domestic product growth at time t

GDP growth is defined as the annual percentage growth of gross domestic product at market prices based on a constant local currency (Waqas et al., 2017). Along with the inflation factor, GDP is a macro factor affecting organizations participating in the financial market. Additionally, a growing economy enables businesses to operate more efficiently. As a result, economic growth is positively related to net income (Pham Anh Tuyet, 2017). GDP, in particular, has a significant positive effect on ROA's business performance (Matar et al., 2018). Hailegebreal (2016), Hang and Thuy Linh (2020) also researched the beneficial effect of GDP on the performance of firms, including SMEs.

The hypothesis is proposed as follows: GDP has a positive relationship with SMEs' performance.

3.13. Inf_{it} : inflation rate at time t

The inflation rate is the annual percentage growth of several popular indexes of money prices, most commonly measured by the percentage increase in the consumer price index (White, 1999). The inflation rate represents the growth rate of the price level of the economy. Macroeconomic factors, including inflation rates, are signalers of uncontrolled failures that banks face because of changes. Research by Mileris (2012), Chaibi and Ftiti (2015) has noted that macroeconomic factors have a powerful impact on the economic environment where business entities and business entities are involved in currency activities.

Matar et al. (2018) observed a similar inverse relationship between inflation and the return on assets (ROA) of service and industrial enterprises in Jordan from 2007 to 2016. Ehlers and Lazenby (2007), Zulfiqar and Din (2015) discovered that inflation has a positive (but not statistically significant) effect on return on assets (ROA) and return on equity (ROE) of firms. Sitharam and Hoque (2016) and Ipinnaiye et al. (2017) discovered that inflation affects SMEs' performance. A hypothesis is proposed: Inflation has a detrimental effect on the performance of small and medium-sized enterprises (SMEs).

3.14. $Interest_{it}$: interest spread at time t

The interest rate is the amount (fee) charged by the lender to the borrower (Crowley, 2007). In other words, interest is the cost of borrowing money. Money supply and demand determine the

interest rate (Keynes, 1960). Interest rates are a critical tool for managing an economy's cash flow (Egbunike & Okerekeoti, 2018). While high-interest rates help to contain inflation, they also slow the economy. While low-interest rates stimulate the economy, they also have the potential to cause inflation (Drobyshevsky et al., 2017). Interest rates are one of the macroeconomic factors that affect business performance. According to Ho and Mohd-Raff (2019), interest rates have a beneficial effect on operating efficiency. Zulfiqar and Din (2015) also reported on the beneficial effect of interest rates on operating efficiency (ROA, ROE) (2015). Zeitun et al. (2007) made a similar statement in their 1989–2003 study of 167 firms in Jordan. That is because higher interest rates make it more difficult for businesses to obtain loans, which influences the operation of the business. Nyumba et al. (2015), Abdullahi and Sulaiman (2015), and Bekeris (2012) have all demonstrated that interest rates negatively affect the performance of SMEs.

3.15. *Picit*: national governance quality

According to Siudek and Zawojcka (2014), governance is about the processes by which public policy decisions are made and implemented. It results from interactions, relationships, and networks between the different sectors (government, public sector, private sector, and civil society) and involves decisions, negotiation, and different power relations between stakeholders to determine who gets what, when, and how. The relationships between the government and different sectors of society determine how things are done and what services are provided.

Huther and Shah (2005) describe governance as “a multifaceted concept encompassing all aspects of the exercise of authority through formal and informal institutions in the resources management endowment of a state”.

Local governance is defined as how local stakeholders interact with each other to influence the outcomes of public policies (Bovaird & Loeffler, 2003). From a local perspective, Nguyen et al. (2017) examined aspects of local governance that influenced the performance of over 300,000 SMEs in Vietnam from 2006 to 2012. They used a new economic institution/transaction cost framework. As with Davidsson and Henrekson (2002), Stenholm et al. (2013), and Charron and Lapuente (2013), the findings indicate that the quality of local governance has a significant effect on enterprise performance, with small firms being more influenced than large firms (J. Du & Mickiewicz, 2016).

3.15.1. *Variables in the model*

4. Research results and discussion

4.1. Research results

Table below presents the statistics descriptive analysis for model.

Table 2 shows the statistics descriptive of all the variables in the model. ROE has a mean value of 0.07, its maximum, minimum value, and standard deviation are 25.72, -14.81, and 1.25, respectively. The maximum value of return on equity (25.72) belongs to General Materials Biochemistry Fertilizer JSC Company at the year of 2015 whist Sacombank Securities Joint Stock Company has the largest loss on 2013.

In the regression model, the correlation between independent variables implies the existence of multicollinearity that can influence the accuracy and reliability of the results. So, this phenomenon needs to be tested.

The multicollinearity phenomenon occurs when two or more predictors in the model are correlated (Nguyen Kim Quoc Trung, 2021). Multicollinearity was measured by variance inflation factors (VIF) and tolerance. According to Hair et al. (2011), if a VIF value exceeds 4.0 or by tolerance of less than 0.2, there is a multicollinearity problem. However, some other authors argue that multicollinearity will occur when the VIF value exceeds 10 (Montgomery et al., 2001). In this paper, VIF

Table 2. Statistics descriptive

Variable	Obs	Mean	Std. Dev.	Min	Max
roe	1,715	0.07	1.25	-14.81	25.72
age	1,715	1.91	0.62	0.00	3.83
size	1,715	25.88	1.19	20.04	30.03
lev	1,715	0.48	0.86	0.00	16.49
liq	1,715	18.09	169.16	0.00	4230.00
ppe	1,715	0.17	0.20	0.00	0.95
rev	1,715	0.44	9.35	-182.08	228.66
gdp	1,715	0.06	0.01	0.05	0.07
inf	1,715	0.06	0.05	0.01	0.19
interest	1,715	0.03	0.00	0.02	0.03
pci	1,715	4.14	0.04	4.09	4.21

Source: results from Stata

Table 3. VIF

Variable	VIF	1/VIF
age	2.08	0.48
inf	1.73	0.58
gdp	1.65	0.60
interest	1.35	0.74
ppe	1.03	0.97
lev	1.03	0.97
size	1.02	0.98
liq	1.02	0.98
pci	1.01	0.99
rev	1.01	0.99
Mean VIF	1.29	

Source: results from Stata

is less than 4.0, hence in the model, the estimates of regression coefficients are reliable and stable (Table 3). That leads to the outcome of this table vividly reflecting the absence of multicollinearity.

The next part will display the results of the Breusch-Pagan/Cook-Weisberg test and the Wooldridge test for heteroskedasticity and autocorrelation, respectively (Table 4 and Table 5). The findings reveal that the error terms are not normally distributed, and the existence of autocorrelation in the residuals of a model is a sign that the model may be unsound. Therefore, the OLS estimation results are biased and unreliable.

Table 4. Test for heteroskedasticity

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of roe

chi2(1) = 18,893.58

Prob > chi2 = 0.0000

Source: results from Stata

Table 5. Test for autocorrelation

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
$F(1, 171) = 2547.396$
Prob > F = 0.0000

Source: results from Stata

Ayele (2012) and other researchers also used classical linear regression to examine the effect of factors on firms' profitability. However, it is critical to take into account that when a dynamic panel data model contains endogeneity (as mentioned above), the pooled OLS, FEM, and REM estimates are biased and inconsistent. In the presence of the lagged dependent variable, the least square estimator becomes biased and inconsistent. Moreover, a two-way relationship may exist between the dependent variable and explanatory variables. This endogenous phenomenon will lead to an endogenous problem. These above issues can be overcome by using the Arellano-Bond two-step difference GMM estimation, with robust standard errors (Arellano & Bond, 1991). The inclusion of the lagged dependent variable also assumes that the number of groups (temporal observations) is greater than the total number of explanatory variables included in the model. The Arellano Bond estimation uses the available lags of the dependent variables and the lagged values of the exogenous variables as instruments.

From the results in Table 6, there are six statistically significant variables at 5%, including lagged (roe), firm size, leverage ratio, revenue growth, gross domestic product growth, and quality of local governance (measured by the Provincial Competitiveness Index).

Regarding the diagnostic tests: the Arellano-Bond test for serial correlation and the Sargan test of overidentification restriction, p-values are reported, and both p-values are greater than 5%. Therefore, the model has no problems with overidentification and autocorrelation.

