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Article

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Capital budgeting techniques and financial performance: a comparison between SMEs and large listed firms

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ABSTRACT

Modern-day firms, both small and medium enterprises (SMEs) and large listed firms (LLFs) practice distinct investment appraisal approaches known as conventional and sophisticated capital budgeting techniques. Despite these prominent developments, the extant literature is yet to empirically examine the impact of these approaches on the financial performance (FP) of respective firms. This study aims to analyze and compare the impact of conventional and sophisticated capital budgeting techniques on the FP of SMEs and LLFs. Following the logic of real option and contingency theories, the payback method and average/accounting rate of return are conceptualized as conventional whereas, net present value, internal rate of return, and profitability index are used as sophisticated capital budgeting techniques. The associated data of 500 Indonesian firms between 2011 and 2020 was obtained and analyzed using the generalized method of moments (GMM) technique. After addressing multicollinearity and heterogeneity issues, the preliminary findings indicate that conventional capital budgeting techniques are not a significant predictor of the FP of SMEs. Conversely, it is observed that sophisticated capital budgeting techniques have a strong and positive effect on the FP of LLFs. The robustness checks confirmed that sophisticated capital budgeting techniques are the significant predictors of the FP of both SMEs and LLFs. The findings of this study are novel and contribute to validating the use of sophisticated capital budgeting techniques for SMEs and LLFs of emerging economies to realize optimal financial outcomes of their investments.

IMPACT STATEMENT

Capital budgeting decisions are key to maximizing stakeholders' wealth. Its success hinges on selecting the most viable capital budgeting technique (CBT) from the pool of available techniques. The key criteria used by firms of different sizes such as SMEs and large listed firms is the financial outcomes of adopted CBT. The firms in developing economies particularly located in Southeast Asia remain in dilemma on deciding a financially feasible CBT. This research aims to resolve this issue by examining the impact of different capital budgeting techniques on the financial performance of firms of different sizes. The empirical findings of this study expect to validate the relevance of a financially feasible CBT which can be used as a benchmark by firms of different sizes operating in developing countries for perusing capital budgeting and investment decisions.

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SUBJECTS
Finance; Business, Management and Accounting; Economics

1. Introduction

Capital budgeting (CB) is an instrument employed to plan and allocate financial resources in a way that firms' perspective investments optimize the wealth of shareholders (Garrison et al., 2021). It has gained popularity as a financial decision-making tool allowing firm to estimate the feasibility of investment projects. The finance literature characterized CB as the discreet approach emphasizing the accuracy, evaluation, and relevance of investment decisions. It is pertinent to growth, stability, and organizational success as it involves long-term investment decisions (Ghahremani et al., 2012). Since access to resources is limited

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therefore, it is debated that the decisions related to CB are crucial and should be taken carefully by the firms (Harris & Raviv, 1998; Viviers & Cohen, 2011). Firms that ignore managerial decision-making theory to evaluate CB projects will face market survival risk due to the loss of competitiveness (Johnson & Pfeiffer, 2016; Rossi, 2014). Also, the failure to select an appropriate CB technique wrongly allocates resources to a project, increases risk, and jeopardizes firms' financial performance (FP) (Hasan, 2013). Seminal studies on CB indicated a negative effect of improper appraisal of CB projects on firms' competitiveness and growth (Baldwin & Clark, 1992). Although the significance of CB is acknowledged by practitioners and finance scholars, the firms continue practicing unsophisticated methods (Alleyne et al., 2018). Recently, a few firms have started implementing sophisticated CB techniques (CBTs) which has equally contributed to the success and FP of firms of different sizes (Klammer & Walker, 1984; Pike, 1988).

The extant literature on CB has investigated two broad perspectives namely CB process and CBTs. Following a systematic CB process, firms may enhance the quality and effectiveness of investment decisions that will contribute to improving shareholders' wealth (Andor et al., 2015; Kashyap, 2014). Previous studies have developed interesting models to outline the CB process and divided it into four distinct but interrelated steps (Figure 1) known as the identification, development, selection, and control stages (Mintzberg et al., 1976; Pinches, 1982). The first step, known as identification; involves recognizing prospective investment opportunities (Northcott, 1995). The second step is development, which requires management to carefully screen the investment opportunities to ensure that the identified investment is reliable followed by the selection step which involves the review and analysis. Once the review and analysis are obtained, management decides whether to accept or reject the investment project. The final step control, comprises implementation, review, and control and it is initiated provided the investments have passed the acceptance criteria. This step creates useful feedback for the firms obtained through audit and post-review of investment appraisal. Past studies have reported various contexts of the CB process and used it to test and analyze the relationship between firms' sophisticated CB process and its effect on their FP (Farragher et al., 2001; Kim, 1981; Kwong, 1986).

CBTs involve selecting the most relevant technique to validate management's investment decisions by evaluating firms' investment output in long-term assets (Peterson & Fabozzi, 2002). These unique approaches guide firms in implementing the traditional theories to achieve the profit maximization goals of shareholders by allocating limited capital to a viable investment project (Bennouna et al., 2010; Gervais et al., 2011; Proctor & Canada, 1992). CBTs are well documented in conventional corporate finance studies which largely exhibit different CBTs in developed economies such as the USA, Canada, the United Kingdom, and Australia (Alkaraan & Northcott, 2006; Arnold & Hatzopoulos, 2000; Baker et al., 2010; Bennouna et al., 2010; Brunzell et al., 2013; Graham & Harvey, 2001; Shao & Shao, 1996; Truong et al., 2008). A few studies have also examined CBTs used in developing (Malaysia, Indonesia, China, and Singapore) and emerging economies of Africa, India, Hong Kong and Philippines (Al Mutairi et al., 2011; Anand, 2002; Correia & Cramer, 2008; Graham & Sathye, 2020; Hermes et al., 2007; Kester & Chong, 1998; Obamuyi, 2013; Singh et al., 2012). The chief financial officers (CFOs) of the firms play a key role by employing a range of CBTs which are broadly categorized into discounted cash flow (DCF), non-discounted cash (NDCF), and sophisticated techniques. However, the CFOs of the Asian and African firms prefer NDCF approaches over sophisticated methods.

The underlying differences in the characteristics of small and medium enterprises (SMEs) and large listed firms (LLFs) lead to the application of variable CB methods tools for investment appraisal. Such as SMEs are recognized as the business entities with a limited access to capital markets and financial resources pushing them to fulfil their financing needs internally or through external bank loans. These limitations force SMEs to rely on simple CBTs such as payback method (PBM) and accounting/average rate of return (ARR) as these methods are simple and cost efficient (Hartmann & Weißenberger, 2024;

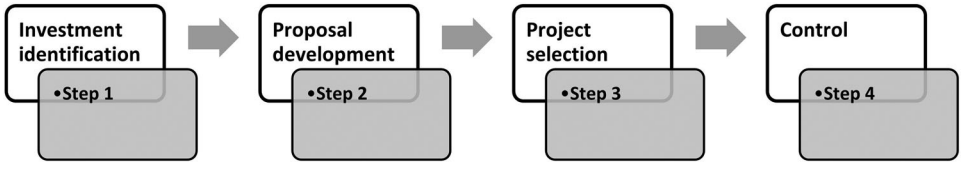

Figure 1. Steps of CB process.

