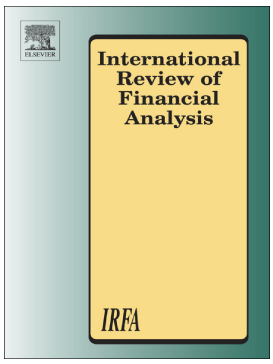

Corporate life cycle research in accounting, finance and corporate governance: A survey, and directions for future research

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Corporate life cycle research in accounting, finance and corporate governance: A survey, and directions for future research*

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Abstract

Corporate life cycle has received considerable interest in the accounting, finance and corporate governance literature. We synthesize this literature to inform readers about the valuable insights gained from these studies, and to outline knowledge gaps and future research directions. Although papers studying the determinants of corporate life cycles are few in number, our review suggests that managerial efficiencies, flexibility, and the resource-base of the firm drive the transition through the corporate life cycle. The bulk of the reviewed papers examine the implications of firm life cycle studies, and we categorize these into three groups: (i) financial reporting and management accounting implications, (ii) financial policy implications, and (iii) corporate governance implications. Our review suggests that the corporate life cycle has considerable effects on firms' financial reporting and corporate disclosures, corporate investment, financing and dividends decisions; and on corporate governance and socially responsible behavior. In surveying the growing body of literature on the corporate life cycle, we identify critical short-comings of past studies, and offer suggestions for future studies.

Keywords: Corporate life cycle; financial reporting; finance; corporate governance.

1. Introduction

A wave of empirical studies has emerged over the previous two and half decades showing corporate life cycle to have considerable effects on firms' financial reporting, corporate financial policies, and corporate governance mechanisms. The purpose of this paper is to review this literature, critique the existing literature, and offer suggestions for future research. Corporate life cycle theory has its origin in organizational science literature. The conventional corporate life cycle model suggests that firms progress monotonically from birth to decline, and strategies, structures, and activities of firms change accordingly (Gray and Ariss, 1985; Miller and Friesen, 1980, 1984; Quinn and Cameron, 1983). Penrose (1959) provides a general theory of growth of the firm, arguing that a firm's growth depends on its resources and productive opportunities. Other studies also show that organizational structure corresponds to the growth strategy designed to exploit external opportunities (Chandler, 1962).

The prior studies suggest that the existence and application of a set of valuable, sparse, immoveable and inimitable resources provides sustainable competitive advantage (Barney, 1991), which, in turn, determines the growth and transition of firms over the life cycle stages (Helfat and Peteraf, 2003; Miller and Friesen, 1984; Quinn and Cameron, 1983; Wernerfelt, 1984). Helfat and Peteraf (2003) extend this literature by introducing 'the dynamic resource-based theory', which argues that the resource base fostering firm's competitive advantage develops over a period of time, and may shift over time: characteristics that result in various life cycle stages. Contemporary life cycle studies support this view, and show that firms' transition over the life cycle is non-linear, and firms can move back and forth from one stage to another in their life cycle (Dickinson, 2011).

The firm life cycle has valuable impact on management and business strategy and, therefore, the stages in the life cycle are a key determinant of organizational competitiveness.

However, many of the studies in the aforementioned fields are conceptual rather than empirical. Studies in accounting and finance overcome this limitation by developing accounting-based metrics for categorizing life cycle stages, and exploring both the antecedents and the implications of firms' transition over the life cycle stages. Recent studies show that corporate life cycle stages are strongly related to "real" corporate decisions and outcomes, such as corporate cash holding, net investment in plant, property and equipment, debt and equity issuance, acquisitions and diversification decisions, corporate financial disclosures and tax planning (Arikan and Stulz, 2016; Faff et al., 2016). Investors and other market participants (e.g., analysts) also take life cycle stages into account in asset pricing and estimation (Hasan et al., 2015). In addition, life cycle studies also offer important implications in relation to policy debates (e.g. tax compliance efforts of Internal Revenue Service (IRS) for firms at different stages of their life cycle progression). Given the surge in corporate life cycle literature, the importance of life cycle in affecting corporate decisions, and the associated policy implications, we argue that it is important and timely to review the extant life cycle studies, to synthesize the valuable insights gained from these, and to offer future research directions for further extending the life cycle literature.

We adapted Brauer's (2006), Haleblian et al.'s (2009), and Schweizer and Nienhaus's (2017) approaches to selecting papers for review by identifying, reviewing, and classifying relevant works. First, we defined a review period from 1992 to 2018, to ensure the inclusion of all studies from 1992 when Anthony and Ramesh's (1992) empirical work on accounting-based measures for classifying life cycle stages was published. Second, we identified two research areas on which to focus our search: namely, accounting and finance, for reasons outlined before. Third, we conducted a keyword search that included: life cycle; firm life cycle; corporate life cycle; organizational life cycle; and dynamic life cycle. We used these search terms to retrieve articles

from EBSCOhost, Emerald Insight, Scopus, and Web of Science. We also searched the Social Science Research Network (SSRN) for working papers. In addition, we used Google Scholar to screen all the relevant papers by using the aforementioned keywords. We skimmed through the articles initially derived, to identify whether they tested, empirically, the determinants and consequences of organization life cycle. We then included published and working papers in the field of accounting and finance for review. To make the review comprehensive, we also included those articles that investigated the consequences of organization life cycle from an accounting and finance perspective, but were published in non-accounting and finance journals. Our review is 'systematic' in nature and, therefore, we incorporate all available research relevant to the corporate life cycle literature in accounting and finance, irrespective of whether these studies use traditional proxies for life cycle (e.g., firm age, IPO cohort, etc.) or proxies that capture the dynamic nature of firm life cycle.

The aforementioned procedures identified a total of 81 papers consisting of 60 published papers and 21 working papers.[1] In the disciplines of accounting, finance and corporate governance, an overwhelming majority of 74 papers examine the implications of firm life cycle, whilst only 7 papers examine the determinants of firm life cycle. Of the 81 papers, 2 followed an analytical approach and 5 used mail surveys/interview techniques, while the remaining 74 papers used empirical archival techniques. Of the 74 implications-type papers, 27 papers focused on accounting-related implications, 34 papers focused on finance-related implications and, finally, 13

[1]An important consideration for any literature review is whether to include unpublished working papers along with published studies. We included working papers in our primary review because (i) inclusion of relevant working papers will provide a complete understanding of the life cycle literature; (ii) it is not logical to offer future research directions without reviewing the unpublished working papers; (iii) the exclusion of working papers may generate selection bias; and (iv) unpublished papers are likely to be subsequently published. Our approach, therefore, differs from the 'structured' approach, which requires selecting "A specific set of articles based on the current impact of scholarly journals in the field…One way to do this is to make a keyword search of the top 20 journals in a specific field" (Massaro et al., 2016, p. 779).

papers focused on governance-related implications. Of the 60 published papers, 11 appeared in non-accounting and finance journals.

The empirical accounting and finance studies on the determinants of firm life cycle stages examine whether management practices, investment in intangible assets (e.g., organization capital), organizational rigidities and foreignness of the firms explain the firm life cycle stages and its exit pattern (Hasan and Cheung, 2018). Findings from these studies suggest that managerial efficiencies, flexibility and resource-base of the firm drive the transitions of firms' life cycles.

The accounting literature that focuses on the implications of firm life cycle stages suggests that life cycle stages have a valuable bearing on the relevance and quality of financial accounting and management accounting information. The finance literature, on the other hand, shows that life cycle affects corporate investment, financing and dividend policies, as well as asset pricing. Research on the implications of firm life cycle for corporate governance practice explores how internal and external corporate governance varies with the firm life cycle stages.

The paper proceeds as follows. In section 2, we provide an overview of the measurement of firm life cycle as applied in existing research. In Section 3, we review the accounting and finance studies that explore the determinants of firm life cycle stages. Section 4 reviews the *accounting literature* on the consequences of organization life cycle. Section 5 reviews the literature that examines the *financial implications* of the organization life cycle. Section 6 reviews the literature that explores the interdependencies between the life cycle stages and the *corporate governance* of firms. Finally, Section 7 concludes the paper.

2. Measures of corporate life cycle

Estimating firm life cycle stages is a complicated exercise. This is because an individual firm is composed of many overlapping, but distinct, products and a firm may operate in diverse industries

with multiple product-lines. It is possible for each product and industry-segment of an individual firm to pass through a different life cycle stage, making it difficult to accurately depict the transition of life cycle stages at the firm level (Dickinson, 2011; Faff et al., 2016; Hasan et al., 2015). Despite this, extant literature proposes some univariate measures of corporate life cycle, including firm age, size, and profitability (Bhattacharya et al., 2004), and the accounting and finance literature uses firm age as a popular proxy for firm life cycle. While these proxies do provide some indications about firm maturity, they are unlikely to capture a firm's life-cycle on their own owing to their inherent limitations (Faff et al., 2016). For example, firm size and age assume a firm progresses linearly over the life cycle, whereas recent studies suggest that a firm's movement over the life cycle is dynamic (Helfat and Peteraf, 2003). Moreover, the univariate measures of firm life cycle cannot truly classify firms into different life cycle stages and, thus, they provide only partial information about the firm life cycle.