The author uses Arellano and Bond tests to check the condition of no correlation in the error term. The AR(2) error test is rejected in the Arellano-Bond model because p-value = 0.321 larger than 0.05 with the Null hypothesis is H0: "Autocorrelation does not exist". So, it can be confirmed that there is the absence of serial autocorrelation in the errors in the model.

Roodman (2009) proved the implementation of System GMM estimation with the difference-in-Hansen test to the subsets of System GMM-type instruments and standard instrumental variables for the levels equation. The table in Appendix 2 also shows the difference-in-Hansen tests of the exogeneity of instrument subsets under the null hypothesis of the joint validity of a specific instrument subset. The test statistics are asymptotically chi-square distributions with degrees of freedom equal to the number of questionable instrumental variables (Nguyen et al., 2015). Table 6 also presents difference-in-Hansen tests of the exogeneity of instrument subsets under the null hypothesis (H0) of the joint validity of a given instrument subset (all p-values are greater than 5%). Because of statistical evidence at 5%, the null hypothesis cannot be rejected. It leads to the suggestion that the subsets of instruments are econometrically exogenous.

The number of instruments (equals 55) is smaller than the number of observations (173); hence the rule of thumb in Roodman (2009) is satisfied. Therefore, the instrument variables can adequately deal with the endogeneity, and the two-step SGMM estimator has reliable and unbiased results.

4.2. Discussion

The study finds that lagged profitability, firm size, leverage, investment in fixed assets, revenue growth, gross domestic product growth, and the quality of local governance all have a significant

Table 6. Regression results by GMM estimation

Dynamic panel-data estimation, two-step system GMM						
Group variable: FIRM			Number of obs =		1560	
Time variable: year			Number of groups =		173	
Number of instruments = 55			Obs per group: min =		2	
Wald chi2(11) = 30.86			avg =		9.02	
Prob > chi2 = 0.001			max =		11	
roe	Coef.	Corrected Std. Err.	z	P > z	[95% Conf. Interval]	Interval]
lroe	0.6972	0.2962	2.3500	0.0190	0.1167	1.2777
age	0.0882	0.1765	0.5000	0.6170	-0.2578	0.4342
size	8.1791	3.2629	2.5100	0.0120	1.7838	14.5744
lev	-1.4934	0.4117	-3.6300	0.0000	-2.3004	-0.6865
liq	-0.0043	0.0133	-0.3200	0.7470	-0.0304	0.0218
ppe	0.0769	0.0237	3.2400	0.0010	0.0304	0.1234
rev	1.2763	0.4429	2.8800	0.0040	0.4082	2.1443
gdp	6.4723	1.8825	3.4400	0.0010	2.7826	10.1620
inf	-0.2560	0.4353	-0.5900	0.5560	-1.1092	0.5972
pci	8.3174	2.7199	3.0600	0.0020	2.9866	13.6482
interest	0.0151	0.0160	0.9500	0.3430	-0.0161	0.0464
_cons	-2.7250	9.3701	-0.2900	0.7710	-21.0900	15.6400
Arellano-Bond test for AR(1) in first differences: z = -1.76 Pr > z = 0.079						
Arellano-Bond test for AR(2) in first differences: z = 0.99 Pr > z = 0.321						
Sargan test of overid. restrictions: chi2(43) = 0.28 Prob > chi2 = 1.000						
(Not robust, but not weakened by many instruments.)						
Hansen test of overid. restrictions: chi2(43) = 18.95 Prob > chi2 = 0.999						
(Robust, but weakened by many instruments.)						
Difference-in-Hansen tests of exogeneity of instrument subsets:						
GMM instruments for levels						
Hansen test excluding group: chi2(26) = 2.34 Prob > chi2 = 1.000						
Difference (null H = exogenous): chi2(17) = 16.61 Prob > chi2 = 0.481						
iv(lroe)						
Hansen test excluding group: chi2(42) = 18.42 Prob > chi2 = 0.999						
Difference (null H = exogenous): chi2(1) = 0.54 Prob > chi2 = 0.464						
iv(pci)						
Hansen test excluding group: chi2(42) = 18.86 Prob > chi2 = 0.999						
Difference (null H = exogenous): chi2(1) = 0.09 Prob > chi2 = 0.766						
iv(size)						
Hansen test excluding group: chi2(42) = 18.45 Prob > chi2 = 0.999						
Difference (null H = exogenous): chi2(1) = 0.50 Prob > chi2 = 0.479						
Source: results from Stata						

positive effect on the profitability of SMEs. In contrast, the leverage ratio has a significant negative effect on their performance.

—The findings of the study indicate a significant correlation between SMEs' lagged profitability and profitability. The findings corroborate those of McDonald (1999), Stierwald (2009), Vijayakumar (2011), and Salman and Yazdanfar (2012), and Yazdanfar (2013). According to Margaretha and

Supartika (2016), the correlation between the profitability of previous and current SMEs can vary significantly depending on the financial resources, leverage structure, asset constraints, management, and productivity levels of SMEs in various economies. Contrary to Margaretha & Supartika's research, the coefficient between lagged profitability and profitability variables in this study indicates that SMEs' profitability in prior years directly affects their profitability in the current year in the Vietnam context. Thus, as long as the economy grows and SMEs maintain stable production, their profits will continue to accumulate in the following years and inversely.

—The coefficient between firm size and performance is 6.9791, which is positive. The study found that size has a significant positive effect on profitability. The result is supported by the study of Stierwald (2009), Vijayakumar and Tamizhselvan (2010), Vijayakumar (2011), Dang et al. (2017), Hashmi et al. (2018), Bolarinwa and Obembe (2019). Theoretically, larger firms generate more revenues that can earn better profits (assume efficient cost management). As a result, large firms outperform small businesses financially. From another perspective, large firms can inspire greater investor confidence than small firms. It implies that investors will have confidence in the company, reflected in the equity market. Their trust contributes to higher investment in the market, which ultimately increases the market value of stockholders' equity (ignoring the fact that it might get overvalued Meyer et al. (2006), Aidis et al. (2008), Jun Du and Girma (2012), and Giordani (2015) have all researched the relationship between SME size and performance. According to these authors, as firms grow in size, their performance improves as well. However, because young and small businesses face a severe asymmetrical information problem, they cannot immediately or temporarily increase profitability.

—In this article, we also find evidence of the inverse relationship between leverage and firm performance. We use an intuitive approach to model the effect of leverage on firm performance empirically. The negative correlation coefficient (−1.2974) between the above variables confirms that the level of leverage is found to be an adverse driver of Vietnamese SMEs' performance in terms of return on equity. The findings are consistent with those of Booth et al. (2001), Onaolapo and Kajola (2010), Tan (2012), Salim and Yadav (2012), and Iavorskyi (2013), and Vaidya and Patel (2019). These studies use Jensen's (1986) agency theory to explore the relationship between leverage and firm performance. Due to the inverse relationship, increased leverage may as well result in more unsatisfactory firm performance, as all losses incurred by debt holders will adversely affect stockholders (Jensen & Meckling, 1976; Myers, 1977). In other words, firms with a low level of leverage typically outperform those with a high level of leverage (Tan, 2012). Greenwald et al. (1984) argued that when firms obtain a high degree of financial leverage, the cost of financing rises because of that level of leverage, leading to lower profits. One thought of a scholarly interpretation of the capital structure theory's signaling component shows that a higher leverage level is interpreted as a pessimistic signal about a negative impact on the performance of firms (Greenwald et al., 1984).

Furthermore, SMEs frequently rely on internal resources to fulfill their goals, such as shareholders' equity. As a direct consequence, Myers and Majluf (1984) developed the pecking order theory, which states that because of asymmetry information, firms prefer to borrow capital for their operations with internal funds initially, followed by debt issuance. Jensen and Meckling (1976) used the capital structure equation (explaining the relationship between total liabilities and equity) to resolve conflicts of interest between owners and agents. As a side effect, when raising external capital, investors face an adverse selection problem. That usually comes at a cost, raising the required rate of return on external capital. In order to mitigate related risks, the company must make careful decisions about funds, whether internally or externally. Therefore, Howorth (2001) agrees that some owners do not want to borrow money from outside sources. Because SMEs face challenges such as resource constraints, small size, unreliable information quality, and unsecured collateral. For those reasons, before a loan can be granted, SMEs must meet the credit requirements set forth by banks.