Lefley, 1996). Alternatively, LLFs with their extended capital market access can acquire funds through equity and debt financing enabling them to appraise investment projects by implementing sophisticated CB methods of net present value (NPV) and internal rate of return (IRR) (Kester & Chong, 1998; Leon et al., 2008). Another diverging aspect of SMEs and LLFs is the investment decision process which follows formal organizational protocols in LLFs and less formal in SMEs. This lays the foundation of different perception to CBTs as the firms following formal decision-making protocols employ risk-adjusted CBTs [NPV, IRR, modified internal rate of return (MIRR), and capital rationing)] (Pike, 1988). From operational point of view, SMEs' operations are simple, flexible and less complicated compared to LLFs indicating the use of conventional CB approaches in investment appraisals (Sureka et al., 2023).

The empirical literature on CBTs emphasized that regardless of the CB method used, the ultimate goal is to maximize firms' value by improving their FP (Puwanenthiren, 2016). Previous studies discussing the nexus between CB methods and FP of firms indicated that systematic and efficient management of investments by employing relevant CBTs leads to positive changes in FP (Haka, 1987; Hasan, 2013; Kashyap, 2014; Kim, 1981; Klammer & Walker, 1984; Pike, 1988). Conversely, some studies delineated that CBTs do not significantly improve FP of firms as the investment decisions of some firms are strategic instead of profitability (Farragher et al., 2001; Johnson & Pfeiffer, 2016). This is relatable for the SMEs as they tend to hold, delay or postpone investment projects when uncertainty increases (Myers, 1977). Nonetheless, the findings of past studies discussing the relationship between CBTs and their impact on FP of firms are inconsistent and inconclusive due to several conditions. Infect, the selection of CBTs used for investment appraisal is influenced by several factors. Some of these factors are ease of calculation, availability of financial and human capital resources, use of computer technologies and sophisticated management support (Souza & Lunkes, 2016). Additionally, CFOs tend to employ different models before finalizing the investment proposals which may directly affect the FP of the firms (Brounen et al., 2004). The studies verifying these contentions are limited and offer mixed results creating a practical and knowledge gap on the viability of CBTs and their role in organizational profitability. Further, the discussion on the selection is CBTs is ongoing and remains unclear leading us to investigate the commonly used CBTs and their impact on the FP (Kalhoefer, 2010).

The current research offers a multidimensional context of CBTs by extending investigation to SMEs and LLFs operating in Indonesia. Both SMEs and LLFs in Indonesia are recognized as the key economic contributors and are expected to accelerate the progress to achieve country's long-term development plans (Asian Development Bank (ADB), 2022; Organisation for Economic Co-operation and Development (OECD), 2022). Recently, the government of Indonesia has enacted various legislations requiring SMEs and LLFs to maintain their financial stability and efficiency which will motivate them to exhibit effective CB methods for the appraisal of their investment projects. First, it unpacks the existing CBTs of SMEs and LLFs in Indonesia followed by the impact of widely practiced CBTs on their FP. The CFOs in different regions employ certain criteria and may choose appropriate CBTs based on the investment goals (Graham & Harvey, 2002). Taking together the difference in the behavioral characteristics of CFOs and the above-stated factors considered during decision-making, it is anticipated that CBTs vary among firms of different sizes which will create different values aka FP. Earlier studies have linked CFOs' attributes, firm and industry size, level of economic development, and the availability of resources to CBTs (Block, 1997; Brounen et al., 2004; Danielson & Scott, 2006; Hermes et al., 2007). However, how firm-specific CBTs contribute to enhancing its FP remains unexplored which will be investigated in this study.

This study unfolds as follows. Section 2 outlines the literature review and research hypotheses followed by the methodological overview in section 3. The key findings are presented and discussed in section 4. Finally, section 5 concludes this study with implications, limitations, and recommendations for future studies.

2. Literature review

2.1. Definitions and developments in CBTs

The concept of CB has gradually evolved over the years. A prominent study defined it as the protocols, arrangements and approaches accomplished to leverage investment opportunities by developing

viewpoints to formulate investment proposals, screen and shortlist the projects, and audit these projects to achieve investment goals (Segelod, 1998). The distinguished finance scholars used managerial significance to define CB as 'the set of interconnected managerial activities used for guiding firms' long-term financing decisions to achieve sustained FP' (Garrison et al., 2021). Some scholars used organizational rationale to explain CB as 'the planning and management of firms' investments in non-current assets' (Ross et al., 2016). A recent study expanded CB definitions and explained it as 'the strategic financing tool to help the firms in selecting, expanding, replacing and acquiring new assets for the firms allowing them to minimize cost and choose between lease or purchase' (Mollah et al., 2023). While, some studies referred to CB as a 'progressive decision-making scheme used by the firms for analyzing the investments in long-term assets having a useful life of more than one year' (Peterson & Fabozzi, 2002). Earlier corporate finance studies found a positive linkage between effective CB decisions and the FP of firms (Arnold & Hatzopoulos, 2000; Khan, 2024). The evidence suggests that managing and budgeting capital investments assures that firms are following a proper mechanism to strategically divert the flow of investment to profitable projects which contributes to their FP (Farragher et al., 2001; Haka, 1987; Kim, 1981; Magni & Marchioni, 2020; Mandipa & Sibindi, 2022; Menifield, 2020; Shakespeare, 2020). The organizational stakeholders critically review CB proposals and expect CFOs to refine and render financially viable approaches suitable for improving firms' FP.

CBTs are grouped into two categories known as the discounted cashflow (DCF) and non-discounted cashflow (non-DCF) approach (Cumming et al., 2023). Generally, PBM, and ARR are categorized under non-DCF CBTs whereas, NPV, and IRR are included in DCF CBTs (Brewer et al., 2022). The concept of the time value of money is prevalent in DCF approaches while non-DCF techniques do not incorporate the time value of money (Alleyne et al., 2018; Hermes et al., 2007). A pioneering study associated firms' FP with the usage of sophisticated and non-sophisticated CBTs (Haka et al., 1985). This study used risk factors in the net cash flows and separated NPV, IRR and profitability index (PI) as the risk-adjusted sophisticated techniques. Whereas, PBM and ARR are placed under non-sophisticated methods as they do not conform to the risk-adjusted and time value of money criteria.