Dickinson (2011) and Faff et al. (2016) further argue that firm age is not a good proxy for life-cycle for some additional reasons. First, the time needed for firms to move from one life cycle stage to another varies across industries. Second, "…experiential learning causes a divergence between firm life cycle and firm age. Firms of the same age can learn at different rates because of imperfections in their feedback mechanisms…" (Dickinson, 2011, p.1975). Third, extant studies mostly use listing year to measure firm age. However, many firms may continue as unlisted private firms for a long period of time: a fact that introduces noise into the measurement of firm age (Faff et al., 2016). In a relatively recent study, DeAngelo et al. (2006) argue that retained earnings as a proportion of either total assets (RE/TA) or total equity (RE/TE) provides a reasonable indication of corporate life cycle, in that a firm with higher RE/TA or RE/TE is mature or older, while a firm with lower RE/TA or RE/TE is young and growing. Recent empirical studies use this as an

alternative life cycle proxy (Faff et al, 2016; Habib and Hasan, 2017; Hasan et al., 2015; Owen and Yawson, 2010). However, in our view, although RE/TA or RE/TE overcomes the linear progression assumption inherent in the firm age-based life cycle proxy, they cannot truly classify firms into different life cycle stages.

The multi-stage life cycle models mitigate some of the limitations of the univariate life cycle measures indicated earlier. The management science and strategy literature offers several such models that differ in terms of the number of stages involved, and the features that correspond to each stage. For example, Greiner (1972) proposes a five-stage model from growth through creativity. Adizes (1979) proposes a ten stage model ranging from courtship (where the firm exists only as an idea) to death. Kazanjian and Drazin (1990) propose a four stage model commencing with 'conception' and finishing with 'stability'. Gort and Klepper (1982) suggest five stages in the firm life cycle, viz., introduction, growth, maturity, shake-out and decline. Miller and Friesen (1984) propose a model that classifies firms into five common phases: birth, growth, maturity, revival and decline.

Anthony and Ramesh (1992) is the first empirical study that uses an accounting information-based life cycle model. They use four variables: age, sales growth, dividend yield, and capital expenditures, to categorize firms into multiple stages of the life cycle: growth, growth/mature, mature, mature/stagnant, and stagnant. Although this measure of firm life cycle can track the transition of a firm over the life cycle, it suffers from some limitations. For example, construction of firm life cycle stages using this measure requires a six year history of the underlying variables, thereby, reducing the probability of observing the true 'introduction stage' firms in the sample. In addition, Dickinson (2011) shows that classification of firms into different

life cycle stages based on Anthony and Ramesh (1992) is largely erroneous, because the underlying variables fail to capture attributes of the firm life cycle.

Drawing on the implications from diverse research areas, such as production behavior, learning/experience, investment, market share and entry/exit patterns, Dickinson (2011) provides a firm-specific life cycle measure using data from the firm's cash flow statement. She argues that cash flows capture differences in a firm's profitability, growth and risk and, hence, one can use the cash flow from operating (OANCF), investing (IVNCF) and financing (FINCF) activities to group firms into five life cycle stages: 'introduction', 'growth', 'mature', 'shake-out' and 'decline'. This life cycle classification is identical to that of Miller and Friesen (1984). The Dickinson (2011) model has become a popular life cycle measure, as is evidenced from its growing use in contemporary life cycle research in accounting and finance (Faff et al., 2016; Hasan et al., 2015, Koh et al., 2015, among others).

Even though Dickinson (2011) shows that the life cycle classification based on cash flow statements incorporates implications from diverse research, and that this life cycle classification is superior to other available classification schemes, we argue that her methodology is also subject to limitations. For example, the life cycle method of Dickinson (2011) uses only the sign of the cash flow variables, without taking the magnitude of cash flow into account.[2] Arguably, a $1 value of OANCF is trivial when compared to that of $1 million. Nonetheless, the life cycle classification of Dickinson (2011) treats them equally. Moreover, under certain circumstances, cash flows suffer more severely from timing and matching problems, thereby, reducing their ability to reflect firm performance (Dechow, 1994) and, consequently, may capture only partial mapping of the firm life cycle stages. It has also been found that firms inflate reported cash from operations by shifting

[2] Dickinson (2011) also acknowledges this limitation (see footnote 6).

items between the statement of cash flows categories, as well as timing transactions (Lee, 2012). Such cash flow management can cause misclassification of life cycle stages. Another important limitation of the firm life cycle stages based on Dickinson (2011), is that US firms have been required to disclose cash flow data under the Statement of Financial Accounting Standards No. 95, beginning from 1987. Therefore, measurement of firm life cycle stages using the cash flow data is only possible for 1987 and onward.

Over the last two and half decades, much has been written about the implications of organization life cycle in accounting and finance, yet there has been comparatively little attention given to the underlying construction and estimation of life cycle stages. Our observations show that even though there has been criticism about the univariate life cycle proxies, these are still used in contemporary studies. It is our view that studies are sometimes insufficiently careful in indicating why a specific measure of firm life cycle is appropriate for their setting. Moreover, given the limitations of the cash flow-based measure of firm life cycle, we encourage future researchers to develop an alternative life cycle proxy to overcome the identified limitations of existing measures of firm life cycle.

We contend that use of a set of available life cycle proxies (both univariate and multi-level) in the estimation may provide reasonable confidence in the observed associations between life cycle and outcome variables. Even though some studies use more than one life cycle measure in the estimation, little or no attention has been paid to reconciling the observed differences in magnitude of economic effect that the different life cycle measures yielded. Future research should attempt to overcome the aforementioned limitations.

3. Accounting and finance literature on the determinants of firm life cycle

3.1 Determinants of life cycle stages

Early management and strategy literature provides a foundation for the evolution of firm life cycle. These studies indicate that the resource-base is the underlying basis for a firm's movement over the life cycle. Studies in accounting and finance also provide important insights, by exploring how organizational resources and structural rigidity affect firms' growth and transition over the life cycle stages.

3.1.1 Accounting studies on the determinants of firm life cycle: Extant studies in accounting explore the exit pattern of firms conditional on firm life cycle. For example, Agarwal and Audretsch (2001) investigate whether the size of firms is related with their likelihood of survival, conditional on industry life cycle. Their analyses show that although the likelihood of survival is relatively less for small entrants, this relationship does not hold for mature stages of the industry life cycle. Their findings indicate the importance of filling strategic niches within the industry to cope with the competition. Mata and Freitas (2012) contribute to this stream of literature by examining whether exit rates of foreign and domestic firms vary depending on firm life cycle stage. Using a data set on firms operating in Portugal, they document that, while the exit rate of foreign (purely domestic) firms increases (decreases) with maturity, domestic-based multinational firms do not follow this pattern. Warusawitharana (2016) uses data from 1997 to 2008 on private and public firms in the U.K. and shows that profitability of the sample firms shows a hump-shaped pattern: profitability increases with age for younger firms, remains elevated for some years, and declines slowly when firms reach the mature stage.

3.1.2 Finance studies on the determinants of firm life cycle: In a recent study Hasan and Cheung (2018) examine the relation between firm life cycle stages and organization capital, the latter being defined as "…the knowledge used to combine human skills and physical capital into systems for producing and delivering want-satisfying products" (Evenson and Westphal, 1995, p. 2337). Building on prior studies, they argue and find that organization capital affects a firm's entrepreneurial dynamics, productive capacity and operating efficiency, all of which influence the progression through a firm's life cycle stages (Helfat and Peteraf, 2003; Lev et al., 2009; Wernerfelt, 1984). Kueng et al. (2014) also provide support for this finding, in that organizational capital or management practices are the most important determinants of firm life-cycle dynamics and firm survival in Canada. Loderer et al. (2016) show that as firms mature, they become more rigid in exploiting benefits from the assets in place, do not consider renewing their growth opportunities and, hence, suffer a decline in firm value. Such organizational and operational rigidities cause firms to move to the latter stages of the life cycle.

Studies also relate venture capital (VC) to life cycle dynamics. Prior studies suggest that venture capitalists provide, not only access to finance, but also mentorship, strategic guidance, network access, and other non-financial support (Hellmann and Puri, 2000). Therefore, VC has the potential to influence the survival and success of newly established firms, and may also affect the transition of such firms to favorable life cycle stages in the future. Taking this perspective into account, Puri and Zarutskie (2012) explore whether VC financing explains corporate life cycle dynamics. Their study documents that VC financing is not particularly instrumental in creating new firms. Importantly, VC-financed firms grow larger and faster, and cumulative failure rates of VC-financed firms are lower than those of non-VC-financed firms, indicating the importance of VC financing in the survival and success of firms. However, their study largely overlooks whether

the financial and strategic support of VC has any role in influencing the transition through firm life cycles. Future study may shed light on this outstanding question.