—In this paper, the investment in fixed assets is a variable that has a positive coefficient of 0.0769, indicating its beneficial effect on firm performance (indexed by the return on equity). This finding is contrary to the proposed hypothesis and some studies by Beneish et al. (2001), Fairfield et al. (2003), and Gautam (2008). However, the result is supported by the following research of Smith (1980), Reyhani (2012), Iqbal and Mati (2012), and Jamali and Asadi (2012), and Harianto (2017).

The most important part of the entire corporation and creating shareholder value is the effective organization of fixed assets. According to Smith (1980), fixed assets play a significant role in determining the profit ratio and assessing the risk involved. In some industries, Reyhani (2012) examines the impact of asset structure on the performance of listed companies on the Tehran Stock Exchange (TSE). The study's findings show fixed assets have a significant positive effect on firms' performance.

From 2006 to 2010, Jamali and Asadi (2012) investigated the relationship between management efficiency and profitability of 13 auto manufacturing companies listed on the Bombay Stock Exchange. They use fixed asset turnover as an index for the measurement of management efficiency. The study concludes that there is a strong link between profitability and management efficiency. Empirical evidence from ZhengSheng and NuoZhi (2013) and Mawih (2014) concluded that asset structures, including fixed assets and current assets, have more practical value and universal significance than the capital structure as they are the main source of creating corporate value, hence increasing firm performance. Another research by Harianto (2017) has proved the positive and significant influence of fixed assets on ROE for information technology product companies in Indonesia. Therefore, investments in fixed assets will improve the performance of enterprises, according to Olatunji and Adegbite (2014).

—Revenue growth, as previously stated, is a necessary condition for businesses to succeed. According to the findings, the positive coefficient (1.4) indicates a direct relationship between revenue growth and the return on equity, confirms a valuable index in measuring the performance of Vietnamese SMEs. This conclusion is also supported by the research of Lechner et al. (2016), Parida (2016), Feng et al. (2017), and Hang and Thuy Linh (2020).

—Besides firm-specific variables that affect SMEs' performance, macro-economic factors also directly impact their profitability. The level of GDP and national governance quality are statistically significant variables that positively affect SMEs' performance. The result is consistent with the findings in the research of Bekeris (2012), Issah and Antw (2017), Matar et al. (2018), Pervan et al. (2019). Obviously, GDP is a macroeconomic variable that has been blamed for firms' performance issues (Alabdullah et al., 2014). Thus, most theoretical predictions corroborate empirical findings that GDP has a positive effect on firm performance indicators. Additionally, because GDP encompasses the entire economic landscape, it is frequently used as a pertinent indicator for any macroeconomic element. As a result, a stable and robust GDP promotes superior firm performance. These studies demonstrated that an economy with stable economic growth results in predictable and constant demand and firm profitability.

—As Svensson (2003), Clarke and Xu (2004), and Tunyi et al. (2019) have discovered, there is a positive correlation between the quality of national governance and the performance of SMEs in Vietnam. Because the coefficient of correlation between two variables is positive and significant (20.01), this result implies that firm performance is strongly influenced by the quality of national governance and short-and medium-term policies that can be amended and improved (Charron & Lapuente, 2013; Parks & Oakerson, 2000; Savitch & Vogel, 2000; Ye, 2009). A strong national governance structure mitigates risk and uncertainty for businesses, protects both businesses and investors, and incentivizes businesses to invest in growth-enhancing and long-term projects, resulting in improved firm performance. As a developing country, Vietnam has many young and small businesses that are typically geographically constrained by local business environments that are heavily influenced by local governance structures that can affect SMEs' performance.

SMEs play an essential role in socio-economic development and hold particular importance, including the dynamics of their interaction with other parties in the economy. However, in Vietnam, this type of enterprise has not yet attracted thorough attention from the government and agencies. Given the weaknesses and constraints faced by Vietnamese SMEs, it is critical to accelerating the growth and dynamism of SME networking, innovation, market expansion, and the effectiveness of national government policies and programs. National governance is a mechanism for creating a favorable economic environment for SMEs that can be linked in networks or inter-regional clusters and structures and initiatives that promote administrative service and financial assistance streamlining. The political regime, the process of using power to manage resources for development, the government's capacity to design, plan, and implement public policy, and the government's critical functions to ensure and protect the development of SMEs are all aspects of national governance. The positive relationship between national governance quality and SMEs' performance in this paper shows that SMEs' performance will improve when national governance quality is adequate. These findings are consistent with previous research studies (Far-Wharton & Brunetto, 2009; Forson, 2006; Lee et al., 2011). Improving the quality of local government by implementing an advanced strategy will help SMEs grow and survive in a globally competitive environment. The following strategies need to be considered in order to enhance SMEs' performance. First, all stakeholders in the economy must raise awareness of the importance of SMEs in economic growth and, in particular, regional development in places such as Ho Chi Minh City and the Mekong River Delta. Second, SMEs aware of the realities of their business creation and scale-up challenges require an economic environment that allows them to thrive and play to their strengths. Third, the Vietnamese government should encourage SMEs to take part in public procurement markets and reinforce the visibility of SMEs.

5. Conclusion and recommendation

This paper examines the relationship between firm-specific variables and the performance of small and medium-sized enterprises (SMEs) listed on the Ho Chi Minh City Stock Exchange. Return on equity is used to evaluate their performance. The author utilized GMM to examine six statistically significant variables associated with SMEs' performance at 5%, such as profitability lag, firm size, leverage ratio, revenue growth, GDP growth, and quality of local governance. One of the significant contributions of this study to the literature is the confirmation that macroeconomic and firm-specific variables affect the performance of SMEs. However, while emphasizing the study's contribution is necessary, it is also necessary to mention its limitations. Among them is the relatively brief period for which complete data sets are available, as we do not account for COVID-19's impact. Additionally, the model excludes some macroeconomic variables, including the unemployment rate, the exchange rate, general government expenditure, etc.

Funding

The author received no direct funding for this research.

Author details

Nguyen Kim Quoc Trung¹

E-mail: nkq.trung@ufm.edu.vn

ORCID ID: <http://orcid.org/0000-0001-9756-6219>

¹ Faculty of Accounting - Auditing, The University of Finance - Marketing (UFM), Ho Chi Minh City, Vietnam.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Citation information

Cite this article as: Determinants of small and medium-sized enterprises performance: The evidence from Vietnam, Nguyen Kim Quoc Trung, *Cogent Business & Management* (2021), 8: 1984626.

References

Abdissa, G., & Fitwi, T. (2016). Factors affecting performance of micro and small enterprises in South West Ethiopia: The case of bench maji, sheka, and kefa zones. *Global Journal of Management and Business Research: A Administration and Management*, 16(10), 47–64.

https://globaljournals.org/GJMBR_Volume16/5-Factors-Affecting-Performance.pdf

Abdullahi, I. I., & Sulaiman, C. (2015). The determinants of small and medium-sized enterprises performance in Nigeria. *Advances in Economics and Business*, 3(5), 184–189. <https://doi.org/10.13189/aeb.2015.030504>

Acs, Z. J., & Yeung, B. (1999). Conclusion in small and medium-sized enterprises. In Z. J. Acs (Ed.), *The global economy* (pp. 164–173). University of Michigan Press.

Adams, J. H., Khoja, F. M., & Kauffman, R. (2012). An empirical study of buyer-supplier relationships within small business organizations. *Journal of Small Business Management*, 50(1), 20–40. <http://dx.doi.org/10.1111/j.1540-627X.2011.00342.x>

Aidis, R., Estrin, S., & Mickiewicz, T. (2008). Institutions and entrepreneurship development in Russia: A comparative perspective. *Journal of Business Venturing*, 23(6), 656–672. <https://doi.org/10.1016/j.jbusvent.2008.01.005>

Akinyomi, O. J., & Olagunju, A. (2013). Effect of firm size on profitability: Evidence from Nigerian manufacturing sector. *Prime Journals of Business Administration and Management*, 3–9, 1171–1175.