The concept of CB emerged from investment appraisal strategies proposed 250 years ago and has significantly transformed due to recent developments in CBTs (Muniesa & Doganova, 2020). Initially, CFOs used to consider their essential business knowledge and personal notions to make investment decisions (Baker et al., 2020). An overview of finance literature indicates that finance scholars, firm owners, and CFOs view CBTs differently and exhibit different opinions towards each approach and its benefits (Güngör Göksu, 2023). The academicians opined that businesses should use NPV to forecast investment outcomes as it exceptionally predicts the creation of extra wealth by recognizing the most viable option (Bartocci et al., 2023). The firm owners believe that IRR allows comparing the percentage rate of return of two projects of different sizes which are unaffected by discount rates (Sureka et al., 2022).

The recent developments in firms' investment practices confirm a paradigm shift in the perception of CFOs about CBTs (Han et al., 2022). According to Mao (1970) and Istvan (1961), non-DCF approaches (PBM and ARR) were more popular during the 1960s to 1970s CFOs compared to the DCF methods. By the end of the 1980s, all major firms around the world started prioritizing DCF approaches and frequently employed NPV and IRR while PBM and ARR were still used as a second option (Stanley & Block, 1984). However, the studies suggest the influence of national culture on the CFOs of Indonesian firms and the dominance of sophisticated CBTs among non-financial firms (Graham & Sathye, 2017, 2020). A review of published studies on CBTs from 1990 to 2000 reports the traction and continuation of NPV and IRR methods (Burns & Walker, 1997; Kester & Chong, 1998; Slagmulder et al., 1995). After the 2000s, scholars started investigating the differences in the usage of CBTs among the CFOs of LLFs and SMEs. Yet a few studies were undertaken to investigate the impact of firm size and attributes in the selection of CBTs. The findings of these limited studies delineated that LLFs prefer DCF approaches whereas, non-DCF techniques (PBM) are more common among SMEs (Arnold & Hatzopoulos, 2000). The analysis of LLFs revealed that due to high debt ratios, CFOs of these firms practice NPV and IRR to appraise investment (Graham, 2022; Graham & Harvey, 2001; Ryan & Ryan, 2002).

2.2. CBTs of SMEs vs. large firms

The CFOs of the firms are yet to agree on the usage of a single CB approach which implies that the adoption of a particular CB method is contingent on certain financial and non-financial aspects (Battalio et al., 2024; Ryan & Ryan, 2002). A few studies found that CFOs' behavioral, demographic, skills and project-specific knowledge influence their selection of CBTs (Alles et al., 2021; Batra & Verma, 2017; Sureka et al., 2023). Whereas firm-specific factors such as corresponding industry, sales, business development, workforce, and the nature of business as the non-financial factors are also highly influential in adopting certain CBTs (Hermes et al., 2007; Mollah et al., 2023). Indonesian CFOs' selection of a suitable CB approach hinges on their education, firm size, cumulative annual investments, industry and ownership type, organizational culture and financial leverage (Leon et al., 2008). The impact of macroeconomic factors such as political, economic, social, technological, legal, and environmental on the selection of CBTs in different countries is also examined by a few studies (Andrews & Butler, 1986; Eljelly & Abuidris, 2001). The findings of a study conducted in Sweden found a few novel factors namely the dividend ratios, firms' growth rate, and foreign sales revenue as the remodelers of selecting particular CBTs (Daunfeldt & Hartwig, 2014).

The current CBTs followed by CFOs are based on the decision criteria used by the finance managers of US firms in the early 60s and 70s (Istvan, 1961). Nonetheless, CFOs around the world continue employing both conventional and modern sophisticated CBTs and exhibit their explanation of the use of each method. it is observed that although corporate finance handbooks widely recommend using NPV and real options for all firms, simple CBTs (PBM and IRR) are more popular among CFOs of small firms despite the lack of theoretical support (De Andrés et al., 2015). Further, the review of CBTs practiced by CFOs indicates the dominance of PBM, and ARR among US firms and NPV was frequently adopted in the large Anglo-American countries such as Canada, the UK and Australia. While, PBM and IRR are commonly used in small Asian and European regions (Baker et al., 2010; Bennouna et al., 2010). A few studies have attempted to understand the factors that motivate CFOs to adopt certain CB methods and the picture remains mimic. Although IRR is theoretically less accurate, finance managers of smaller firms show a higher tendency to this method as it allows them to establish project-specific logic such as, easy to compute, representable in percentage values, and comparable among different projects (Burns & Walker, 1997). Similarly, PBM is preferred due to its ability to forecast future investment risks and coherence with CFOs' risk aversion behavior (Kim, 1981; Stanley & Block, 1984). There is a dearth of studies devoted to explaining the financial logic of CBTs employed by CFOs. To the best of researchers' knowledge, to this date, there is no empirical study that has investigated and compared the CBTs deployed in SMEs and LLFs and their impact on the FP of these firms.

2.3. Hypotheses development

To examine the impact of selected CBTs on the FP of SMEs and LLFs, we developed a conceptual framework (Figure 2) operationalizing the theories of contingency and real option. These theories were first

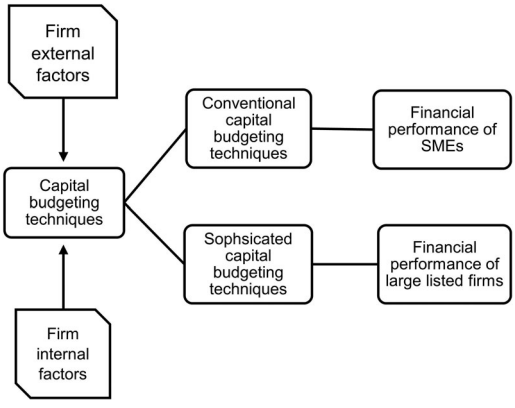

Figure 2. Conceptual framework.

proposed by Fiedler (1967) and Myers (1977) and are extensively used in corporate finance literature to analyze the factors influencing CFOs' investment decisions and their impact on organizational performance. Fiedler (1967) predicted that there is no perfect way to lead an organization as the managers/leaders' decisions are influenced by various internal and external factors. Contextually, contingency theory may allow an understanding of how different internal factors such as firm resources, goals, technology, culture, managers' demographics, and external political, economic, and regulatory environment may influence the selection of CBTs (Chen, 2008). Simultaneously, the real option theory is expected to critically appraise the investments by reviewing the impact of SCBTs on the FP of the firms operating in a highly competitive and uncertain business landscape (Ashuri et al., 2011).