3.2 Section summary

The studies reviewed above provide valuable insights into the factors explaining the determinants of firm life cycle. However, given the importance of corporations and their life cycle to industrial, economic and social well-being, considerable opportunities are there to further explore the antecedents that propel a firm's transition over its life cycle. For example, future research may explore how country level institutional factors (e.g., culture, good governance, cost of doing business, corruption, etc.) affect firms' life cycle stages. In addition, studies focus predominantly on the life cycle of public firms, and very little attention is directed to private firms. Future research may fill this gap in the literature.

4. Implications of firm life cycle research in accounting

4.1 Firm life cycle and the value-relevance of financial accounting information

Accounting research considers firm life cycle stages as proxies for the firm's economic characteristics, and suggests that firm life cycle should have a first order effect on financial performance and reporting quality (Zimmerman, 2013). Although firms at all life cycle stages are required to comply with the same mandatory financial accounting requirements, nonetheless, the relevance of accounting information varies over the firm life cycle stage.

As is well known at the early stage of firm life cycle, there are few assets in place, and this results in lower or negative operating cash flows and profit but substantial investments in tangible and intangible assets result in noticeable sales growth at the growth phase of the life cycle, generating positive operating cash flows and profit. Mature firms have higher assets in place and

less uncertain operating environments compared to the other stages of the life cycle, ensuring stable cash flows and profitability. Firms regenerate their investment and R&D activities at the decline stage of life cycle. Given the variability of earnings and cash flows over the firm life cycle, it is misleading to draw inferences about the relative usefulness of one set of accounting information over another by pooling a cross-section of firms and assuming a homogeneous sample of companies. Therefore, it is not surprising to find a number of empirical studies investigating the value-relevance of accounting information, proxied by the returns-earnings association, across firm life cycle stages.

Anthony and Ramesh (1992) examine the stock market response to accounting performance measures, namely, earnings, sales growth and capital expenditure, across firm life cycle stages. They find that unexpected positive earnings, sales growth and capital expenditure are the most (least) valued by the capital market during a firm's growth (stagnant) stage. Habib (2010), too, using data from Australia, shows that information related to revenue growth is value-relevant only during the growth stage of the firm life cycle. This could be consistent with the argument that revenue growth signals changes in market expectations about positive net present value investment opportunities (Charitou et al., 2001). Black (1998) reveals that although neither net income nor cash flow from operations (CFO) is value relevant in the early-stage of the firm life cycle, CFO is significantly associated with stock returns in each of the growth, maturity, and decline phases, and net income only in the maturity stage. In a follow up paper, Black (2003) examines both the incremental and relative usefulness of earnings, cash flows and book values across life cycle stages. He finds that earnings become incrementally informative as firms move into a growth stage, whilst cash flow measures are relatively more value-relevant than earnings in the early stages of the firm life cycle. Jenkins (2004) argues that firms follow different strategies, such as product

differentiation and cost leadership, across the life cycle stages. Jenkins (2004) provides evidence that growth and mature firms emphasize sales growth, whereas stagnant firms emphasize profitability. Dickinson et al. (2018) find that investors rely more on analysts' forecasts for growth and mature stage firms, whilst accounting information becomes more value-relevant for introduction and decline stage firms. They further document that book value is more important than earnings in equity valuation for introduction and decline firms, while earnings outperform book value for mature firms.

Dickinson (2011) documents a 3 to 10 percent differential spread in return on net operating assets (RNOA) between decline and mature firms for five years after the formation of the life cycle portfolio. She further finds that the effect of changes in asset turnover (ATO) on changes in future profitability is concentrated in mature firms, confirming the notion that competitive pressures force mature firms to focus on cost leadership (Selling and Stickney, 1989). Vorst and Yohn (2017) extend the work of Dickinson (2011) by documenting that life cycle models improve both the short and long-term growth and profitability forecasts when benchmarked against the economy-wide and industry-specific models. Hribar and Yehuda (2015) demonstrate that free cash flows (FCF) and total accruals convey different information at various stages of a firm's development. They document that the negative correlation between these two variables is lowest in the growth stage: evidence that these two variables convey different information signals. Accruals at the growth stage signal information regarding the investment component that is positively related to growth. But, in the mature stages of the life cycle, working capital accruals provide a less distinctive signal about growth or capital investment and, hence, show a stronger negative correlation with cash flows. With respect to the mispricing of accruals and cash flows (Sloan, 2001) across life cycle stages, they find the highest degree of mispricing in the growth stage. Anderson et al. (2017) find

that fundamental accounting signals (Abarbanell and Bushee, 1998) become differentially informative across firm life cycle stages. Using a large sample of 81,613 US firm-year observations from 1989 to 2014, the authors document that financial statement information signaling managers' investment commitments is particularly informative for firms in the introductory stage of the life cycle, whilst signals related to operating performance and efficiency are informative for mature-stage firms. A trading strategy based on the varying informativeness of fundamental signals across different life cycle stages is found effective in separating winners from losers in terms of excess stock returns.

Accounting information is said to be value-relevant if it embodies both relevance and reliability. There is ongoing debate about the relevance of historical cost-based financial information in providing useful information to investors. It is, therefore, important to investigate whether value-relevance of non-financial information varies across life cycle stages as well and, if it does, to explore its incremental informativeness compared to financial information conditional on life cycle stages. With respect to the reliability aspect of financial information, a plethora of research suggests the existence of managerial incentives for earnings manipulation. However, research also suggests that the discretionary accruals component of earnings is value-relevant (Subramanyam, 1996). Whether such a finding is relevant for particular life cycle stages has remained unexplored. Finally, future research could also explore the life cycle implications of other accounting anomalies, e.g., post-earnings announcement drifts (Bernard and Thomas, 1989).

4.2 Firm life cycle and financial reporting quality

We now review the strand of research that examines whether financial reporting quality varies across firm life cycle stages. Two broad categories of financial reporting quality dominate the empirical literature (Dechow et al. 2010). Category 1, 'properties of earnings' include earnings

persistence, earnings smoothness, and earnings conservatism. Suberi et al. (2014), who find, for a sample of US firms, that mature-stage firms, on average, exhibit more persistent earnings, as is consistent with the argument that such firms have a steady state of production functions and earnings generation processes. They also find that accounting quality is related to future firm growth only when conditioned to life cycle stages, suggesting that life cycle, but not accounting measurement processes, drives firms' economic outcomes. Hansen et al. (2018) find that unconditional reporting conservatism (proxied by non-operating accruals and market-to-book ratio) decreases over life cycle stages. This is owing to the US GAAP's requirement on expensing intangible investments (the dominant asset base of early-stage firms), thereby severely depressing the book value of equity of early-stage firms compared with that of firms in mature or decline stages. However, they find that conditional conservatism (Basu, 1997) is not systematically related to life cycle stages. Besides earnings conservatism, asymmetric timeliness of operating cash flows (OCF) has also been linked to firm life cycle. Collins et al. (2014) find that early-stage firms reveal strong asymmetric timeliness of OCF (positive association between negative OCF and economic shocks). However, Lu et al. (forthcoming) fail to find support for firm life cycle as an explanation for OCF timeliness in Australia: an observation that is attributed to the higher OCF asymmetric timeliness of more mature mining firms.

Quality of corporate disclosures is also included as a broader measure of financial reporting quality belonging to this category. Early-stage firms are mostly controlled by founder owners, and have fewer resources to allocate on disclosure compliance. Therefore, such firms are more likely to suffer from asymmetric information problems (Singhvi and Desai, 1971). Lang and Lundholm (1993) find that shareholders demand more disclosures from younger firms because of uncertain future cash flows, compared to their mature firm counterparts. One such form of disclosures is

balance sheet information in the quarterly earnings announcement (Chen et al., 2002). At the growth stage, the demand for transparency and accountability increases as growth firms seek to obtain external financing. More voluntary disclosures help firms reduce information asymmetries and obtain more external finance (Eng and Mak, 2003; Khurana et al., 2006). Mature-stage firms are plagued with higher agency problems (e.g., agency problems emanating from free cash flows) and, hence, are required to provide more disclosures to increase information transparency and reduce agency costs. Due to the uncertainty of cash flow and profits at the declining stage, management offers additional disclosures on firm performance (Holder-Webb and Cohen, 2007). A direct test of variation in annual report readability (complexity, tone, and sentiment) across life cycle stages is conducted by Bakarich et al. (2018). Using a sample of 24,268 firm-year observations from 2000–2014, the authors find that narrative disclosures become less complex, less ambiguous, and more optimistic as they progress from the introduction to the maturity stage of the firm life cycle. Firms in the decline stage make the most negative and ambiguous disclosures. Al-Hadi et al. (2016), for a sample of 677 firm-year observations of financial firms from the Gulf Cooperation Council (GCC) spanning the period 2007-2011, find that firms with a separate risk committee make more market risk disclosures, and that this effect is more pronounced for mature-stage firms.

