

Does firm life cycle affect comparability?

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Abstract

This paper examines how the financial statement comparability varies across different phases of the firm life cycle. We assert that mature firms are inclined to produce financial statements that are comparable among the industry peers to maintain their reputation. Using a sample of U.S. listed companies from 1981 to 2019, we find evidence to support our assertion. A battery of robustness tests, including propensity score matching and change analysis, validate our initial findings. We extend financial statement comparability literature by providing evidence on a determinant of comparability. Our study gives the policymakers insights regarding the necessity to consider comparability when designing financial accounting standards.

Keywords: financial statement comparability, comparability, firm life cycle,

JEL Classifications: M41, G41

1. Introduction

This paper examines whether financial statement comparability (hereafter comparability) varies at different firm life cycle stages (hereafter FLC). A strand of research examines whether financial reporting quality varies across firm life cycle stages.¹ Although several studies examine the consequences of comparability, the determinants of comparability is largely unexplored (De Franco et al., 2019). Besides, there is no empirical evidence on how different stages of the life cycle affect comparability. Comparability increases the quality of the information environment (De Franco et al., 2011). Therefore, we assert that comparability varies at different stages of FLC as the requirements of the firm differs at different stages.

Higher comparability reduces information processing costs and thereby increases the efficacy of the information environment. In other words, comparability enhances the transparency of financial statements. Prior empirical evidence also suggests that comparability reduces the cost of equity (Imhof et al. 2017) and the cost of borrowing (Kim et al., 2013). Using an intuitive and practical measurement to capture comparability, De Franco et al. (2011) suggest that it increases the quality of the information environment. Comparability essentially reduces information acquisition cost, enhances the ability to evaluate performance with fewer adjustments and judgments, and increases internal capital market efficiency (Cheng and Wu, 2018; Peterson et al., 2015). It also reduces bad news hoarding, future earnings responses (Choi et al., 2019; De Franco et al., 2011; Peterson et al., 2015; Kim et al., 2016; Kim et al., 2020), and thereby increases the overall quantity and quality of information available to investors and analysts (Barth et al., 2012; Kim et al., 2013; Chen et al., 2018). Zhang et al. (2020) find that comparability affects corporate employment decision-making.

¹ See Habib et al., 2019 for a comprehensive review

Comparability is a qualitative characteristic that has been identified as essential in the financial reporting framework (IASB, 1980, 2018). Therefore, it is important from regulatory perspective to learn what factors determine the variation of the level of comparability facet of financial reporting. Studies on the determinants of comparability suggest that accounting standards and regulations affect comparability (Barth, et al., 2012; Brochet, et al., 2013; Dhole, et al., 2015). It has also been found that internal governance mechanisms (Endrawes et al., 2018; Francis et al. 2014), mimicking strategic imperatives (Francis et al. 2014) and geographical proximity (DeFranco et al., 2019) also affect comparability. This study adds to the limited literature on the determinants of comparability and examines whether FLC is a determining factor affecting comparability.

Habib and Hasan (2019) provide a comprehensive literature review of the role of FLC on financial reporting and management accounting practices, financial policy implications, and corporate governance processes. Prior research provides evidence to suggest that a wide range of firm-level outcomes is different at various phases of the FLC. For example, research shows that stock prices, value relevance of accounting measures, dividend policy, accrual quality, cost of equity, forecasting profitability and growth, corporate policies and other disclosure initiatives such as CSR differ across FLC (Anthony and Ramesh, 1992; Coulton and Ruddock, 2011; DeAngelo et al., 2006; Faff et al., 2016; Hasan et al., 2015; Liu, 2006; Vorst and Yohn, 2018). However, prior research did not examine whether comparability varies across phases of the FLC. This paper aims to fill the void.

While the conventional life cycle theory argues that organizations grow from its birth to decline monotonically, the contemporary life cycle theory argues that firms' evolution over the life cycle is nonlinear (Habib and Hasan, 2019). We use the reputation view of the resource-based theory and argue that mature firms are more likely to produce comparable financial statements. Based on a US sample of 57,523 firm-year observations from 1981 to 2019, we

show that firms' likelihood of producing a set of comparable financial statements differ significantly across life cycle stages. More specifically, we document that comparability, measured across three distinct variables, is higher for the firms at the mature stage of FLC. Evidence also exists to report that comparability is lower for the introduction stage firms and somewhat similar in growth and maturity stage firms and decreases for the shakeout and decline firms. Our results are robust when we control for selection bias using the propensity score matching technique. Further robustness tests including a change analysis and alternative measure of FLC substantiate our original findings. From a theoretical stance, our evidence supports the reputation view of FLC. We extend two distinct streams of the prior literature. First, by documenting that firm life cycle is linked to the financial statement comparability, we answer the call of De Franco et al. (2019) for exploring new determinants of financial statement comparability and extend the comparability literature. We extend FLC literature by providing evidence that firm life cycle plays an important role in the disclosure of comparable financial statements.

The paper is organized as follows. This introduction is followed by literature and hypotheses development in sections 2 and 3, respectively. Section 4 presents the methodology, while section 5 discusses the empirical results and analysis. Robustness tests are presented in section 6, and section 7 concludes the paper.