The theory of real option contends that investment decisions in uncertain circumstances can be held, delayed, and postponed (Myers, 1977). This theory offers theoretical underpinnings to understand and examine the CBTs of firms operating with limited resources and uncertain conditions (Ashuri et al., 2011; Chen, 2006; Slade, 2001). CFOs of Smaller firms especially, SMEs remain vigilant while evaluating investment decisions so that the management of such firms have operating flexibility in case of new information (Verbeeten, 2006). The critics of sophisticated CBTs conferred that the use of real options such as PBM and ARR is superior compared to NPV and IRR techniques due to flexibility in investment appraisal. SMEs, often characterized by their small size, limited access to resources, and uncertain economic conditions require CFOs to remain cautious and efficient in their CB decisions (Hornstein, 2013). This study posits that SMEs tend to rely on conventional (PBM and ARR) CBTs as the managers can easily decide whether to peruse, hold or delay the investments (Chittenden & Derregia, 2015). The results of the empirical literature on CBTs in SMEs present mixed and inconclusive findings as some studies have found a positive impact on FP (Alles et al., 2021; Block, 1997; Nunden et al., 2022; Peel & Bridge, 1998) and a few studies reported its negative impact on firms' value (Brounen et al., 2004; Charoenwong et al., 2024; Graham & Harvey, 2002). This leads us to propose the first research hypothesis (H1) as follows;

H1: Conventional CBTs affect the FP of SMEs.

The contingency theory asserts that one size does not fit all (Fiedler, 1967). Therefore, strategic financing decisions of large should be taken according to their existing conditions (Alsharif et al., 2019;). Following contingency theory, Haka (1987) claimed that investment decisions are influenced by internal and external factors that are likely to impact firms' operations and overall performance. CB studies have attempted to link managers' demographics (gender, age, and knowledge and skill), firms' access to resources and size to the internal factors that may push CFOs to adopt simple CBTs (Alles et al., 2021; Graham & Harvey, 2001; Sureka et al., 2023). The external factors including the political, economic, and regulatory environment of the firm are highly influential in rendering a suitable CB approach (Andrews & Butler, 1986; Eljelly & Abuidris, 2001; Hermes et al., 2007). LLFs' attributes as access to higher resources, concentrated ownership, and undertaking large investment projects prioritize innovative CBTs such as NPV, IRR, and PI (Angelo et al., 2018; Batra & Verma, 2017; Ryan & Ryan, 2002). These sophisticated CBTs are not affected by information uncertainty as the firms have exceptional interconnection between departments allowing them to overcome the issues of new information (Tam, 1992). Also, sophisticated CBTs are featured as specialized long-term investments to achieve economies of scale and long-term growth. The plethora of studies on CBTs of large firms confirms that sophisticated CBTs improve the FP of large firms (Hermes et al., 2007; Nurullah & Kengatharan, 2015; Puwanenthiren, 2022; Siziba & Hall, 2021). Conversely, a few studies found a negative relationship between sophisticated CBTs and large firms FP (Haka et al., 1985; Pike, 1984). Thus, the second research hypothesis of this study is proposed as follows;

H2: *Sophisticated CBTs affect the FP of LLFs.*

3. Methods

3.1. Research sampling

The impact of CBTs on the FP of SMEs and LLFs is investigated and compared by obtaining secondary data between 2011 and 2020 of Indonesian firms. The geographical settings and the selected period were

key to the context of this study. Indonesian SMEs and LLFs are the key economic contributors and play a significant role in achieving the country's long-term development plans (ADB, 2022; OECD, 2022). Hence, understanding the CBTs of these firms will allow us to gain insight into real-time practices used by regulated entities for investment appraisal and estimating the impact on FP. Indonesian SMEs and LLFs have experienced several regulatory developments during the selected period (OECD, 2022). A few notable regulations were SMEs Law No. 20/2008 (defining SMEs and explaining governments' obligation to promote SMEs), Ministry of Home Affairs Regulation No. 83/2014 offering Guidelines for the licensing of SMEs, Presidential Regulation No. 2/2015 on National Mid-term Development Plan (formulating National Mid-term Development Plan 2015–2019 to align SMEs and LLFs policies), and Government Regulation No. 14/2015 on Master Plan of National Industry Development 2015-2035 (formulating industrial estate and centers for SMEs and LLFs) (ADB, 2022). These regulatory promulgations were game changers for SMEs and LLFs as they started making careful investment decisions to realize financial benefits.

The sampling of firms was done by following assets (Rp50 million–Rp10 billion), sales (Rp2.5 billion to Rp50 billion per annum), employment (1 to 99 employees), public financial disclosure (at least once a year), and listed on Indonesian Stock Exchange [Pt Bursa Efek Indonesia (BEI)] criteria set by the Ministry of Cooperatives and SMEs and the Ministry of Finance [Otoritas Jasa Keuangan (OJK)] of the Republic of Indonesia. Initially, we sampled 730 firms however, during data screening, we dropped 230 firms as they did not fully fulfill SMEs and LLFs' criteria and lacked required data. Altogether, we used 500 (SMEs = 250, LLFs = 250) firms as the final sample. Table 1 presents the number of firms and their respective industries used as a sample in this research.

3.2. Data, estimates, and econometric models

To estimate the impact of CBTs on the FP of SMEs and LLFs, we employed two main variables. The data for these variables is retrieved from the Asian Development Bank (ADB), Organisation for Economic Co-operation and Development (OECD) databases, and annual reports of LLFs. ADB, OECD, and annual financial reports are credible data sources due to their accuracy and reliability (Beattie et al., 2004; Zen & Regan, 2022) CBTs are operationalized as an independent variable and measured by conceptualizing that SMEs employ conventional CBTs (PBM and ARR) whereas, LLFs use sophisticated CBTs (NPV, IRR, and PI). We created dummy variables of CCBTs and SCBTs to represent conventional CBTs used by SMEs and sophisticated CBTs used by LLFs. A dichotomous scale was used to estimate CCBTs and estimated as '0', and SCBTs were estimated as '1'. While the use of a dichotomous scale appears restricted and does not indicate whether the firms actually use these CB approaches. However, these propositions are developed following the findings of the empirical literature (see, Alles et al., 2021; Mollah et al., 2023; Nurullah & Kengatharan, 2015; Peel & Bridge, 1998; Puwanenthiren, 2022) justifying the use of these dummy variables and contributing to propose novel approaches to estimate CBTs for SMEs and LLFs. FP is the dependent variable estimated by two dummy variables, return over assets (ROA) and return over equity (ROE). Earlier studies on CB have also used these variables as the indicators of FP hence, our approach is consistent with extant literature (Farragher et al., 2001; Haka et al., 1985; Johnson & Pfeiffer, 2016; Kim, 1981). Following the findings of seminal CB studies (Farragher et al., 2001; Graham & Sathye, 2020; Pike, 1984), we controlled firm size, board size, risk, capital intensity, and degree of focus as they potentially influence the FP of firms. Table 2 reports the explanations and sources of the variables used in this study.

Table 1. Statistics of sampled firms.

SMEs			LLFs		
Industries	N	%	Industries	N	%
Agriculture, forestry, and fisheries	67	26.8	Energy, oil, gas, and coal	73	29.2
Manufacturing	45	18	Agriculture and plantation,	52	20.8
Transportation and communication	41	16.4	Real estate management & development	41	16.4
Construction	38	15.2	Apparel and luxury goods	38	15.2
Wholesale and retail trade	36	14.4	Food and beverages	26	10.4
Other services	23	9.2	Media and entertainment	20	8
Total	250	100	Total	250	100

Table 2. Operational variables.