A review of the literature on the firm life cycle effect on the properties of earnings (Category 1) suggests that research on how firm life cycle affects earnings smoothing, another important earnings attribute, is missing from the literature. Future research could investigate whether and why earnings smoothing varies across life cycle stages. Two aspects of earnings smoothing can be investigated. First, whether incentives for smoothing earnings vary across life cycle stages and, second, whether the market perceives earnings smoothing as either informative

or opportunistic, conditional on life cycle stage. The opportunistic argument renders the test as belonging to category 3 studies, i.e., earnings management across life cycle stages.

Category 2 includes financial reporting manipulation as evidenced by accruals management, financial statement fraud, and accounting restatements, as proxies for financial reporting quality. Choi et al. (2016), using a sample of 27,197 firm-year observations from 1988 to 2008 and the Dickinson (2011) life cycle measure, examine the association between corporate life cycle and firms 'meet or beat earnings benchmark' (MBE) behavior. They find that growth firms have more incentives to engage in MBE than do mature firms. Prior evidence suggests that the stock market penalizes growth firms for more missing earnings targets (Skinner and Sloan, 2002), thus, providing incentives for beating earnings benchmarks. Also, growth firms rely heavily on external financing and issue new equity more frequently (Langberg, 2008). By meeting earnings benchmarks, such firms can convey a positive signal to capital providers regarding their favorable future outlooks. However, this study does not show the specific tools, e.g., accruals earnings management, real earnings management, and/or classification shifting, through which growth firms engage in MBE behavior. This is an important omission because Zang (2012) finds that managers trade earnings management methods based on their relative costs and benefits. Although Cohen et al. (2010) evidence that managers reduce advertising spending to avoid losses and earning decreases in order to meet quarterly reporting earnings benchmarks, they do not incorporate firm life cycle as a conditioning variable. Nagar and Radhakrishnan (2017) fill this void by documenting that firms in the mature stage cut discretionary spending, to report small profits; but firms in the introductory and growth stages do not. One of the major shortcomings associated with these studies is the measurement errors related to the precise estimation of discretionary accruals. Whether the life cycle-based discretionary accruals estimation method can

be more reliable than industry and/or size-based estimation methods could be avenues for future research.[3]

Financial analysts play an important role in providing firm-specific information to investors. The literature provides consistent evidence that analyst forecast properties, namely, forecast error and dispersion, reflects uncertainty about firms' cash flow and financial performance and, therefore, increase the estimation error and earnings volatility (Barry and Jennings, 1992; Kross et al., 1990). Whether such an effect is conditional on firm life cycle stages is an important research question. Hamers et al. (2016a) use the 'visibility hypothesis' to examine analyst forecast behavior across the firm life cycle, and document that analyst following is higher for firms in the introduction and growth stages. Hamers et al. (2016a) also suggest that analysts reveal information about earnings persistence that helps investors to assess firm value accurately, but the role of analyst in the price discovery process varies across the firm life cycle. They suggest that mature firms have stable earnings and operating cash flow and, therefore, forecast accuracy is high for 'mature' firms only.

However, in the context of firm life cycle, existing research is yet to explore whether analysts produce more idiosyncratic, as opposed to more common information across different life cycle stages.[4] It is intuitive to argue that analysts would be more inclined to produce idiosyncratic information for early-stage firms, given the high payoffs associated with such firm-specific information. Besides financial analysts, corporate management, too, provides line item forecasts

[3] Hribar and Nichols (2007) detail numerous problems with using absolute values of Jones-type model residuals as measures of accounting information quality. Specifically, they show that the volatility of the firm's operating environment is highly correlated with the absolute value of discretionary accruals, and this volatility of operating environment is also likely to be associated with many of the outcome variables. Owens et al. (2017) detail how idiosyncratic shocks to firms' operating environments can propagate through multiple years of financial statements and reduce discretionary accrual models' goodness-of-fit, creating extreme bias in these estimates.

[4] Piotroski and Roulstone (2004) argue and show that analysts are primarily involved in the production of industry-wide and/or market-wide information. Using data from 45 emerging markets, Chan and Hameed (2006) find similar evidence.

to market participants. It will be interesting to explore how firm life cycle affects the quantity and quality of management earnings forecasts, and the relationship between the forecasts of accounting numbers made by financial analysts and management, across life cycle stages.[5]

4.3 Tax avoidance and tax planning across life cycle stages

In this section we review the studies that examine how a firm's tax payment behavior changes across life cycle stages. Studies suggest that since fundamental financial characteristics of business activities, i.e., firm profit, sales growth, capital expenditure and cash flow, vary across the life cycle stages, such variation affects corporate tax planning. Anandarajan et al. (2010) examine the association between R&D tax credit and operating performance in the context of firm life cycle, and find the association to be most pronounced for mature and decline-stage firms. Building on the resource-based dependency theory, Hasan et al. (2017) examine the association between firm life cycle stage and corporate tax avoidance. They find that firms in the introduction and decline (growth and mature) stages tend to engage more (less) in tax avoidance.[6] Drake (2015) also argues and shows that tax information available from financial statements is informative about future earnings, because the difference between book income and taxable income captures information about a firm's life cycle stage. Stam and Verbeeten (2017) further extend the literature by examining theoretically how the heterogeneity of young and/or small firms over their life cycle affects tax compliance. They argue that tax compliance is likely to be relatively high in the start-up, survival and early growth phases, but likely to be relatively low in the growth syndrome and

[5] For example, management makes less frequent forecasts when analyst disagreement is high (Ajinkya and Gift, 1984).
[6] In an attempt to generate competitive advantage, introduction-stage firms invest aggressively in capital expenditure and R&D, which reduce taxable income. Growth and mature firms, on the other hand, are more profitable, and these firms invest relatively less in capital expenditure and R&D. Moreover, these firms are more concerned with the reputational cost of aggressive tax planning, thus, reducing both the incentives and the ability to avoid tax. Firms became more active on tax planning at the decline stage of their life cycle, because of their financial constraints, less profitability, volatile cash flows and liquidity crises.

accumulation phases. However, these conjectures have not been empirically tested and, thus, provide an opportunity for future research.

In sum, prior studies provide considerable evidence that firm life cycle has important implications for the motivation and capacity of the firm to comply with and/or to avoid tax. These studies argue consistently that tax avoidance serves as an instrument to improve performance, and improved performance offers an incentive to devote resources for tax planning and tax avoidance. We argue that, even though the above studies provide important insights about the implications of firm life cycle stages for tax avoidance and tax planning, there is still scope to further extend this line of research. For example, Chen et al. (2010) show that family-owned firms avoid less tax than non-family-owned firms, to minimize the concern that such tax avoidance conceals rent extraction by the family owner-managers. However, it is not clear whether the tax avoidance of family and non-family owned firms varies, depending on firm life cycle stages. Moreover, it will be interesting to know how CEO age and tenure, when interacted with firm stages in the life cycle, affect the tax avoidance of the firm.

4.4 Firm life cycle and auditing

The literature on the association between various facets of external auditing, financial reporting and related issues is voluminous (DeFond and Zhang, 2014). External auditors provide assurance to corporate stakeholders about the reliability of the financial statements (Watts and Zimmerman, 1983). This helps the firm access external capital markets for financing requirements (Chang et al., 2009). However, existing research on auditing has provided a rather static view of the demand for and the consequences of high quality auditing. For example, whether and why auditor choice (both brand name auditor and industry-specialist auditors) varies across life cycle stages has

remained unexplored. Prior studies suggests that firm-specific factors, such as firm size, profitability, growth, business risk and complexity, as well as agency-related problems, determine both auditor selection and audit fees. Given that resource-base, information asymmetry, risk and operational complexity vary depending on the life cycle stages, it is intuitive to argue that firm life cycle has implications for firms' auditor selection and audit pricing. Future research should shed light on these interesting issues. We also encourage future research to investigate whether audit quality has a differential effect in reducing information asymmetry, and cost of equity, for firms at different life cycle stages. Although there is evidence that IPO underpricing is lower for firms engaging reputable auditors (Chang et al., 2008), IPO and SEO settings are rather unique, and do not capture the entire spectrum of the firm life cycle. Data from 1987-2017 shows that 78.44 percent and 77.32 percent of growth and mature firms, respectively, employ 'big' audit firms in auditing their financial statements. The corresponding percentages for introduction and decline-stage firms are 49.92 and 56.34 percent, respectively (results untabulated). In summary, given this interesting descriptive evidence, it is important to examine auditor choice and its implications over the life cycle of the firm, explicitly.