Alabdullah, T. T. Y., Yahya, S., & Ramayah, T. (2014). Corporate governance mechanisms and Jordanian

- companies' financial performance. *Asian Social Science*, 10(22), 247–262. <https://doi.org/10.5539/ass.v10n22p247>
- Alayemi, S. A. (2013). Relationship between assets utilization and corporate profitability: A case study of food and beverage industry quoted on the Nigerian stock exchange. *Merit Research Journal of Business and Management*, 1(1), 1–10. <https://meritresearchjournals.org/bm/content/2013/August/Alayemi.pdf>
- Alshehhi, A., Nobanee, H., & Khare, N. (2018). The impact of sustainability practices on corporate financial performance: Literature trends and future research potential. *Sustainability*, 10(2), 1–25. <https://doi.org/doi:10.3390/su10020494>
- Ang, J. S. (1991). Small business uniqueness and the theory of financial management. *Journal of Small Business Finance*, 1(1), 1–13.
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277–297. <https://doi.org/10.2307/2297968>
- Ayele, G. A. (2012). *Factors affecting profitability of insurance companies in Ethiopia: Panel evidence*. Addis Ababa University.
- Ayyagari, M., Beck, T., & Demirguc-Kunt, A. (2007). Small and medium enterprises across the globe. *Small Business Economics*, 29(4), 415–434. <https://doi.org/10.1007/s11187-006-9002-5>
- Bekeris, R. (2012). The impact of macroeconomic indicators upon SME's profitability. *Ekonomika*, 91(3), 117–128. <https://doi.org/10.15388/Ekon.2012.0.883>
- Beneish, M., Lee, C., & Tarpley, R. (2001). Contextual fundamental analysis in the prediction of extreme returns. *Review of Accounting Studies*, 2(3), 165–191. <https://doi.org/10.1023/A:1011654624255>
- Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking and Finance*, 21(6), 849–870. [https://doi.org/10.1016/S0378-4266\(97\)00003-4](https://doi.org/10.1016/S0378-4266(97)00003-4)
- Berger, A. N., & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal Bank Finance*, 30(4), 1065–1102. <https://doi.org/10.1016/j.jbankfin.2005.05.015>
- Bititci, U., Garengo, P., Dörfler, V., & Nudurupati, S. (2012). Performance measurement: Challenges for tomorrow. *International Journal of Management Reviews*, 14(3), 1–23. <https://doi.org/10.1111/j.1468-2370.2011.00318.x>
- Bititci, U. S., Carrie, A. S., & McDevitt, L. (1997). Integrated performance measurement systems: A development guide. *International Journal of Operations & Production Management*, 17(5), 522–534. <https://doi.org/10.1108/01443579710167230>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Bolarinwa, S. T., & Obembe, O. B. (2019). Firm size-profitability nexus: An empirical evidence from Nigerian listed financial firms. *Glob Bus Rev*, 20(5), 1109–1121. <https://doi.org/10.1177/0972150917733834>
- Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *The Journal of Finance*, 56(1), 87–130. <http://dx.doi.org/10.1111/jofi.2001.56.issue-1>
- Bovaird, T., & Loeffler, E. (2003). Evaluating the quality of public governance: Indicators, models and methodologies. *International Review of Administrative Sciences*, 69(3), 313–328. <https://doi.org/10.1177/0020852303693002>
- Brush, C. G., & Vanderwerf, P. A. (1992). A comparison of methods and sources for obtaining estimates of new venture performance. *Journal of Business Venturing*, 7(2), 157–170. [https://doi.org/10.1016/0883-9026\(92\)90010-0](https://doi.org/10.1016/0883-9026(92)90010-0)
- Calamar, A. (2016). Return on equity: A compelling case for investors. In *Jensen investment management* (pp. 1–15).
- Caputo, F., Buhnova, B., & Wallezky, L. (2018). Investigating the role of smartness for sustainability: Insights from the smart grid domain. *Sustain. Sci*, 13(5), 1299–1309. <https://doi.org/10.1007/s11625-018-0555-4>
- Carpinetti, L. C. R., Galdámez, E. V. C., & Gerolamo, M. C. (2008). A measurement system for managing performance of industrial clusters: A conceptual model and research cases. *International Journal of Productivity and Performance Management*, 57(5), 405–419. <https://doi.org/10.1108/17410400810881854>
- Chaibi, H., & Ftit, Z. (2015). Credit risk determinants: Evidence from a cross-country study. *Research in International Business and Finance*, 33(2015), 1–16. <https://doi.org/10.1016/j.ribaf.2014.06.001>
- Chalmeta, R., Palomero, S., & Matilla, M. (2012). Methodology to develop a performance measurement system in small and medium-sized enterprises. *International Journal of Computer Integrated Manufacturing*, 25(8), 716–740. <https://doi.org/10.1080/0951192X.2012.665178>
- Chandler, G. N., & Hanks, S. (1993). Founder competence, the environment, and venture performance. *Entrepreneurship Theory and Practice*, 18(3), 77–79. <https://doi.org/10.1177/104225879401800306>
- Charron, N., & Lapuente, V. (2013). Why do some regions in Europe have a higher quality of government? *Journal of Politics*, 75(3), 567–582. <https://doi.org/10.1017/S0022381613000510>
- Cicea, C., Popa, I., Marinescu, C., & Stefan, S. C. (2019). Determinants of SMEs' performance: Evidence from European countries. *Economic Research-Ekonomska Istraživanja*, 32(1), 1602–1620. <https://doi.org/10.1080/1331677X.2019.1636699>
- Clarke, G. R. G., & Xu, L. C. (2004). Privatization, competition and corruption: How characteristics of bribe takers and payers affect bribes to utilities. *Journal of Public Economics*, 88, 2067–2097.
- Coad, A., Segarra, B. A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age? *Structural Change and Economic Dynamics*, 24, 173–189. <https://doi.org/10.1016/j.strueco.2012.07.002>
- Cocca, P., & Alberti, M. (2010). A framework to assess performance measurement systems in SMEs. *International Journal of Productivity and Performance Management*, 59(2), 186–200. <https://doi.org/10.1108/17410401011014258>
- Crowley, J. (2007). Interest rate spreads in english-speaking African Countries. *IMF Working Paper*. International Monetary Fund.
- Dang, N. H., Hoang, T. V. H., & Tran, M. D. (2017). Factors affecting earnings management the case of listed firms in Vietnam. *International Journal of Economic Research*, 14(20), 117–134.
- Davidsson, P., & Henrekson, M. (2002). Determinants of the prevalence of start-ups and high-growth firms. *Small Business Economics*, 19(2), 81–104. <https://doi.org/10.1023/A:1016264116508>
- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms. *Journal of*