Variables	Explanation	Measures	Types	Symbols	Effect	Sources
CBTs	Following the extant literature review, it was conceptualized that SMEs employ conventional CBTs (CCBTs) such as PBM and ARR while, LLFs use sophisticated CBTs (SCBTs) such as NPV, IRR and PI.	The dummy variable CCBTs is measured by '0' representing CBTs of SMEs and SCBTs estimated by '1' representing CBTs rendered by LLFs.	Independent	CCBTs SCBTs	±	Alles et al. (2021), Mollah et al. (2023), Nurullah and Kengatharan (2015), Peel and Bridge (1998), Puwanenthiren (2022).
FP	FP was estimated through indicators of ROA and ROE.	ROA is the operating rate of return and was estimated by the ratio of operating cash flow divided by total assets, ROE is the return generated on the net assets of the firm and is estimated by the ratio of net income divided by average shareholders' equity.	Dependent	ROA ROE	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).
Size	It is an industry-adjusted measure of a firm's size	It is measured by the ratio of the total assets of the firm relative to the average total assets of the industry.	Control	SIZE	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).
Sales	The FP of both SMEs and LLFs is expected to be influenced by annual growth in sales.	The annual sales growth is estimated by the Log of real sales.	Control	SAL	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).
Risk	The Firms' operating risk is likely to influence the returns of the firms as higher risk leads to higher returns.	It was estimated by the coefficient of variation of firm operating income between 2011 and 2020.	Control	OR	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).
Capital intensity	The extant literature found that capital intensity influences the FP of SMEs and LLFs	It was estimated by the ratio of net fixed assets per employee divided by net fixed assets per employee of the respective industry of the firm.	Control	CI	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).
Degree of focus	Firms operating in industries with a large number of firms are likely to experience weak FP while, firms operating in industries with fewer firms are expected to indicate strong FP.	It was estimated by the ratio of the number of industries in which a firm operates divided by the average number of segments for firms in the same industry	Control	DOF	±	ADB (2022), Annual financial reports 2011–2020; OECD (2022).

The present study aims to verify and compare whether FP SMEs and LLFs are influenced by CCBTs and SCBTs. The recent developments in CB strategies have emerged as novel techniques to analyze the feasibility of investments in promoting the FP of SMEs and LLFs (Sureka et al., 2022). The hypothetical propositions H1 and H2 are investigated by creating the following economic models;

$$\mathrm{ROA}it = \emptyset 0 + \emptyset 1\mathrm{CCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \alpha i + \epsilon\iota \quad (1)$$

$$\mathrm{ROEit} = \emptyset 0 + \emptyset 1\mathrm{CCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \alpha i + \epsilon\iota \quad (2)$$

$$\mathrm{ROA}it = \emptyset 0 + \emptyset 1\mathrm{SCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \alpha i + \epsilon\iota \quad (3)$$

$$\mathrm{ROE}it = \emptyset 0 + \emptyset 1\mathrm{SCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \alpha i + \epsilon\iota \quad (4)$$

While, ROA and ROE are the indicators used to evaluate the FP in Eqs. (1), (2), (3), and (4). CCBTs and SCBTs are the dummy variables representing CB practices of SMEs and LLFs and are employed as predictors of FP. Besides main research variables, firm size (SIZE), sales (SAL), risk (OR), capital intensity (CI), and degree of focus (DOF) are imported as the control variables, $\mathcal{E}it$ is the random distributed error term, i specifies firm, and t represent firm-year. The proxies and indicators deployed for the

measurement of independent, dependent and control variables are commonly used in corporate finance studies for examining the impact of CBTs on the FP of firms validating the accuracy of our economic models (Farragher et al., 2001; Graham & Sathye, 2020; Haka et al., 1985; Johnson & Pfeiffer, 2016; Kim, 1981). Additionally, the econometric settings of the variables allowed us to create the panel data models catering to the time and cross-sectional attributes of the data. Therefore, the datasets of this study are considered superior data which allowed us to control the heterogeneity issues that frequently persist in cross-sectional data units. The data used in this study can also be categorized as diverse, flexible, and informative as it allowed us to efficiently capture the maximum number of observations to expound diverging findings (Gujarati & Porter, 2009).

3.3. Data analysis procedures

To analyze panel data, ordinary least squares (OLS), 2-stage least squares (2SLS), and generalized method of moments (GMM) are the prominent approaches. Each approach attributed to have its benefits and shortfalls, that is, OLS deliberates pooled regression technique using a single regression which pools the series of observations in a large dataset based on time and cross sections. OLS frequently generates biased output due to the prevalence of endogeneity and heterogeneity problems (Gujarati & Porter, 2009). An alternative econometric approach known as 2SLS is used to overcome these problems signifying its statistical accuracy in capturing the statistical relationship compared to the OLS technique (Bollen, 1996). However, one of the limitations of 2SLS is the failure to investigate the dynamic nexus between latent variables indicating that 2SLS is also not suitable for this study. Consequently, this study employs the GMM approach to simultaneously eliminate heterogeneity and endogeneity problems and estimate the dynamic impact of CCBTs and SCBTs on the FP of SMEs and LLFs. Thus, this study employs the following GMM regression models;

$$\mathrm{ROAit} = \emptyset 0 + \beta 1\mathrm{ROA}it - 1 + \emptyset 1\mathrm{CCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \propto i + \epsilon\iota \quad (5)$$

$$\mathrm{ROE}it = \emptyset 0 + \beta 1\mathrm{ROE}it - 1 + \emptyset 1\mathrm{CCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \propto i + \epsilon\iota \quad (6)$$

$$\mathrm{ROA}it = \emptyset 0 + \beta 1\mathrm{ROA}it - 1 + \emptyset 1\mathrm{SCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \propto i + \epsilon\iota \quad (7)$$

$$\mathrm{ROE}it = \emptyset 0 + \beta 1\mathrm{ROE}it - 1 + \emptyset 1\mathrm{SCBTs}it + \emptyset 2\mathrm{SIZE}it + \emptyset 3\mathrm{SAL}it + \emptyset 4\mathrm{OR}it + \emptyset 5\mathrm{CI}it + \emptyset 6\mathrm{DOF}it + \propto i + \epsilon\iota \quad (8)$$

The variables CCBTs and SCBTs in Eqs. (5), (6), (7), and (8) are endogenous to ROA and ROE confirming their consistency with the arguments established earlier in the conceptual framework of this study (Alles et al., 2021; Block, 1997; Farragher et al., 2001; Haka et al., 1985; Pike, 1984). After verifying the econometric validity, we employed Roodman's (2009) GMM approach to analyze the panel data. Additionally, the GMM approach is appropriate for the studies using large panel data (N) and has restricted it to small sample observations (T) representing that GMM regression outputs are expected to be robust as they do not rely on cross-sectional dependence tests. This technique is commonly applied in corporate finance studies to investigate the linkage between CBTs and FP of firms. Nonetheless, to statistically investigate the effect of CBTs on the FP of firms, this study prioritized the GMM approach over other statistical techniques due to its capability of producing robust results that are unaffected by heterogeneity and endogeneity problems. We used Sargan and Arellano-Bond tests to verify our contentions and found that the instrumental variables are free of correlation or autocorrelation (AR2) issues which further justified the use of the GMM technique.