Existing literature provides convincing evidence that high quality audit reduces earnings manipulation and increases reporting transparency (Balsam et al., 2003; Becker et al., 1998). However, this does not address the issue of whether this association is pronounced for firms in certain life cycle stages that are more prone to earnings manipulation (see section 4.2 above). High quality auditing is also associated with firm-level operation decisions, e.g., investments and financing choices. Bae et al. (2017) find that various auditor characteristics, e.g., industry specialization and brand name, are associated with higher client investment efficiency: an effect that is more pronounced for clients with higher demands for information. However, how firm life

cycle affects the documented association remains unexplored. Das and Pandit (2010) provide some insights on this issue. They find that high quality auditing encourages investment in young firms and curbs underinvestment in growth-oriented firms. They also find that the joint effect of audit quality and life-cycle stage on firm-level investment efficiency is significantly larger for firms with high business risk. Chang et al. (2009) find that companies audited by brand name auditors are more likely to issue equity, as opposed to debt, than are those audited by small audit firms. Kim et al. (2015) find that the market value of cash holdings is significantly higher for the client of an industry specialist auditor. Again, these studies remain silent on whether the documented association is concentrated among firms in certain life cycle stages, e.g., whether relatively high market valuations of cash holdings, as documented by Kim et al. (2015) is also evident for 'mature' stage firms, which have more free cash flows than firms in other life cycle stages and, hence, are more likely to suffer from FCF-induced agency problems.

4.5 Firm life cycle research in Management Accounting

Extant life cycle literature also links firm life cycle stages with the adoption of management accounting practices. For example, Kallunki and Silvola (2008) find that the use of activity-based costing (ABC) is greater among firms in the maturity and revival phases, than among firms in the growth phase. Mature and revival-stage firms face more complex and more competitive business environments, thus, they require more complex administrative tasks (Chandler, 1962; Miller and Friesen, 1983), which, in turn, create a need for a more sophisticated decision-making tools, such as the ABC system. Also, mature and revival-stage firms face increased competition, which requires them to be more cost-effective than growth-stage firms. This necessitates putting more emphasis on adopting advanced cost management tool like ABC (Miller and Friesen, 1984). Moores and Yuen (2001) use mail survey and field studies to investigate the life cycle implications

for changes to a firm's management accounting system (MAS). They document that firms change their MAS to complement the changes in organizational characteristics corresponding to their particular stage in the life cycle. Silvola (2008) documents that a firm's life cycle, and venture investors, are important explanatory variables for changes in management control systems in Finland.[7] Other studies examining the life cycle implications for management control system designs, include Auzair and Langfield-Smith (2005) and Granlund and Taipaleenmäki (2005).

An important cost management concept that can be linked to firm life cycle is 'cost stickiness'. Traditional cost behavior identifies all costs as either fixed or variable with respect to concurrent sales, or some other cost driver (Anderson et al., 2003; Banker and Byzalov, 2014). However, in reality, the relation between cost and cost driver is more complex, in that some costs rise more with activity or cost driver increases, than they decrease with proportionate decreases in activity levels (Cooper and Kaplan, 1998). Anderson et al. (2003) propose two theories underlying cost stickiness: adjustment cost theory and agency theory. Future research could investigate whether cost stickiness varies across life cycle stages and, if it does, then which of the underlying theories is relevant in explaining such behavior.

4.6 Section summary

This section reviewed and offered future research suggestions on corporate life cycle research in accounting. Evidence summarized suggests that (i) accounting information, e.g., accounting earnings and cash flows, are differentially informative across life cycle stages, (ii) financial reporting quality, including disclosure quality, varies across life cycle stages; (iii) firms engage in

[7] The author includes venture capital investors, arguing that "…a large amount of new firms for which venture capital providers are an important source of funds have been established [in Finland] during the last decade. Many of these firms are fast growing R&D-intensive firms operating in the field of high technology. These firms passed their first growth stage during the 1990s and, hence, the first of them are at the beginning of their revival stage" (p. 128).

varying degrees of tax planning and tax avoidance activities across life cycle stages, and (iv) life cycle stages affect the choice of management control system tools. However, life cycle implications for external auditing, as well as internal audit functions, have received scant research attention.

5.0 Implications of firm life-cycle research in Finance

Recent finance literature has shown a considerable interest in the life cycle implications of corporate policies. Firms experience fundamental changes in key internal and/or external factors as they move over the life cycle stages, and this influences a number of corporate decisions including investment, financing and dividends decisions. In this section, we review this strand of the literature.

5.1 Firm life cycle and investment policies

The growth-based explanation of investment suggests that early and growth firms are likely to invest more, to capitalize their growth opportunities, whereas mature firms are likely to invest to maintain the assets in place (Hubbard, 1998). In a recent study, Faff et al. (2016) find that net investment in tangible assets decreases with the progression through firm life-cycle stages, as is consistent with this explanation. Faff et al. (2016) also find that cash holdings increase in the introduction and growth stages (due to an increase in financing), but decrease in the mature and shake-out/decline stages, due to reduction in both internal cash flows and external financing. Drobetz et al. (2016) also document similar findings in relation to the life cycle and dynamics of cash holdings. The study of Habib and Hasan (2017) indicates that investments, both in the early and the decline stages, are risky. In particular, using a large set of US data and the life cycle model of Dickinson (2011), they show a U-shape in corporate risk taking. Coad et al. (2016) also draw a

similar conclusion, in that R&D investment by younger firms is riskier than that by mature stage firms.

Empirical finance studies also provide insights about the life cycle-wise variations in corporate merger and acquisition (M&A) activities. Using a sample of US firms and the life cycle measure of DeAngelo et al. (2006) over the period 1991–2005, Owen and Yawson (2010) show that (i) mature (young) firms are more (less) likely to become a bidder in M&A activities; (ii) mature firms are positively (negatively) related to negotiated deals (tender offers); and (iii) corporate life cycle is positively related to the likelihood of making either a cash or a mixed deal. Arikan and Stulz (2016) examine the acquisition behavior across life cycle stages using a sample of US firms that have an IPO during the 1975 to 2008 period. They find that the acquisition rate follows a U-shape over the life cycle, although compared to firms in other life cycle stages, the acquisition rate is higher among the young firms. In terms of the nature of acquisition, they find that younger firms make more related and diversifying acquisitions, and they mostly acquire private firms. With respect to acquisition performance, they find that throughout the life cycle, acquiring firms creates value through the acquisition of non-public firms.

In addition to the above studies that investigate the magnitude and nature of investment in different life cycle stages, some studies also examine whether the benefits from such investment is conditional on the firm life cycle stages. For example, in a recent study, Chuang (2017) extends the life cycle literature by examining whether the role of financial advisors in value creation from M&As depends on firm life cycle stages. Using the life cycle measure of Anthony and Ramesh (1992), this study provides evidence that while growth (stagnant) bidding firms are less (more) likely to hire financial advisors for M&As, growth (mature) bidders that hire financial advisors, obtain lower (higher) post-announcement returns. In a related study, Coad et al. (2016) use a

Spanish Community Innovation Survey sample between 2004 and 2012 to examine the association between innovation and firm growth for firms of different ages. They find that young firms enjoy relatively better performance benefits from innovation for high growth quantiles. Habib and Hasan (2017) also show that risk-taking during the introduction and decline stages (growth and maturity stages) affects future performance adversely (favorably).

Collectively, findings from the above studies suggest that the firm life cycle has considerable impact on corporate investment in physical and intangible assets, and in the magnitude and nature of M&A activities. Extant studies also show that firm life cycle has important bearings on risk-taking behavior and future performance benefits stemming from corporate investment activities. Future research could investigate whether investment-cash flow sensitivity and investment efficiency vary over the firm life cycle stages. Given the fact that family-controlled corporations have lower investment–cash flow sensitivities (Pindado et al., 2011), interesting insights may be derived by examining whether this relation is also moderated by the life cycle stages.

5.2 Firm life cycle and financing policies

A firm's access to external finance and its debt servicing capacity changes as it goes through the transitions of the life cycle. As a result, capital structure and financing costs tend to vary across firm life cycle stages. Empirical finance studies investigate this proposition and document some interesting findings. For example, Bulan and Yan (2010) classify the firms into growth and maturity stages, and test the pecking order theory of financing.[8] They show that a

[8] The pecking order theory of Myers and Majluf (1984) postulates that firms follow a hierarchy of financing sources, and this choice is driven by the underlying information asymmetry. According to this model, firms prefer internal financing, and then debt and, finally, equity financing.

firm's maturity provides a reasonable indication of its debt capacity. Their analysis confirms that the pecking order theory captures the financing behavior of mature firms better than that of growth firms. Using a large sample of US firms over the 1973–2014 period, Faff et al. (2016) show that capital structure follows a life cycle pattern. In particular, they find that net equity issuance decreases as the firm moves towards the latter phases of its life-cycle, whereas net debt issuance increases as firms move from the introduction phase to the mature phase, but decreases in the mature and shake-out/decline stages. Kieschnick and Moussawi (2018) use firm-age-since-IPO as a life cycle proxy, and show this to be negatively correlated with the level of debt a firm uses. They also show that this relation is driven primarily by the interaction between a firm's age and its governance features.