- Business Finance Accounting*, 30(3–4), 573–588. <https://doi.org/10.1111/1468-5957.00008>
- Dogan, M. (2013). Does firm size affect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, 4(4), 53–59.
- Drake, P. P., & Fabozzi, F. J. (2010). Financial ratio analysis. In P. P. Drake (Ed.), *The basics of finance: An introduction to financial markets, business finance, and portfolio management* (pp. 258–260). John Wiley & Sons, Inc.
- Drobyshevsky, S., Bozhechkova, A., Trunin, P., & Sinelnikova-Muryleva, E. (2017). The Effect of Interest Rates on Economic Growth. *Working Papers wpaper-2017-300*. Gaidar Institute for Economic Policy.
- Du, J., & Girma, S. (2012). Firm size, source of finance, and growth - evidence from China. *International Journal of the Economics of Business*, 19(3), 397–419. <https://doi.org/10.1080/13571516.2012.715272>
- Du, J., & Mickiewicz, T. (2016). Subsidies, rent seeking and performance: Being young, small or private in China. *Journal of Business Venturing*, 31(1), 22–38. <https://doi.org/10.1016/j.jbusvent.2015.09.001>
- Egbunike, C. F., & Okerekeoti, C. U. (2018). Macroeconomic factors, firm characteristics and financial performance: A study of selected quoted manufacturing firms in Nigeria. *Asian Journal of Accounting Research*, 3(2), 142–168. <https://doi.org/10.1108/AJAR-09-2018-0029>
- Ehlers, T., & Lazenby, K. (2007). *Strategic management. South Africa concept and cases* (2 ed.). Pretoria.
- Fairfield, P. M., Whisenant, J. S., & Yohn, T. L. (2003). The differential persistence of accruals and cash flows for future operating income versus future profitability. *Review of Accounting Studies*, 8(2/3), 221–243. <https://doi.org/10.1023/A:1024413412176>
- Fama, E. F., & Jensen, M. C. (1983). Agency problems and residual claims. *The Journal of Law & Economics*, 26(2), 327. <https://doi.org/10.1086/467038>
- Far-Wharton, R., & Brunetto, Y. (2009). Female entrepreneurs as manager: The role of social capital in facilitating a learning culture. *Gender in Management*, 24(1), 14–31. <https://doi.org/10.1108/17542410910930725>
- Feng, H., Morgan, N. A., & Rego, L. L. (2017). Firm capabilities and growth: The moderating role of market conditions. *J Acad Mark Sci*, 45(1), 76–92. <https://doi.org/10.1007/s11747-016-0472-y>
- Fiegner, M. K., Brown, B. M., Dreux, D. R., & Dennis, W. J. (2000). The adoption of outside boards by small private US firms. *Entrepreneurship & Regional Development*, 12(4), 291–309. <https://doi.org/10.1080/08985620050177921>
- Forson, C. (2006). The strategic framework for women's enterprise: BME women at the margins. *Equal Opportunities International*, 25(6), 418–432. <https://doi.org/10.1108/02610150610713737>
- Fraser, S., Storey, D., Frankish, J., & Roberts, R. (2002). The relationship between training and small business performance: An analysis of the Barclays bank small firms training loan scheme. *Environment and Planning C: Politics and Space*, 20(2), 211–233. <https://doi.org/10.1068/c0111>
- Freeman, E. (1984). *Strategic management: A stakeholder approach*. Boston. Pitman.
- French, J. J., & Taborda, R. (2017). Disentangling the relationship between liquidity and returns in Latin America. *Global Finance Journal*, 2017, 1–32. <https://doi.org/10.1016/j.gfj.2017.10.006>
- Gallo, M. (2004). The family business and its social responsibilities. *Family Business Review*, 17(2), 135–148. <https://doi.org/10.1111/j.1741-6248.2004.00009.x>
- Gautam, K. (2008). *Important tips for stock market investors' outlook money*. Rediff Indian.
- Ghozali, I., Eka, H., & Hersugondo, A. (2018). The role of sales growth to increase firm performance in Indonesia. *International Journal of Civil Engineering and Technology (IJCIET)*, 9(7), 1822–1830. <http://iaeme.com/Home/issue/IJCIET?Volume=9&Issue=7>
- Giordani, P. (2015). Entrepreneurial finance and economic growth. *Journal of Economics*, 115(2), 153–174. <https://doi.org/10.1007/s00712-014-0411-7>
- Greenwald, B. C., Stiglitz, J. E., & Weiss, A. (1984). Informational Imperfections in the capital market macroeconomic fluctuations. *American Economic Review*, 74(2), 194–199. <http://www.jstor.org/stable/1816354>
- Gschwandtner, A. (2005). Profit persistence in the 'very' long run: Evidence from survivors and exiters. *Applied Economics*, 37, 793–806.
- Hailegebreal, D. (2016). Macroeconomic and Firm Specific Determinants of Profitability of Insurance Industry in Ethiopia. *Global Journal of Management and Business Research: C Finance*, 16(7), 27–36. https://globaljournals.org/GJMBR_Volume16/4-Macroeconomic-and-Firm-Specific.pdf
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2011). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, 40(3), 414–433.
- Halil, E. A., & Hassan, A. (2012). The effect of firm size on profitability: An empirical Icelandic funds Bitrost. *Journal of Social Sciences*, 1, 33–42.
- Hall, M., & Weiss, L. (1967). Firm size and profitability. *The Review of Economics and Statistics*, 49(3), 319–331.
- Hang, N. T., & Thuy Linh, N. T. (2020). Factors affecting profitability of vietnamese real estate firms: Employing fixed effect and random effect model. *Banking Science & Training Review*, 223(12/2020), 13–25. https://hvn.edu.vn/medias/tapchi/vi/12.2020/system/archivedate/13c7e1af_B%C3%A0i%20c%E1%BB%A7a%20Ng%C3%B4%20Th%E1%BB%8B%20H%E1%BA%B1ng,%20Nguy%E1%BB%85n%20Th%E1%BB%8B%20Th%C3%B9y%20Linh.pdf
- Hardwick, P. (1997). Measuring cost inefficiency in the UK life insurance industry. *Applied Financial Economics*, 7, 37–44.
- Harianto, S. (2017). Financial ratios and their influence on profitability in Islamic people's financing banks. *Esensi Jurnal Bisnis Dan Manajemen (Essence of Journal of Business and Management)*, 7(1), 41–48. <http://journal.uinjkt.ac.id/index.php/esensi>
- Hashim, M. K., & Abdullah, M. S. (2000). A proposed framework for redefining SMEs in Malaysia: One industry, one definition. *Asian Academy of Management Journal*, 5(1), 65–79. <http://web.usm.my/aamj/5.1.2000/5-1-6.pdf>
- Hashmi, S. D., Gulzar, S., Khan, M. J., & Akhtar, M. (2018). Sensitivity of firm size measures to practices of corporate finance: Evidence from Shari'ah compliant firms. *J Islam Bus Manag*, 8(2), 538–558. <https://doi.org/10.26501/jibm/2018.0802-012>
- Ho, C. S. F., & Mohd-Raff, N. E. N. (2019). External and internal determinants of performances of Shariah and non-Shariah compliant firms. *International Journal of Islamic and Middle Eastern Finance and Management*, 12(2), 236–253. <https://doi.org/10.1108/IMEFM-08-2017-0202>
- Honjo, Y., & Harada, N. (2006). SME policy, financial structure and firm growth: Evidence from Japan. *Small Business Economics*, 27(4–5), 289–300. <http://dx.doi.org/10.1007/s11187-005-6703-0>