Table 3. Descriptive statistics.

Variables	Mean	Median	Maximum	Minimum	SD	Skewness	Kurtosis	Jarque-Bera	Probability
ROA	3.10	2.16	1.35	−1.48	1.618	0.148	0.751	3.715	0.011
ROE	1.64	1.59	1.21	1.21	1.276	0.227	0.337	6.132	0.001
CCBTs	7.16	6.78	10.17	2.13	3.314	0.348	3.670	10.320	0.001
SCBTs	31.47	30.33	20.58	7.15	18.374	0.464	6.825	18.318	0.001
SIZE	33.67	34.18	78.42	16.40	23.478	0.528	11.714	22.616	0.001
SAL	18.39	20.35	42.65	15.17	14.442	0.663	18.230	38.394	0.001
OR	76.37	80.16	88.12	23.64	67.235	0.779	31.154	62.784	0.000
CI	18.76	18.93	34.73	14.41	12.186	0.889	13.593	21.884	0.001
DOF	9.15	10.12	12.76	3.18	4.422	0.997	7.773	10.650	0.001

4. Results and discussion

Before proceeding to the main findings, we performed descriptive and correlation analysis. Table 3 reports the descriptive statistics of instrumental variables. It is observed that the mean, median, and standard deviations of outcome (ROA and ROE) and predictors (CCBTs and SCBTs) are positive which explains the peak distribution and significant changes in both variables. The difference between high and low performance of the indicators (CCBTs and SCBTs) of CBTs is notable representing that the outcome variables are likely to experience a positive effect. The high index values of CCBTs and SCBTs range between 10.17 and 20.58 whereas low values are within the range of 2.13 and 7.51. Hence, it is anticipated that increasing CBTs value is expected to influence the ROA and ROE of Indonesian firms.

The correlations between observable are presented in Table 4. The results conferred that the econometric models of this study do not exhibit multicollinearity issues. This assertion is also verified by performing the Variance Inflation Factor (VIF) test. The results of the VIF test are presented in Table 5. The coefficients of VIF are less than the minimal threshold (VIF $>$ 10) which confirms that our regression models do not contain serious multicollinearity problems (Bring, 1994).

The current empirical study attempts to verify whether different CBTs (CCBTs and SCBTs) affect the FP of Indonesian SMEs and LLFs by postulating H1 and H2. Before testing the research hypotheses, it is critical to assess whether heterogeneity persists in self-reported data. This was addressed by testing the independence of cross-sections following Driscoll and Kraay (1998) technique. Table 6 reports the

Table 4. Correlation matrix.

Variables	ROA	ROE	CCBTs	SCBTs	SIZE	SAL	OR	CI	DOF
ROA	1								
ROE	0.325	1							
CCBTs	0.247	0.197	1						
SCBTs	0.148	0.364	0.230	1					
SIZE	0.289	0.409	0.386	0.298	1				
SAL	0.348	0.364	0.671	0.276	0.238	1			
OR	0.389	0.247	0.252	0.136	0.229	0.398	1		
CI	0.510	0.385	0.284	0.324	0.265	0.172	0.197	1	
DOF	−0.133	−0.096	−0.112	−0.088	−0.164	−0.143	−0.319	0.252	1

Table 5. VIF test results.

Variables	VIF	1/VIF
CCBTs	0.98	0.311
SCBTs	1.16	0.368
SIZE	0.85	0.287
SAL	0.76	0.256
OR	1.38	0.414
CI	1.47	0.432
DOF	1.69	0.495
Mean VIF	1.18	

Table 6. Cross-sections dependence results.

	ROA	CCBTs	SCBTs	SIZE	SAL	OR	CI	DOF
Cross-sectional independence	0.621	0.753	0.241	0.876	0.631	0.509	0.218	0.124
Off-diagonal elements	0.325	0.406	0.238	0.476	0.317	0.538	0.237	0.303
	ROE	**CCBTs**	**SCBTs**	**SIZE**	**SAL**	**OR**	**CI**	**DOF**
Cross-sectional independence	1.236	1.348	0.876	0.873	0.738	0.860	0.778	0.674
Off-diagonal elements	0.739	0.862	0.685	0.565	0.418	0.629	0.393	0.235

Table 7. Results of heterogeneity test (adjusted slope method).

Models	Statistics	Coefficient	*p*
ROA	Slope	0.658	0.221
	Adjusted slope	0.895	0.471
ROE	Slope	0.916	0.596
	Adjusted slope	0.974	0.694

Table 8. Results of GMM regression (The impact of CCBTs and SCBTS on FP of SMEs and LLFs).

Dependent variables	Model 1 ROA	Model 2 ROE	Model 3 ROA	Model 4 ROE	Model 5 ROA	Model 6 ROE
Lagged of dependent variables	0.048**	0.014**	0.027**	0.031**	0.048*	0.039**
	(0.011)	(0.008)	(0.013)	(0.018)	(0.023)	(0.016)
CCBTs	0.036	0.028	0.023	0.041	0.026	0.034
	(0.007)	(0.011)	(0.008)	(0.005)	(0.014)	(0.018)
SCBTs	0.053***	0.045***	0.067***	0.055***	0.049***	0.032***
	(0.017)	(0.023)	(0.028)	(0.019)	(0.026)	(0.008)
SIZE	0.023***	0.038***	0.034***	0.026***	0.021***	0.019**
	(0.010)	(0.015)	(0.009)	(0.013)	(0.008)	(0.002)
SAL	0.012***	0.021**	0.027***	0.034*	0.028**	0.036*
	(0.034)	(0.004)	(0.035)	(0.026)	(0.015)	(0.012)
OR	0.053***	0.046**	0.032**	0.036**	0.028*	0.022**
	(0.017)	(0.023)	(0.017)	(0.014)	(0.008)	(0.011)
CI	0.017**	0.028*	0.026***	0.033**	0.010**	0.014**
	(0.002)	(0.004)	(0.014)	(0.007)	(0.002)	(0.010)
DOF	−0.028*	−0.026**	−0.019*	−0.023*	−0.016***	−0.038*
	(0.011)	(0.008)	(0.005)	(0.008)	(0.001)	(0.020)
Constant	0.467***	0.354*	0.469***	0.376*	0.235**	0.485**
	(0.035)	(0.149)	(0.193)	(0.114)	(0.017)	(0.037)
Annual effect	Yes	Yes	Yes	Yes	Yes	Yes
AR(1) *p* values	−2.16	−2.26	−2.37	−2.39	−2.24	−2.31
	(0.07)	(0.04)	(0.03)	(0.05)	(0.04)	(0.04)
AR(2) *p* values	−2.38	0.44	0.52	0.67	0.61	0.58
	(0.03)	(0.13)	(0.37)	(0.28)	(0.32)	(0.13)
Hansen test's *p*-values	0.78	0.67	0.58	0.62	0.59	0.55
Obs.	1637	1673	1721	1612	1542	1596