The aforementioned findings based on large size firms may not be extrapolated to small and medium scaled firms that are subject to more informational opacity. Berger and Udell (1998) argue that a firm's financing needs, the availability of financial resources, and financing costs, depend on life cycle stages. They find that small firms rely more on debt financing as firms grow from "infancy" to "adolescence", but use less debt as firms become "middle-aged" and "old". They also note that average smaller firms use more equity, most of which is contributed by the principal owners; whereas larger firms use more debt, sourced through bank loans and trade credit. Using a theoretical model, Hirsch and Walz (2011) integrate entrepreneurial finance and corporate finance, and investigate the interaction between financing and investment decisions over the firm's life-cycle. Their model shows that start-up and expansion firms that pursue capital intensive projects tend to use more debt financing; widely held firms initially use equity financing and, subsequently, debt financing; and closely held firms use more equity financing at both development stages. Future research might test the validity of these findings empirically.

One may argue that the relation between firm life cycle and access to finance and, thus, the capital structure of a firm, may also vary depending on whether the economy is market-based or bank-based. Therefore, findings from outside the US may offer interesting insights. La Rocca et al. (2011) find that for early stage small Italian firms, debt is fundamental to the capital structure, while mature stage firms rebalance their capital structure by substituting debt for internal capital. The authors argue that, banks serve as the primary source of financing for small firms in Italy, owing to the inadequacy of internal resources and the lack of a private equity market to finance young businesses. Thus, findings from this study differ from those of Berger and Udell (1998) and, therefore, highlight the important moderating role played by institutional settings on the relation between firm life cycle and financing choices. Ylhäinen (2017) further extends the earlier findings by using small Finnish firms as a sample from the period 1999–2013 to investigate how the cost of credit and the use of bank finance changes over the life cycle (proxied by age) in small business finance. This study documents that small firms' financing cost decreases monotonically as the firms mature. In a similar fashion, using bank-dependent Japanese small firms for 1997–2002, Sakai et al. (2010) examine how firms' borrowing costs evolve as they mature. Their study indicates that firms' borrowing costs decline as they age, which they argue as being consistent with the reputation hypothesis suggested by Diamond (1989). Keasey et al. (2015) introduce family firms in the life cycle literature, and examine whether the association between leverage and ownership is moderated by the life cycle of family firms. Using a European sample of 1,050 listed family firms over the period 2000–2009 and firm age as the proxy for life cycle, the study suggests that the relationship between ownership and leverage is positive (negative) for mature (growth) stage firms.

Seasoned equity offering (SEO) is another important means of financing for publicly listed firms. Conventional wisdom suggests that managers time SEOs to exploit equity overvaluation. DeAngelo et al. (2010) examine the effect of firm life cycle on the likelihood of conducting SEOs. Using the number of years since listed, and dividend history, as proxies for firm life cycle, the authors show that corporate life cycle stages have statistically and economically meaningful influences on the decision to conduct an SEO, and that this effect is stronger economically than are market timing opportunities. Seifert and Gonenc (2012) examine the impact of firm life cycle on firms' decisions to issue or repurchase equity or debt. Using a large international data set from 47 countries over the 1984–2006 period, they provide evidence in support of the life cycle theory of financing choices. In particular, they show that firms in the younger stage of life cycle (proxied by age) issue (repurchase) more (less) equity than do older firms. Extant studies indicate that SEO under-pricing is considerable, and has increased substantially over time (Bowen et al., 2008; Corwin, 2003). These studies suggest that informational uncertainty about firm value leads to SEO under-pricing. Since the level and quality of disclosures (as proxies for information uncertainty) vary over the life cycle stages, it is likely that firms at different life cycle stages are exposed to different levels of SEO under-pricing. Future research may explore this proposition empirically.

Hasan et al. (2018) use trade credit as a setting to investigate whether the use of supplier-provided trade credit also depends on life cycle stages. Studies show that the implicit cost of trade credit is high and, therefore, firms with access to alternative financing forgo trade credit. Using US data, Hasan et al. (2018) find that firms in the growth and mature stages use less supplier-provided trade credit, owing to their having access to alternative financing, while firms in the introduction and decline stages use more. Deli and Santhanakrishnan (2010) show that venture capital firms take entrepreneurial firms' lifecycles into account in decisions about syndication.

Their analysis reveals that the likelihood of syndication in venture capital investments is higher for firms in the earliest stage of development and for firms in the last stage of development. They argue that such syndication mitigates human capital constraints within individual venture capital firms.

In a recent study, Lobo et al. (2018) examine how the private debt market views the firm life cycle in setting loan contract terms. Using a sample of US publicly traded firms from 1994 to 2015, they show that the cost of corporate borrowing decreases from the introduction to the growth stage, and reaches the bottom in the mature phase, but then increases in the shake-out phase and peaks in the decline phase. A similar pattern is found for the probability of covenant violations. Non-pricing terms of loan contracts, such as debt maturity and loan securitization, follow the inverse U shape and the U shape patterns, respectively. Overall, findings from this study indicate that private credit markets take into account the distinct stages of firm development when setting loan pricing and loan characteristics.

5.3 Firm life cycle and payout policies

Payout policy of the firm is one of the fundamental topics in corporate finance literature. Payout policy affects firms' valuation and investment decisions and signals how good the firm is, relative to its peers. Extant studies suggest that large, profitable and established firms with fewer investment opportunities pay more dividends than small, risky, and high-growth firms (Farre-Mensa et al., 2014). The life cycle theory of payout policy is perhaps one of the most extensively investigated topics in the corporate finance literature. This theory suggests that as firms move over the life cycle stages, their profitability, growth opportunity and levels of free cash flow also change, which may affect their ability to pay dividends.

Although a few papers note implicitly that dividend pay outs follow a life cycle pattern (Fama and French, 2001; Grullon et. al, 2002), DeAngelo et al. (2006) was the first to test this proposition explicitly. Using a large sample of US industrial firms, DeAngelo et al. (2006) show that the likelihood of dividend payment is related positively to the maturity of the firm (proxied by RE/TA or RE/TE). Their finding is consistent with the conjecture that younger firms are in the capital infusion stage, which limits their ability to pay dividends, whereas mature firms are profitable with fewer investment opportunities, which allows them to pay dividends to the stockholders. Coulton and Ruddock (2011) re-examine the life cycle theory of dividends in the Australian context using data from January 1993 and June 2004. Their analysis provides support to the findings of DeAngelo et al. (2006). Using Australia's dividend tax imputation system as a unique context, the authors also show that firm life cycle explains the level of franking credits attached to dividends.

Brockman and Unlu (2011) incorporate the country-level disclosure environment into the life cycle theory of dividends to examine the 'agency cost inclusive life cycle' of dividends. Their study confirms that life cycle theory explains dividend payments around the world. They also document a U-shape relation between country-level disclosure quality and dividend payouts because

> …in opaque disclosure environments, managers pay dividends to establish a reputation among outside capital suppliers; and in transparent disclosure environments, managers have little choice but to disgorge excess cash. The weakest connection between disclosure quality and payout policy is in those environments that are neither highly transparent nor highly opaque (p. 1614).

Using cross-county data from 39 countries between 1991 and 2010, Shao et al. (2013) provide further support that firm maturity is related positively to the likelihood of dividends payment. However, their study shows that the relationship between firm maturity and *level* of dividends is statistically insignificant in countries where creditor rights are weak. Flavin and O'Connor (2017)

further analyze the life cycle of dividend policy in Korea, a county characterized by a low-disclosure regime. They show that the magnitude of dividends increases over the life cycle of the firm, but peaks during the mature stage. Their finding that even growth firms tend to pay large dividends is consistent with the reputation-building hypothesis. In contrast to these studies that use either single-county or cross-country data to examine the likelihood of dividend payments across firm life cycle stages, Bulan et al. (2007) examine whether firm life-cycle affects firms' decisions to *initiate* dividends. Tracking a sample of 2,333 firms from IPO to initiation stage, or until their last observed time, they find that mature firms with larger size, profitability and cash reserves, and fewer growth options, tend to initiate dividends.

Banyi and Kahle (2014) extend the life cycle literature by investigating whether inferences relating to the lifecycle theory of dividends also holds for stock repurchases. Their study reveals two important findings: (i) there exists a positive association between earned/contributed capital and stock repurchases; and (ii) this positive relation is weaker for firms with recent IPOs. Banyi and Kahle (2014) argue that their findings are consistent with prior studies that recent IPOs firms are less profitable and riskier, and managers of these firms are less inclined to initiate dividends (Brav et al., 2005; Brown and Kapadia, 2007). Interestingly, they find that within a given IPO cohort, the likelihood of payouts increases with firms' age, thereby, confirming the lifecycle effect. The above life cycle theory of payout literature predominately focuses on public firms and, therefore, little is known whether this relation also holds for private firms. Future research may also explore whether the life cycle theory of dividends varies for family versus non-family firms.