- Howorth, C. (2001). Small firms' demand for finance: A research note. *International Small Business Journal*, 19(4), 78–86. <https://doi.org/10.1177/026624260101900406>
- Hudson, M., Smart, A., & Bourne, M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations & Production Management*, 21(8), 1096–1115. <https://doi.org/10.1108/EUM000000005587>
- Huther, J., & Shah, A. (2005). A simple measure of good governance. In A. Shah (Ed.), *Public services delivery, public sector governance and accountability series* (pp. 39–62). World Bank.
- Iavorskyi, M. (2013). *The impact of capital structure on firm performance: evidence from Ukraine*. Thesis. Kyiv School of Economics.
- Ibhagui, O. W., & Olokoyo, F. O. (2018). Leverage and firm performance: New evidence on the role of firm size. *North American Journal of Economics and Finance*, 45(2018), 57–82. <https://doi.org/10.1016/j.najef.2018.02.002>
- Ipinnaiye, O., Dineen, D., & Lenihan, H. (2017). Drivers of SME performance: A holistic and multivariate approach. *Small Business Economics*, 48(4), 883–911. <https://doi.org/10.1007/s11187-016-9819-5>
- Iqbal, A., & Mati, M. (2012). *Relationship between non-current assets & firms profitability*. University Library of Munich.
- Islam, A., Khan, M. A., Obaidullah, A. Z. M., & Alam, M. S. (2011). Effect of entrepreneur and firm characteristics on the business success of small and medium enterprises (SMEs) in Bangladesh. *International Journal of Business and Management*, 6(3), 289–299. <https://doi.org/10.5539/ijbm.v6n3p289>
- Issah, M., & Antw, S. (2017). Role of macroeconomic variables on firms' performance: Evidence from the UK. *Cogent Economic & Finance*, 5(1), 1–24. <https://doi.org/10.1080/23322039.2017.1405581>
- Jamali, A. H., & Asadi, A. (2012). Management efficiency and profitability in Indian automobile industry: From theory to practice. *Indian Journal of Science and Technology*, 5(5), 2779–2781. <https://doi.org/10.17485/ijst/2012/v5i5.21>
- Jauch, L. R., & Glueck, W. F. (1998). *Business policy and strategic management*. Mc-Graw Hill Books Company.
- Jensen, M. (1986). Agency cost of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2), 323–329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Keskin, H. (2006). Market orientation, learning orientation, and innovation capabilities in SMEs. *European Journal of Innovation Management*, 9(4), 396–417. <https://doi.org/10.1108/14601060610707849>
- Keynes, J. M. (1960). *The general theory of employment, interest and money*. London Macmillan & Co.
- Khalid, A. (2012). The impact of asset quality on profitability of private banks in India: A case study of JK, ICICI, HDFC & YES Banks. *Journal of African Macroeconomic Review of Accounting Studies*, 2(1), 127–143.
- Khatib, H., Masood, M., Zaman, K., Saleem, S., & Saeed, B. (2011). Corporate governance and firm performance: A case study of karachi stock market. *International Journal of Trade, Economics and Finance*, 2(1), 39–43. <https://doi.org/10.7763/IJTEF.2011.V2.76>
- Koufopoulos, D., Zoumbos, V., Argyropoulou, M., & Motwani, J. (2008). Top management team and corporate performance: A study of Greek firms. *Team Performance Management: An International Journal*, 14(7/8), 340–363. <https://doi.org/10.1108/13527590810912322>
- Kumar, R. (2017). Targeted SME financing and employment effects: What do we know and what can we do differently? *Jobs Working Paper* (3). Washington, DC: World Bank.
- Kumar, S., & Rao, P. (2015). A conceptual framework for identifying financing preferences of SMEs. *Small Enterprise Research*, 22(1), 99–112. <https://doi.org/10.1080/13215906.2015.1036504>
- Lampadarios, E. (2016). Critical success factors for SMEs: An empirical study in the UK chemical distribution industry. *International Journal of Business and Management*, 11(7), 67–82. <https://doi.org/10.5539/ijbm.v11n7p67>
- Lechner, C., Soppe, B., & Dowling, M. (2016). Vertical cooperation and the sales growth of young and small firms. *J Small Bus Manag*, 54(1), 67–84. <https://doi.org/10.1111/jsbm.12131>
- Lee, D. Y., & Tsang, E. W. K. (2001). The effect of entrepreneurial personality, background and network activities on venture growth. *Journal of Management Studies*, 38(4), 583–602. <https://doi.org/10.1111/1467-6486.00250>
- Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. *International Journal of the Economics of Business*, 16(2), 89–203. <https://doi.org/10.1080/13571510902917400>
- Lee, J. H., Sohn, S. Y., & Ju, Y. H. (2011). How effective is government support for Korean women entrepreneurs in small and medium enterprises? *Journal of Small Business Management*, 49(4), 599–616. <https://doi.org/10.1111/j.1540-627X.2011.00338.x>
- Lemuel, E. (2009). *Financing options for Small and Medium Scale Enterprises (SMEs): Exploring the non-bank financial institution as an alternative means of financing in Nigeria*. Sweden: School of Management, Blekinge Institute of Technology.
- Li, H., Zhang, Y., & Chan, T. S. (2005). Entrepreneurial strategy making and performance in China's new technology ventures – The contingency effect of environment and firm competence. *Strategic Management Journal*, 16(1), 37–57. <https://doi.org/10.1016/j.hitech.2005.06.003>
- Lonial, S. C., & Carter, R. E. (2015). The impact of organizational orientations on medium and small firm performance: A resource-based perspective. *Journal of Small Business Management*, 53(1), 94–113. <https://doi.org/10.1111/jsbm.12054>
- Luttmer, J. (2010). Models of firm heterogeneity and growth. *The Annual Review of Economics*, 2, 547–576.
- Majumdar, S. K. (1997). The impact of size and age of firm-level performance: Some evidence from India. *Review of Industrial Organization*, 12(2), 231–241.
- Manzaneque-Lizano, M., Alfaro-Cortés, E., De La Cruz, P., & Alba, M. (2019). Stakeholders and long-term sustainability of SMEs. Who really matters in crisis contexts, and when. *Sustainability*, 11(23), 1–27. <https://doi.org/10.3390/su11236551>
- Margaretha, F., & Supartika, N. (2016). Factors affecting profitability of small medium enterprises (SMEs) firm listed in Indonesia stock exchange. *Journal of Economics, Business and Management*, 4(2), 132–137. <https://doi.org/10.7763/JOEBM.2016.V4.379>
- Matar, A., Al-Rdaydeh, M., & Odeh, M. (2018). Factors affecting the corporate performance: Panel data analysis for listed firms in Jordan. *Academy of Accounting and Financial Studies Journal*, 22(6), 1–10. <http://www.scopus.com/inward/record.url?eid=2-s2.0-85061846283&partnerID=MN8TOARS>

- Mawih, K. A. (2014). Effects of assets structure on the financial performance: Evidence from sultanate of oman. *Journal of US-China Public Administration*, 11(2), 170–179. <https://www.davidpublisher.com/index.php/Home/Article/index?id=5763.html>
- McDonald, J. (1999). The determinants of firm profitability in Australian manufacturing. *The Economic Record*, 75(229), 115–126. <https://doi.org/10.1111/j.1475-4932.1999.tb02440.x>
- Mehari, D., & Aemiro, T. (2013). Firm specific factors that determine insurance companies performance in Ethiopia. *European Scientific Journal*, 9(10), 245–255.
- Meyer, K. E., Thu Yen, T. T., & Hung, N. V. (2006). Doing business in ... Vietnam. *Thunderbird International Business Review*, 48(2), 263–290. <https://doi.org/10.1002/tie.20095>
- Mileris, R. (2012). Macroeconomic Determinants of loan portfolio credit risk in banks. *Inzinerine Ekonomika-Engineering Economics*, 23(5), 496–504. <https://doi.org/10.5755/J01.EE.23.5.1890>
- Ministry of Planning and Investment. (2020). *The white book on vietnamese businesses 2020*.
- Monteiro, A. (2006). A quick guide to financial ratios. *The Citizen Moneyweb Business Insert*, 6 May(3), 1. <https://journals.co.za/doi/abs/10.10520/EJC77164>
- Montgomery, D. C., Peck, E. A. và Vining, G. G. (2001). *Introduction to linear regression analysis* (3rd ed.). New York, USA: Jon Wiley and Sons.
- Munro, D. (2013). What is an SME? In *A guide to SME financing* (pp. 7–13). Palgrave Pivot. https://doi.org/10.1057/9781137373786_2
- Muriithi, S. M. (2017). African small and medium enterprises (SMEs) contributions, challenges and solutions. *European Journal of Research and Reflection in Management Sciences*, 5(1), 36–48. <http://www.idpublications.org/ejrrms-vol-5-no-1-2017/>
- Mutezo, A. (2013). Credit rationing and risk management for SMEs: The way forward for South Africa. *Corporate Ownership & Control*, 10(2–1), 153–163. <https://doi.org/10.22495/cocv10i2c1art1>
- Mwika, D., Banda, A., Chembe, C., & Kunda, D. (2018). The impact of globalization on SMEs in emerging economies: A case study of zambia. *International Journal of Business and Social Science*, 9(3), 59–68. <https://doi.org/doi:10.30845/ijbss.v9n3p6>
- Myers, S., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)
- Myers, S., & Rajan, R. (1995). Liquidity and the rise of financial intermediation. *Proceedings(May)*, 427–446. [https://doi.org/10.1016/0304-405X\(77\)90015-0](https://doi.org/10.1016/0304-405X(77)90015-0)
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), 147–175. [https://doi.org/10.1016/0304-405X\(77\)90015-0](https://doi.org/10.1016/0304-405X(77)90015-0)
- Nguyen, B., Mickiewicz, T., & Du, J. (2017). Local governance and business performance in Vietnam: The transaction costs' perspective. *Regional Studies*, 52(4), 1–16. <https://doi.org/10.1080/00343404.2017.1341625>
- Nguyen, T., Locke, S., & Reddy, K. (2015). Does boardroom gender diversity matter? Evidence from a transitional economy. *International Review of Economics and Finance*, 37, 184–202. <https://doi.org/10.1016/j.iref.2014.11.022>
- Nyumba, E. O., Muganda, M., Musiega, D., & Masinde, S. W. (2015). Loan interest rate and performance of small and medium enterprises in Kenya. *International Journal of Management Research & Review*, 5(10), 712–728. http://ijmrr.com/admin/upload_data/journal_Otieno%20Nyumba%20%20Evans%20%2010ct15mrr.pdf
- Odusanya, I. A., Yinusa, O. G., & Ilo, B. M. (2018). Determinants of firm profitability in Nigeria: Evidence from dynamic panel models. *SPOUDAI-J Econ Bus*, 68(1), 43–58. <https://spoudai.unipi.gr/index.php/spoudai/article/view/2637/2660>
- Olatunji, T. E., & Adegbite, T. A. (2014). Investment in fixed assets and firm profitability: Empirical evidence from the nigerian banking sector. *Asian Journal of Social Sciences and Management Studies*, 1(3), 78–82. <https://ideas.repec.org/a/aoj/ajssms/2014p78-82.html>
- Oliver, C. (1997). The influence of institutional and task environment relationships on organizational performance: The Canadian construction industry. *Journal of Management Studies*, 34(1), 99–124. <https://doi.org/10.1111/1467-6486.00044>
- Onaolapo, A. A., & Kajola, S. O. (2010). Capital structure and firm performance: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 25(October 2010), 70–82.
- Owoseni, O. O., & Akanbi, P. A. (2010). Entrepreneurial intentions: A theoretical framework. *Journal of Management and Corporate Governance*, 1, 1–15.
- Ozgun, O., & Gorus, M. S. (2016). Determinants of deposit bank profitability: Evidence from Turkey. *Journal of Applied Economics and Business Research*, 6(3), 218–231.
- Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance*, 10(1), 74–95. <https://doi.org/10.1177/0974686217701467>
- Papadogonas, T. (2007). The financial performance of large and small firms: Evidence from Greece. *International Journal of Financial Services Management*, 2(1–2), 1–12. <https://doi.org/10.1504/IJFSM.2007.011668>
- Parida, V. P. (2016). Network partner diversity, network capability, and sales growth in small firms. *Journal of Business Research*, 69(6), 2113–2117. <https://doi.org/10.1016/j.jbusres.2015.12.017>
- Parks, R. B., & Oakerson, R. J. (2000). Regionalism, localism, and metropolitan governance: Suggestions from the research program on local public economies. *State & Local Government Review*, 32(3), 169–179. Retrieved from <https://www.jstor.org/stable/4355265>
- Perez, E. H., & Canino, R. M. B. (2009). The importance of the entrepreneur's perception of "success". *Review of International Comparative Management*, 10(5), 990–1003. <https://ideas.repec.org/a/rom/rmci/nv10y2009i5p990-1010.html>
- Pervan, I., Pervan, M., & Ćurak, M. (2019). Determinants of firm profitability in the Croatian manufacturing industry: Evidence from dynamic panel analysis. *Economic Research*, 32(1), 968–981. <https://doi.org/10.1080/1331677X.2019.1583587>
- Qalati, S. A., Li, W., Khan, M. A. S., & Anwar, F. (2021). A mediated model on the adoption of social media and SMEs' performance in developing countries. *Technology in Society*, 64(2021), 1–20. <https://doi.org/10.1016/j.techsoc.2020.101513>
- Quoc Trung, N. K. (2021). The relationship between internal control and credit risk – The case of commercial banks in Vietnam. *Cogent Business & Management*, 8(1), 1–17. <https://doi.org/10.1080/23311975.2021.1908760>
- Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international