Note. The operationalized variables are defined and explained in Table 2.
* Significant at 1% level.
** Significant at 5% level.
*** Significant at 10% level.

dependence results of cross-sections. The findings determine that the data cross-sections are independent. To reinforce our findings, we conducted a Slope heterogeneity test and analyzed the coefficients of cross-sections. It is observed that the coefficient values of cross sections in Table 7 are identical which leads us to establish that heterogeneity problems are less likely to influence the results of the present study. Therefore, it is feasible to employ the GMM technique to analyze the self-reported panel data. This study employs 6 different GMM regression models to analyze 1800 firm-year observations to estimate the impact of CCBTs and SCBTs on SMEs and LLFs.

The research hypotheses of this study are tested by employing the GMM regression technique. Table 8 reports the empirical results of GMM regression output. An overview of the GMM estimate reveals that both CCBTs and SCBTs are positively related to ROA and ROE. Also, the coefficients of both outcome indicators (ROA and ROE) follow a significant (strong and moderate) positive trend.

To ensure that our results are robust, CCBTs proxy was dropped and GMM regression analysis was reperformed by employing SCBTs to test whether it affects the FP of both SMEs and LLFs in Indonesia. This approach was adopted following the results of recent studies claiming that modern firms including SMEs need to employ SCBTs to improve their FP (Alles et al., 2021; Peel & Bridge, 1998; Sureka et al., 2023). Table 9 reports the findings of robustness checks. The results delineate that SCBTs positively influence the performance of SMEs and LLFs which is consistent with the earlier findings presented in Table 8. Contrary to our expectations, SCBTs have a moderate significant and a weak significant impact on the indicators of ROA and ROE of SMEs. Another notable feature of robustness findings was its strong significant impact on the indicator of ROE. A careful explanation of this result is increasing variations in the capital structure of SMEs require implementing modern SCBTs for a profitable outcome of investment decisions. Despite the underlying challenges of SMEs in adopting SCBTs, this result validates the narratives of a recent study that CFOs of SMEs should start using SCBTs for the appraisal of investments (Sureka et al., 2023).

The research hypotheses (H1 and H2) are tested through the GMM regression technique. The results of GMM regression in Table 8 (Models 1, 3, and 5) indicate that the CCBTs' proxy and all control variables have an insignificant positive ($\beta = 0.036$, $p < 0.01$; $\beta = 0.023$, $p < 0.01$; $\beta = 0.026$, $p < 0.01$) impact on ROA. The coefficient values of GMM regression in Models 2, 4, and 6 also reveal that CCBTs have an insignificant positive impact on the ROE indicator ($\beta = 0.028$, $p < 0.01$; $\beta = 0.041$, $p < 0.01$; $\beta = 0.034$,

Table 9. Robustness checks.

Dependent variables	Model (1) ROA	Model (2) ROE	Model (3) ROA	Model (4) ROE	Model (5) ROA	Model (6) ROE
Lagged of dependent variables	0.036***	0.044**	0.028***	0.022***	0.049***	0.021**
	(0.010)	(0.028)	(0.011)	(0.003)	(0.017)	(0.002)
SCBTs	0.045***	0.027**	0.025***	0.041**	0.036***	0.038**
	(0.011)	(0.009)	(0.004)	(0.022)	(0.016)	(0.007)
SIZE	0.027***	0.031***	0.046***	0.033*	0.037**	0.028*
	(0.010)	(0.012)	(0.018)	(0.010)	(0.005)	(0.013)
SAL	0.046***	0.039**	0.034***	0.050*	0.048**	0.032*
	(0.002)	(0.004)	(0.001)	(0.012)	(0.014)	(0.016)
OR	0.026***	0.031**	0.028***	0.023**	0.021***	0.024**
	(0.008)	(0.010)	(0.017)	(0.006)	(0.003)	(0.010)
CI	0.035***	0.021**	0.028***	0.032**	0.035***	0.026**
	(0.012)	(0.008)	(0.006)	(0.015)	(0.013)	(0.005)
DOF	−0.032*	−0.029**	−0.027**	−0.022*	−0.026*	−0.038*
	(0.005)	(0.002)	(0.010)	(0.013)	(0.014)	(0.018)
Constant	0.326***	0.142*	0.460***	0.394*	0.318***	0.275**
	(0.010)	(0.004)	(0.013)	(0.016)	(0.006)	(0.002)
Annual effect	Yes	Yes	Yes	Yes	Yes	Yes
AR(1) *p* values	−2.26	−2.30	−2.20	−2.34	−2.39	−2.46
	(0.08)	(0.07)	(0.06)	(0.03)	(0.01)	(0.03)
AR(2) *p* values	0.37	0.75	0.47	0.55	0.64	0.70
	(0.06)	(0.26)	(0.34)	(0.27)	(0.29)	(0.38)
Hansen test's *p*-values	0.55	0.58	0.61	0.67	0.58	0.54
Obs.	1332	1289	1286	1262	1286	1286

Note. The operationalized variables are defined and explained in Table 2.
* Significant at 1% level.
** Significant at 5% level.
*** Significant at 10% level.

$p < 0.01$) inferring that H1 was not fully supported. Although CCBTs proxy represented a positive influence on ROA and ROE indicators, the FP of SMEs may experience slight changes. The results of H1 contradict the findings of numerous studies (see, Alles et al., 2021; Block, 1997; Nunden et al., 2022; Peel & Bridge, 1998) disseminated that SMEs should employ CCBTs (PBM and ARR) offer operating flexibility and allow their decision makers whether to pursue, hold, or delay investments. This is logical for SMEs operating in a dynamic business world regularly generating new information hence, efficient consumption of information and flexibility in CB approaches do not affect the routine business operation and profitability of SMEs (Tam, 1992; Verbeeten, 2006). These results are consistent with the findings of Brounen et al. (2004), Charoenwong et al. (2024) and Graham and Harvey (2002) conferred that CCBTs are defective and fail to explain the strategies for managing SMEs' long-term funds. While investigating the barriers to employing SCBTs, the findings of a recent study deliberated similar findings and highlighted that the lack of knowledge and skills of the decision-makers and inherent issues in CCBTs risk the future survival of SMEs (Sureka et al., 2023). This leads us to argue that business entities like SMEs often characterized by financial constraints and operating in a highly competitive business environment need to reassess their investment appraisal techniques.