5.4 Firm life cycle and other aspects of finance

Studies in finance also investigate the implications of firm life cycle for other aspects of finance, including asset pricing. For example, Hasan et al. (2015) investigate the relation between corporate life cycle and the implied cost of equity capital. They argue that since the riskiness and resource-base of firms vary across the life cycle stages, the cost of equity may follow a life cycle pattern. Using a sample of Australian firms during 1990-2012, they find that the implied cost of equity is higher in the introduction and decline stages, but lower in the growth and mature stages, resembling a U-shaped pattern. Although insightful, this study does not explore whether variations in information asymmetry and information risk, or both (Bhattacharya et al., 2012; Easley and O'hara, 2004; Lambert et al., 2011) across life eycle stages are responsible for the observed behavior.

Hasan and Habib (2017a) extend the asset pricing aspect of firm life cycle literature by examining the association between firm life cycle stages and idiosyncratic return volatility (IRV). Extant studies show that investor heterogeneity stemming from future cash flow and information uncertainties increases the IRV (Irvine and Pontiff, 2009; Rajgopal and Venkatachalam, 2011). Hasan and Habib (2017a) argue that since such uncertainties change across life cycle stages, IRV should also evolve accordingly. Using a large sample of US data, they find that the IRV is significantly higher in the introduction and decline stages, while it is significantly lower in the growth and mature stages, when compared to the shake-out stage. In addition, they show that both the fundamental risk and informational environment at different life cycle stages moderate the relationship between life cycle stages and IRV. An important aspect of this study is that, the relationship between firm life cycle and IRV remains robust, even after controlling for firm age or IPO cohort, which the authors argue is evidence that firm age or IPO cohort captures firm characteristics (e.g., reputation or learning) other than the firm life cycle stages. Xu (2007) also

provides support that capital markets assess and incorporate information conveyed in firm life cycle stages when interpreting risk factors and estimating expected rates of return. Similarly, Chincarini et al. (2016) find that firm age (a proxy for firm life cycle) captures the time-variation of beta (systematic risk) and its relation to the cost of equity capital. Da et al. (2013) examine whether firms in the same life cycle stage exhibit different stock returns conditional on investors' optimism about sales growth. Using industry IPO waves as a natural setting, the authors find that among those US firms that went public during the industry IPO waves, firms with high sales growth and valuation but low gross margins are related with poor future stock price performance on average. Hamers et al. (2016b) extend the life cycle literature relating to asset pricing by examining the relationship between firm life cycle and future stock price crash risk. They find that stock price crash risk is relatively higher for firms in the introduction and growth stages. They contend that their finding is consistent with the argument that heterogeneity in investor beliefs about firm fundamentals and informational opacity is highest during the introduction and growth stages, resulting in a higher crash risk for these firms. However, they do not explicitly test this conjecture.

Cremers et al. (2018) further extend the life cycle literature by incorporating the equity structure of US firms. In particular, using a matched sample of US dual and single class firms from 1980 to 2015, they examine whether the costs and benefits of dual class stocks evolve over the life cycle stages. Their analysis shows that, relative to matched single class firms, dual-class firms survive longer. Importantly, they document that at the IPO, dual class firms enjoy a higher valuation, which gradually declines and diminishes with firm age, implying a firm life cycle effect.

5.5 Section summary

This section reviewed the finance literature relating to firm life cycle and offered future research direction. Evidence summarized in this section suggests that firm life cycle has considerable effect on corporate investment, financing, pay out and asset pricing decisions. Findings from the literature suggest that the life cycle effect on corporate policies also exists in a cross-county setting. However, more research is warranted to understand how the effect of firm life cycle on corporate policies differs for private versus public firms, as well between family and non-family firms.

6. Interdependencies between life cycle stages and corporate governance

Corporate governance mechanisms aim to mitigate agency conflicts between principal and agents for maximizing shareholder value (Jensen and Meckling, 1976). Corporate governance research emphasizes the efficacies of formal incentives and control mechanisms, to protect minority shareholders against managerial opportunism. In this section, we review the strand of literature that investigates life cycle effects on board structure, executive compensation, CSR activities and other corporate governance issues.

6.1 Firm life cycle and board structure

The board of directors is an important element of the corporate governance structure (Adams et al., 2010; Hermalin and Weisbach, 1998, 2003) which serves advisory and monitoring functions. The advisory function involves counselling management in establishing and implementing strategic initiatives. The monitoring function requires the board to act in the best interests of the shareholders by monitoring managerial actions.

Habib et al. (2018) investigate whether firm life cycle has implications for the presence of advisory directors and monitoring directors on the board. Using 11,251 Australian firm-year observations from 2001 to 2014, and the Dickinson (2011) life cycle measure, this study shows

that mature-stage firms have the lowest (highest) proportion of advisory (monitoring) directors, compared to other stages of the firm life cycle. How the presence of advisory directors at different life cycle stages affects organizational outcomes, viz., investment efficiency, remains an open empirical question. Furthermore, the definition of advisory directors (i.e., directors who are not members of the monitoring committees) may fail to capture individual characteristics that might be correlated with the demand for such directors across the firm life cycle stages. They call for future research to include a more refined definition that might include directors' detailed biographical information. Li and Zhang (2018) use data from China's listed, privately owned enterprises (POEs) spanning the period 2002 to 2014, and find that board size, as well as board chair-CEO duality, declines as a firm moves through the life cycle stages. However, board independence is not found to vary across the firm life cycle. Using a broad corporate index developed by CLSA for 2001[9], O'Connor and Byrne (2015) use the DeAngelo et al. (2006) life cycle measure, and reveal that mature firms practice better corporate governance, as is consistent with such firms devoting more resources to preserve, as opposed to create, value (Filatotchev et al., 2006).

6.2 Firm life cycle and executive compensation

Information asymmetries arising from conflicts of interest between contracting parties increase monitoring costs. Agency theory suggests that self-interested managers may pursue their own goals, instead of pursuing goals that maximize shareholder value. Designing an optimum executive compensation scheme has the potential to incentivize managers towards maximizing shareholder value. Wang and Sing (2014) criticized the voluminous literature on executive

[9] The scores range from a low of 0 to a high of 100. The rating for each individual firm is a composite measure of 57 qualitative, binary questions that span seven distinct governance categories, namely: management discipline, transparency, independence, accountability, responsibility, fairness, and social awareness.

compensation, noting that "… Most studies of CEO compensation to date are static in their treatment of organizational development, usually focusing on concurrent associations between CEO compensation and such organizational factors as firm age, size, performance, strategies, or structures…Consequently, there is little on why and how the levels and structure of CEO compensation change as organizations develop over time" (p. 144).

Drake and Martin (2015) respond to the call for more research by Wang and Singh (2014) on the variation in executive compensation across life cycle stages, and document that, although mature stage firms provide the highest levels of both total and bonus compensation, the percentage of equity-based compensation is highest for growth stage firms. They also find that executive compensation is most sensitive to accounting-based performance measures in the mature stage, but more sensitive to forward-looking market measures of performance in the early and late stages of a firm's life cycle, owing to the inability of historical accounting performance measures to capture more timely value-relevant signals emanating from managerial efforts. Drake and Martin (2018) introduce 'life cycle peers' as a more informative benchmark for relative performance evaluation (RPE) than the static 'within industry peer benchmark'. Because of evolution across life cycle stages, firms within an industry can show predictable differences, and these differences could make them less effective in filtering out the common exogenous shocks. Using a large sample of CEO compensation data spanning 1992-2015, the authors indeed find strong evidence of RPE using life cycle peers. Kanagaretnam et al. (2009) examine the efficacies of stock option grants to CEOs of firms in the stagnant stage of their life cycle (using the Anthony and Ramesh (1992) life cycle classification measure), in terms of drivers of such compensation; whether such grants act as an incentive alignment tool and, finally, whether firms' operating performance is affected by such option grants. They find that weak corporate governance drives the existence of

sizable option grants in stagnant firms. This might explain the weaker pay-performance sensitivity of stock option grants for stagnant firms relative to growth firms. Finally, such stock option awards do not deliver incremental performance benefits to shareholders of stagnant firms.

6.3 Firm life cycle and corporate social responsibility (CSR)

The CSR research suggests that firms use CSR activities to differentiate them from their competitors, to build customer loyalty, and to retain or attract high quality employees (Lee et al., 2013; Perez and del Bosque, 2015). However, CSR activities require significant resource outlays. Hence, the extent of available financial resources has profound implications for CSR activities. Importantly, whether the association, if any, exhibits variation across life cycle stages, has the potential to provide important insights into the dynamic nature of the CSR-firm performance relationship.