- data. *The Journal of Finance*, 50(5), 1421–1460. <https://doi.org/10.1111/j.1540-6261.1995.tb05184.x>
- Reyhani, A. G. (2012). The investigation of effect of assets structure on performance of accepted companies of Tehran Stock Exchange (TSE). *Journal of Basic and Applied Scientific Research*, 2(2), 1086–1090. [https://www.textroad.com/pdf/JBASR/J.%20Basic.%20Appl.%20Sci.%20Res.%202\(2\)1086-1090,%202012.pdf](https://www.textroad.com/pdf/JBASR/J.%20Basic.%20Appl.%20Sci.%20Res.%202(2)1086-1090,%202012.pdf)
- Roodman, D. (2009). How to do xtabond2: An introduction to “difference” and “system” GMM in stata. *Stata Journal*, 9(1), 86–136. <https://doi.org/10.1177/1536867X0900900106>
- Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia - Social and Behavioral Sciences*, 65(2012), 156–166. <https://doi.org/10.1016/j.sbspro.2012.11.105>
- Salman, A. K., & Yazdanfar, D. (2012). Profitability in Swedish SME firms: A quantile regression approach. *International Business Research*, 5(8), 94–106. <https://doi.org/10.5539/ibr.v5n8p94>
- Santarelli, E., & Tran, H. T. (2012). Growth of incumbent firms and entrepreneurship in Vietnam. *Growth and Change*, 43(4), 638–666. <https://doi.org/10.1111/j.1468-2257.2012.00601.x>
- Sargan, J. D. (1958). The estimation of economic relationships using instrument variables. *Econometrica*, 26(3), 393–415. <http://dx.doi.org/10.2307/1907619>
- Saviano, M., & Caputo, F. (2013). Managerial choices between systems, knowledge and viability. S. Barile Ed., *Contributions to theoretical and practical advances in management. A Viable Systems Approach (VSA)* (219–242). Aracne.
- Savitch, H. V., & Vogel, R. K. (2000). Paths to new regionalism. *State and Local Government Review*, 32(3), 158–168. Retrieved from <https://www.jstor.org/stable/4355264>
- Savlovski, L. I., & Robu, N. R. (2011). The role of SMEs in modern economy. *Economia Seria Management*, 14(1), 277–281. <http://www.management.ase.ro/reveconomia/2011-1/25.pdf>
- Scott, W. R. (1995). *Institutions and organizations*. Sage. <https://doi.org/10.3917/mana.172.0136>
- Sharma, M. K., & Bhagwat, R. (2007). Performance measurement system: Case studies from SMEs in India. *International Journal of Productivity and Quality Management*, 2(4), 475–509. <https://doi.org/10.1504/IJPM.2007.013338>
- Shumway, T. (2001). Forecasting bankruptcy more accurately: A simple hazard model. *Journal of Business*, 74(1), 101–124. <https://doi.org/10.1086/209665>
- Sitharam, S., & Hoque, M. (2016). Factors affecting the performance of small and medium enterprises in KwaZulu-Natal, South Africa. *Problems and Perspectives in Management*, 14(2), 277–288. [https://doi.org/10.21511/ppm.14\(2-2\).2016.03](https://doi.org/10.21511/ppm.14(2-2).2016.03)
- Siudek, T., & Zawojcka, A. (2014). *Quality of national governance and rural development: The case of the European Union countries*. EAAE 2014 Congress ‘Agri-Food and Rural Innovations for Healthier Societies’.
- Smith, K. V. (1980). Profitability versus liquidity tradeoffs in working capital management. In *Readings on the movement of working capital*. West Publishing Company.
- Stenholm, P., Acs, Z. J., & Wuebker, R. (2013). Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, 28(1), 176–193. <https://doi.org/10.1016/j.jbusvent.2011.11.002>
- Stierwald, A. (2009). Determinants of firm profitability—The effect of productivity and its persistence. In *Melbourne institute of applied economic and social research* (pp. 1–25). <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.361.1327&rep=rep1&type=pdf>
- Surjan, S., & Srivastava, S. (2019). Identification of determinants influencing the performance of MSMEs. *International Journal of Recent Technology and Engineering*, 8(2S3), 1580–1590. <https://doi.org/10.35940/ijrte.B1288.0782S319>
- Svensson, J. (2003). Who must pay bribes and how much? Evidence from a cross section of firms. *Quarterly Journal of Economics*, 118, 207–230.
- Tan, T. K. (2012). Financial distress and firm performance: Evidence from the Asian financial crisis. *Journal of Finance and Accountancy*, 11, 1–11. <https://www.aabri.com/manuscripts/121199.pdf>
- Taticchi, P., Tonelli, F., & Cagnazzo, L. (2010b). Performance measurement and management: A literature review and a research agenda. *Measuring Business Excellence*, 14(1), 4–18. <https://doi.org/10.1108/13683041011027418>
- Tewari, P. S., Skilling, D., Kumar, P., & Wu, Z. (2013). *Competitive small and medium enterprises. A diagnostic to help design smart SME policy*. The World Bank.
- Tunyi, A. A., Agyei-Boapeah, H., Areneke, G., & Agyemang, J. (2019). Internal capabilities, national governance and performance in African firms. *Research in International Business and Finance*, 50(C), 1–54. <https://doi.org/10.1016/j.ribaf.2019.04.009>
- Tuyet, P. A. (2017). Analysis of factors affecting the business performance of joint stock commercial banks in Vietnam. *Journal Of Asian Business And Economic Studies*, 1. <https://digital.lib.uh.edu.vn/handle/UJH/56770>
- Vaidya, R., & Patel, P. (2019). Determinants of profitability of capital-intensive firms in the Indian capital market: A static and dynamic panel approach. *IUP Journal of Accounting Research & Audit Practices*, 18(4), 33–51. <https://www.proquest.com/openview/f0183abe1857f14581820fc980c3ec80/1?pq-origsite=gscholar&cbl=54439>
- Vandenberg, P., Chantapacdepong, P., & Yoshino, N. (2016). *SMEs in developing asia new approaches to overcoming market failures*. Asian Development Bank Institute.
- Vätavu, S. (2014). The determinants of profitability in companies listed on the Bucharest stock exchange. *Ann Univ Petrosani Econ*, 14(1), 329–338. <https://ideas.repec.org/a/pet/annals/v14y2014i1p329-338.html>
- Vietnam Government. (2018). Decree No. 39/2018/ND-CP dated March 11, 2018 of the Government on detailing a number of Articles of the laws on small and medium-sized enterprises. In *Decree*. Vietnam Government.
- Vijayakumar, A. (2011). An empirical study of firm structure and profitability relationship: The case of Indian automobile firms. *International Journal of Research in Commerce and Management*, 1(2), 100–108. https://ijrcm.org.in/article_info.php?article_id=615
- Vijayakumar, A., & Tamizhselvan, P. (2010). Corporate size and profitability: An empirical analysis. *Journal for Bloomers of Research*, 3(1), 44–53.
- Wafa, S., Noordin, R., & Kim-Man, M. (2005). Strategy and performance of small and medium-size enterprises in Malaysia. In *The International Conference in Economics and Finance (ICEF)*. Malaysia.
- Waggoner, D. B., Neely, A. D., & Kennerley, M. P. (1999). The forces that shape organizational performance measurement systems: An interdisciplinary review. *International Journal of Production Economics*, 60–61