GMM regression of coefficients in Table 8 (Models 1, 3, 5) represents that SCBTs have a significant (strong) positive effect on ROA ($\beta = 0.053$, $p > 0.01$; $\beta = 0.067$, $p > 0.01$; $\beta = 0.049$, $p > 0.01$). The findings (Models 2, 4, 6) also indicate that SCBTs obey a similar trend of a significant (moderate) positive impact ($\beta = 0.045$, $p > 0.01$; $\beta = 0.055$, $p > 0.01$; $\beta = 0.032$, $p > 0.01$) on ROE indicator validating that H2 of this study was fully supported. This finding validates the contentions of previous studies recommending LLFs in developing and developed economies to practice SCBTs (De Andrés et al., 2015; Eljelly & Abuidris, 2001; Haka, 2006). Indeed, SCBTs allow LLFs to strategically mitigate internal and external organizational risks and maintain their profitability by making long-term strategic financing decisions (Alsharif et al., 2019; Haka, 1987; Hermes et al., 2007). This result also allows debunking of the critics against CFOs who prefer employing SCBTs in firms operating in a fast-changing and uncertain business environment (Haka et al., 1985; Pike, 1984). The findings of this study have just established that despite the flow of new information, clear barriers in employing SCBTs, and saturation of global markets, LLFs can quickly absorb new information, overcome the underlying barriers, and economies of scale offer significant rationales for these firms to use SCBTs in taking investment decisions and improve their financial portfolios (Angelo et al., 2018; Siziba & Hall, 2021; Sureka et al., 2022).

Another striking feature of GMM regression results presented in Table 8 is associated with the findings of control variables. Notably, all our control variables (SIZE, SAL, OR, and CI) appear significant and positive (except DOF) during the analysis. This result is also consistent with the earlier studies on CB rendering that firm size, annual sales growth, operating risk, and capital intensity have a positive effect on FP (Farragher et al., 2001). Particularly, it was notable that all our control variables were significant (positive/negative) while estimating SCBTs impact on ROA proxy. This finding implies that firms looking to grow their size, and sales, and generate high returns by increasing their investments in long-term assets may enjoy higher profits in the future (Klammer & Walker, 1984; Kwong, 1986). DOFs' significant and negative trend can be explained by the fact that Indonesian firms (SMEs and LLFs) are operating in highly saturated markets with a large number of industries and it is common for the firms to experience low FP while operating in such an environment.

5. Conclusions

The global business entities including SMEs and LLFs particularly, operating in developing countries employ numerous CBTs. The investment decision makers of these firms are yet to agree on commonly practiced CBTs due to the lack of studies identifying the most profitable outcome. Thereby, the present study has attempted to examine how different CBTs may influence the FP by conceptualizing that CCBTs are practiced in SMEs and SCBTs are employed in LLFs. The associated data between 2011 and 2020 was obtained and processed using the GMM regression technique. The results offer interesting facts about the impact of different CBTs on the FP of the firms operating in an emerging economy. Precisely, it was observed that CCBTs have an insignificant positive impact on ROA and ROE indicators used for estimating the FP of SMEs. Alternatively, we found that SCBTs have a significant (strong and moderate) positive impact on ROA and ROE indicators operationalized as the proxies to compute the FP of LLFs. Simultaneously, robustness checks strengthened our assertions of the profitable relevance of SCBTs for LLFs as well as stemmed that SMEs may gain financial benefits by employing SCBTs.

5.1. Research implications

This study exhibits various practical and theoretical and practical implications. First, our findings highlight the use of the real option and contingency theories by authenticating their relevance and significance in developing conceptual frameworks to investigate CBTs and their impact on the FP of different business entities. Our findings have contributed to proposing an overarching conceptual framework by importing the logic of these theories and extending their implications in corporate finance literature. Second, the research findings of this study contributed to developing a conceptual framework for future researchers looking to explore the financial outcome of different CB approaches. Third, without disregarding the benefits of CCBTs in SMEs and LLFs; the empirical results of this study have revealed that probably it is time for these firms to start using SCBTs while making their major business decisions. This requires regulatory interventions and support in developing a roadmap for implementing SCBTs in these firms. Fourth, the financial managers (CFOs) and the owners of the businesses should start learning and acquiring knowledge and skills about SCBTs and how to operationalize such techniques to maximize FP. The business managers of SMEs may view these implications as controversial however, SCBTs can be used as a syndicate or even on a trial basis while making investment decisions involve small investments. Fifth, the financial consultants may consider our findings to identify and recommend the knowledge, skills, education, and training required for financial managers to successfully employ SCBTs.

5.2. Limitations and future research pathways

Similar to any corporate finance study, the results of this research also suffer from theoretical, data collection and analysis limitations. The constructs used in this study are imported from extant literature and the use of each construct is linked scientifically and logically to CBTs and FP of the firms. However, a large number of studies agreed that the selection of a particular CB approach is linked to the behavioral features (education, age, knowledge, and skill) of financial decision-makers (CFOs) which potentially

may change the use of CBTs and may result in different financial outcomes. Future studies are recommended using an integrated conceptual framework that incorporates these factors to explore how these factors have interacted in selecting a particular CB approach and the impact of such techniques on FP. The data used in this study was collected from credible sources and each procedure was explained and justified. However, the data used for the measurements of certain variables such as ROA and ROE may not represent the actual changes in FP of firms. These indicators of FP are criticized due to their limitations in estimating the risks and actual cash flows generated in an investment project. The perspective studies are encouraged to use diverging indicators of FP to gain a better insight into the changes in the profitability of firms. The present study employed numerous measures guided by GMM regression to statistically prove the accuracy of results. However, heterogeneity and multicollinearity issues may still persist due to the nature of secondary data. Future researchers are recommended to use additional measures such as 2-stage or multistage GMM regression to enhance the robustness of the results.

Authors' contributions

Conceptualization, Pupung Purnamasari; data curation, Adriza; formal analysis, Pupung Purnamasari and Adriza; funding acquisition, Pupung Purnamasari and Adriza; investigation, Pupung Purnamasari; methodology, Pupung Purnamasari; project administration, Adriza; resources, Pupung Purnamasari; software, Adriza; supervision, Adriza; validation, Pupung Purnamasari; visualization, Adriza; writing – original draft preparation, Pupung Purnamasari and Adriza; writing – review and editing, Pupung Purnamasari and Adriza

Disclosure statement

The authors declare no conflict of interest.

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Data availability statement

The datasets of this article are freely accessible from [https://data.adb.org > media > download; https://www.oecd-ilibrary.org/sites/13753156-en/index.html?itemId=/content/component/13753156-en] and are also available from corresponding author on a reasonable request.

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