Elsayed and Paton (2009) evidence, for a sample of 935 UK firm-year observations spanning from 1994 to 2000, that the relationship between financial performance and CSR engagement varies across the life cycle stages, with performance exerting the strongest (weakest) positive effect on environmental policy in the maturity (rapid growth) stage of the firm life cycle. Hasan and Habib (2017b) examine the impact of corporate life cycle on CSR for a large sample of US firms over the period spanning 1991 to 2013. They find that mature-stage firms invest more in the CSR-related activities than do firms at other stages of the life cycle. They further find that size, profitability and slack resources moderate the CSR-life cycle relationship, which is more pronounced for mature-stage firms. Using an international sample, Diebecker et al. (2017) find consistent evidence that corporate sustainability performance is poor before and after the mature stages, implying that CSR investment follows a life cycle pattern. Al-Hadi et al. (2017, forthcoming) find that firms with good CSR performance are less likely to experience financial

distress in Australia, and that this association is more pronounced for firms in the mature stage of their life cycle. The latter findings suggest that mature firms with greater resources are less prone to distress risk and, thus, are more likely to engage in positive CSR activities compared to firms in the early-stage of their life cycles (Hasan and Habib, 2017b).

6.4. Firm life cycle and other governance issues

In this sub-section, we review other governance studies relating to firm life cycle. Takeover defences are managerial actions designed to resist the acquisition of a firm, and entail a considerable wealth effect. Johnson et al. (2018) argue that the benefits and costs of takeover defences change systematically with firms' life cycle stages. They provide evidence that the costs tend to outweigh the benefits as the firm ages, and the average relation between firm value and the use of defences is positive when firms are young (i.e., at the IPO), but declines and becomes negative as the firm ages. Koh et al. (2015) investigate whether corporate restructuring in response to financial distress varies over the life cycle stages. They find that distressed firms in earlier life cycle stages downsize their workforce, while mature firms in financial distress undertake asset restructuring. Allen et al. (2018) examine how financial regulation (SOX in this case) affects the innovative capacity of young life-cycle stage firms, and document that young life-cycle stage firms experience a significant decline in innovation after SOX relative to both the mature control sample as well as the young life-cycle sample exempted from full regulatory compliance. SOX increased external monitoring and centralized decision-making, thus, hindering the explorative innovation which thrives in a decentralized environment. Furthermore, compliance with mandatory SOX has been prohibitively costly, particularly for young life-cycle stage firms, which are resource-constrained, thus, diverting scarce resources from innovation activities. Of further concern, decline in innovation did not improve

the financial reporting quality of young life-cycle firms. Finally, an event study analysis suggests that market participants expected financial regulation to be detrimental for young life-cycle stage firms.

6.5 Section summary

This section reviews the literature on the life cycle implications for corporate governance issues. Findings from the literature suggest that board structure and function, a key ingredient of the corporate governance landscape, vary across life cycle stages. Research also suggests that companies provide a different mix of compensation benefits to executives depending on firm life cycle stages. Both total compensation as well as relative performance evaluation aspects of executive compensation have been investigated. However, more research is warranted to understand how firm life cycle affects the design and consequences of 'tournament incentives'. Furthermore, whether the determinants and consequences of CEO inside debt is conditional on firm life cycles stages, offers an interesting avenue for future research.

7. Discussion and conclusion

The literature on firm life cycle has made considerable progress in the past 25 years. In this paper, we reviewed the accounting and finance literature on the determinants and consequences of firm life cycle. Our review of the accounting and finance literature on the determinants of firm life cycle suggests that organization capital, management practices, corporate structure, flexibility, and venture capital involvement explain, to a large extent, corporate life cycle dynamics and exit patterns. These studies indicate the importance of investment in intangible assets to generate sustainable competitive advantages that can propel firms' progression into desirable life cycle stages. Our review also suggests that there is considerable scope to further extend the literature on the determinants of firm life cycle. In particular, we encourage more studies to understand the

determinants of private firm life cycles, and how the country-level institutional factors (e.g., culture, good governance, cost of doing business, corruption etc.) affect firms' progression into different life cycle stages.

We categorized the implications of firm life cycle studies into three groups: life cycle studies in accounting, finance and corporate governance. A review of the first category of literature shows that life cycle affects the value-relevance of accounting information; financial reporting quality; corporate disclosure practices; corporate tax planning and avoidance; and management control system designs. Our review suggests some research opportunities that would fill gaps in the literature. For example, future research might examine whether corporate disclosure, financial reporting quality and tax avoidance differ across the life cycle stages for private verses public firms. We also encourage future research to better understand the determinants and consequences of the choice of big audit firm and/or industry specialist auditors over the life cycle stages.

Our review of the second category of research (i.e., implications of firm life cycle on financial policies) shows that life cycle has important implications for key corporate decisions, including, investment, financing, and pay-out decisions. Our review also indicates that investors take life cycle stages into account in valuing the firm. Finally, our review on the life cycle aspects of corporate governance demonstrates that firm life cycle has effects on board structure and function, mix of executive compensation, and investment in CSR activities. We contend that more research is warranted to understand how firm life cycle affects the design and consequences of tournament incentives and CEO inside debt. In addition, we encourage future research to investigate the evolution in governance structures across life cycle development, and how these contribute towards firm value. Finally, future studies might also investigate the relevance of firm life cycle research to government policy and compliance.

Our review of the life cycle literature in accounting and finance reveals that studies focus mostly on the industrial sectors, possibly because of the difficulty in estimating firm life cycle for financial firms. Consequently, very little is known about how firm life cycle affects the risk taking, loan-loss provisions, investment, financing and dividend decisions of financial firms. Future studies could attempt to address this gap in literature. With respect to the sample of the literature pertaining to the determinants and consequences of firm life cycle, we observe, unsurprisingly, that the US dominates the empirical research landscape. Albeit there are a few international studies, surprisingly, there are very little studies on the determinants and implications of firm life cycle from emerging countries. Institutional differences in developing and emerging countries may provide important insights into firm life cycle research. Therefore, we call for more research in an international context to better understand how country-specific idiosyncratic features affect the determinants and implications of firm life cycle.

In terms of theoretical underpinning, we observe that most extant studies deploy a specific theoretical perspective (e.g., agency theory, resource-based theory, and theories relating to market frictions) in framing the research problem.[10] Interestingly, studies largely ignore empirical validation of the chosen theory. Given the multidisciplinary nature of the life cycle-based studies, we argue that the use of a combination of theories from diverse disciplines may provide rich insights into the life cycle literature. In addition, we encourage researchers to exploit recent empirical developments in validating the theories used in their studies.[11]

In terms of research methodology and estimation techniques, we observed that, most of the accounting and finance studies tend to show the correlation between firm life cycle and the

[10] For example, Hasan et al. (2015) use resource-based theory, while Faff et al. (2016) use an agency-based framework.
[11] For instance, the resource-based of a firm may be proxied by knowledge capital, organization capital (Peters and Taylor, 2017) or human capital (Israelsen and Yonker, 2017).

accounting or finance or governance outcome. Although only a few studies show that the relationship between life cycle and the outcome variable remains robust to an instrumental variable approach to mitigating the endogeneity problem, the instruments used in these studies are subject to conventional criticisms, such as 'weak instruments' or 'exclusion restriction'. Moreover, use of a two-stage least squares-type of strategy does not provide reasonable evidence about the causal relation. In this connection, Kahn and Whited (2018, p. 2) note that, "causal effects are…difficult to estimate because econometricians rarely observe occasions where one variable is altered while others are held constant, that is, where there is genuine exogenous variation in a variable." Recent finance studies exploit a difference-in difference strategy, or natural experiment, to establish causal relations. However, possibly due to the lack to an exogenous shock, it remains difficult to draw causal inferences in life cycle studies. In addition, use of the life cycle classification of Dickinson (2011) requires the inclusion of four life cycle stages as explanatory variables in the regression model. It is difficult to find instruments or exogenous shocks that are related to all life cycle stages at a given point in time. Thus, albeit a causal relation could strengthen the inferences from the study, extant studies, so far, could not provide such evidence: a limitation that requires readers to interpret the findings from this review with caution.

We also observe that a majority of the life cycle studies use pooled ordinary least squares in estimating the relationship between firm life cycle stages and outcome variables. Given that studies attempt to estimate how the accounting or financial or governance outcome varies with changes in the life cycle stages (i.e., within-firm variation), we emphasize that use of firm-fixed-effect regression is imperative for such studies. This can also alleviate the concern with unobserved time-invariant firm heterogeneity that may otherwise drive the documented relation. Furthermore,

use of a set of observable control variables is also important, to account properly for the relationship between firm life cycle stages and outcome variables.

In conclusion, life cycle studies in accounting, finance and corporate governance so far, provide interesting insights into the determinants and implications of the firm life cycle. However, much more research, in conjunction with better empirical life cycle proxies and research design, could play important roles in advancing life cycle literature in the future.

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* indicates that the paper is a relevant study for the life cycle review.

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