(1), 53–60. [https://doi.org/10.1016/S0925-5273\(98\)00201-1](https://doi.org/10.1016/S0925-5273(98)00201-1)

Waqas, M., Fatima, N., Khan, A., & Arif, M. (2017). Determinants of non-performing loans: A comparative study of Pakistan, India, and Bangladesh. *Journal of Finance & Banking Studies*, 6 (1), 51–68. <https://doi.org/10.20525/ijfbs.v6i1.617>

White, L. H. (1999). *The theory of monetary institutions*. Blackwell.

Winter, R. (1994). The dynamics of competitive insurance markets. *Journal of Financial Intermediation*, 3(4), 379–415. <https://doi.org/10.1006/jfin.1994.1011>

Wyn, J. (1998). The fourth wave. *Best's Review*, 99, 53–57.

Xuan, V. N., Phuong Thu, N. T., & Anh, N. T. (2020). Factors affecting the business performance of enterprises: Evidence at Vietnam small and medium-sized enterprises. *Management Science Letters*, 10(2020), 865–870. <https://doi.org/10.5267/j.msl.2019.10.010>

Yang, J., Guariglia, A., & Guo, J. (Michael). (2019). To what extent does corporate liquidity affect M&A decisions, method of payment and performance? Evidence from China. *Journal of Corporate Finance*, 54(2019), 128–152. <https://doi.org/10.1016/j.jcorpfin.2017.09.012>

Yazdanfar, D. (2013). Profitability determinants among micro firms: Evidence from Swedish data. *The International Journal of Managerial Finance*, 9(2), 150–160. <https://doi.org/10.1108/17439131311307565>

Ye, L. (2009). Regional government and governance in China and the United States. *Public Administration Review*, 69, S116–S121.

Zeitun, R., Tian, G. G., & Keen, S. (2007). Macroeconomic determinants of corporate performance and failure: Evidence from an emerging market the case of Jordan. *Corporate Ownership and Control*, 5(1), 179–194. <https://doi.org/10.22495/cocv5i1c1p2>

ZhengSheng, X., & NuoZhi, X. (2013). The research of the optimal allocation of assets structure and business performance. *Research Journal of Economics, Business and ICT*, 8 (1), 19–23. <https://ojs.journals.cz/index.php/RJEBI/article/view/261>

Zulfiqar, Z., & Din, N. U. (2015). Inflation, interest rate and firms' performance: The evidences from textile industry of Pakistan. *International Journal of Arts and Commerce*, 4(2), 111–115. https://ijac.org.uk/images/frontImages/gallery/Vol_4_No_2/14_111-115.pdf

APPENDIX 1: Decree 39/2018/ND-CP providing guidance on the Law on support for Small and Medium Sized Enterprises (“SMEs”)

	Microenterprise	Small-sized enterprise	Medium-sized enterprise
Agriculture, forestry, aquaculture, industry and construction			
Annual average number of employees contributing Social Insurance	No more than 10 employees	No more than 100 employees (compared to no more than 200 employees under Decree 56)	No more than 200 employees (compared to no more than 300 employees under Decree 56)
Total capital Or Total revenue	No more than VND3 billion No more than VND3 billion/year	No more than VND20 billion No more than VND50 billion/year	No more than VND100 million No more than VND200 billion/year
Trading and Services			
Annual average number of employees contributing Social Insurance	No more than 10 employees	No more than 50 employees	No more than 100 employees
Total capital Or Total revenue	No more than VND3 billion No more than VND10 billion/year	No more than VND50 billion (compared to no more than VND10 billion under Decree 56) No more than VND100 billion/year	No more than VND100 billion (compared to no more than VND50 billion under Decree 56) Not more than 300 billion/year

APPENDIX 2: REGRESSION RESULTS BY GMM

Dynamic panel-data estimation, two-step system GMM

Group variable: FIRM	Number of obs	=	1560
Time variable : year	Number of groups	=	173
Number of instruments = 55	Obs per group: min	=	2
Wald chi2(11) = 30.86	avg	=	9.02
Prob > chi2 = 0.001	max	=	11

roe	Coef.	Corrected Std. Err.	z	P> z	[95% Conf. Interval]	
lroe	.6971721	.2961742	2.35	0.019	.1166813	1.277663
age	.0882377	.1765295	0.50	0.617	-.2577537	.4342291
size	8.179096	3.262949	2.51	0.012	1.783834	14.57436
lev	-1.493418	.4117135	-3.63	0.000	-2.300361	-.6864739
liq	-.0043015	.0133114	-0.32	0.747	-.0303914	.0217884
ppe	.0769262	.0237348	3.24	0.001	.0304069	.1234454
rev	1.276252	.4428684	2.88	0.004	.4082456	2.144258
gdp	6.472321	1.882542	3.44	0.001	2.782607	10.16204
inf	-.2560101	.4353282	-0.59	0.556	-1.109238	.5972175
pci	8.317391	2.719851	3.06	0.002	2.98658	13.6482
interest	.0151357	.0159533	0.95	0.343	-.0161322	.0464037
_cons	-2.725001	9.370057	-0.29	0.771	-21.08997	15.63997

Instruments for first differences equation

Standard

D.size

D.pci

D.lroe

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(4/5).(L2.inf L2.gdp L3.pci L2.interest)

Instruments for levels equation

Standard

size

pci

lroe

_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL3.(L2.inf L2.gdp L3.pci L2.interest)

Arellano-Bond test for AR(1) in first differences: z = -1.76 Pr > z = 0.079

Arellano-Bond test for AR(2) in first differences: z = 0.99 Pr > z = 0.321

Sargan test of overid. restrictions: chi2(43) = 0.28 Prob > chi2 = 1.000
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(43) = 18.95 Prob > chi2 = 0.999
 (Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(26) = 2.34 Prob > chi2 = 1.000

Difference (null H = exogenous): chi2(17) = 16.61 Prob > chi2 = 0.481

iv(lroe)

Hansen test excluding group: chi2(42) = 18.42 Prob > chi2 = 0.999

Difference (null H = exogenous): chi2(1) = 0.54 Prob > chi2 = 0.464

iv(pci)

Hansen test excluding group: chi2(42) = 18.86 Prob > chi2 = 0.999

Difference (null H = exogenous): chi2(1) = 0.09 Prob > chi2 = 0.766

iv(size)

Hansen test excluding group: chi2(42) = 18.45 Prob > chi2 = 0.999

Difference (null H = exogenous): chi2(1) = 0.50 Prob > chi2 = 0.479



© 2021 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format.

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.



***Cogent Business & Management* (ISSN: 2331-1975) is published by Cogent OA, part of Taylor & Francis Group.**

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com