2. Literature and hypothesis development

2.1 Firm life cycle

According to the firm life cycle theory, firms evolve through distinct life cycle stages. Revenue generation, profitability, and cash flows are uncertain during the introduction and growth stages (Habib and Hasan, 2020). These firms are encountered with “liability newness” and are prone to exit the market (Hasan and Habib, 2017). While the growth firms focus on product modification and improvement due to intense competition (Hay and Ginter, 1979),

firms in the decline stage concentrate more on survival. Consequently, Hasan and Habib (2017) argue that firms in the introduction, growth, and decline stages of the FLC have “fragile financial performance” (p.23), which may lead to jeopardizing shareholder value. In contrast, firms in the mature stage have more stable revenues and cash flows and therefore, overall uncertainties are relatively lower. Furthermore, mature firms have a larger customer base and diversification advantages, leading to lower cash flow risk (Hasan and Habib, 2017).

Life cycle theory also suggests that the reward for acquiring market share to create demand advantages or for building capacity to create cost advantages diminishes over a firm’s life cycle stages. In other words, rewards are larger in the earlier stages of the firm life cycle. Therefore, it is necessary to maximize revenue growth in the earlier stages of the firm life cycle to create permanent demand or cost benefits over its competitors (Karnani, 1984; Porter, 1980; Wernerfelt, 1985). Consequently, firms at different stages of the life cycle require different management skills, priorities, structures and strategies (Miller and Friesen, 1980, 1984; Quinn and Cameron, 1983). Accordingly, firms display different operating, investing and financing cash flow patterns across different stages of the life cycle (Dickinson, 2011).

Prior empirical evidence has found that FLC affects firm-level outcomes. For example, various stages of FLC are shown to affect the stock market response to accounting information (Anthony and Ramesh, 1992); investment, financing, and cash policies (DeAngelo et al., 2006; Faff, et al., 2016); risk-taking propensities (Habib and Hasan, 2017); tax avoidance (Hasan et al., 2017); and analyst following (Hamers et al., 2016). Hasan and Habib (2017) examined the association between the corporate life cycle and corporate social responsibility (CSR). Their evidence supports the assertion that the resource base and competitive advantages allow mature firms to invest more in CSR-related activities than

firms at other stages of the corporate life cycle. During the early stages of the FLC, managers are likely to invest in diversifying strategies and in opportunities that may provide long-term survival (Donaldson & Lorsch, 1983; Doukas & Kan, 2004), leading to poor financial performance and deficits for the firms when compared to the mature stage of FLC. These strategic imperatives lead to higher levels of information asymmetry between the investors and the managers during the early stages. Consequently, firms at the earlier stages of their FLC are less likely to be followed by analysts (Barth, et al., 2001; Lehavay et al., 2011).

There is a lack of empirical evidence on how different stages of FLC affect firm reporting behaviour with only a few exceptions. Liu (2006) examined how discretionary accruals vary over a firm's life cycle and find that accruals quality varies with changes in a firm's operating environment over its life cycle. Hansen et al. (2018) find that unconditional reporting conservatism decreases over life cycle stages. Bakarich et al. (2019) find that each of the life cycle indicators is a determinant of different textual characteristics such as complexity, tone, and sentiment of 10-Ks.

Berger and Udell (1998) suggest that firms at different life cycle stages differ in their ability to raise funds from the market. For instance, young firms generally chose private equity, whereas mature firms mainly rely on public markets. Information asymmetry in combination with reputation effect plays a role in determining the sources of financing at different stages of FLC. Specifically, firms at their introduction stage are relatively small, unknown, and are less closely followed by analysts and investors. This creates information asymmetry (Berger & Udell, 1998), which causes mispricing (Myers & Majluf, 1984). In contrast, mature firms are known to investors and more closely followed by analysts. Hasan et al. (2015) find evidence to suggest that cost of equity is lower for mature firms. In sum, prior research has examined consequences of FLC such as firm corporate investments,

financing and dividends decisions, corporate governance and socially responsible behaviors. Although some studies examined the impact of FLC on firm financial reporting behaviour and disclosures, none examined the comparability.

2.2 Financial statement comparability

According to the FASB conceptual framework, comparability ensures the usefulness of financial statements for the decision-makers. More specifically, the Concept Statement # 8 of the FASB (2010) prescribes that firm-specific information is more useful to the investors when they can compare it with other firms. In the equity market, it is essential for the investors to evaluate alternative opportunities. This comparison would be difficult without comparable financial statements (FASB, 2010). Prior empirical evidence suggests that comparability lowers information acquisition cost because it reduces uncertainties, which are linked to comparing similar economic events reported differently. Consequently, comparability increases the quality of financial information presented in the financial statements (De Franco et al., 2011).

De Franco et al. (2011) provides a measurement strategy of comparability that can be computed based on reverse earnings/returns regressions of a set of comparable firms. They find that comparability increases analyst coverage and forecast accuracy, and is inversely related to forecast dispersion. Accordingly, comparability enriches the quality of the information environment. Applying De Franco's measurement strategy, a stream of studies examined various firm-level consequences of comparability. Empirical evidence exists to suggest that comparability affects the cost of capital. For instance, Imhof et al. (2017) find that the implied cost of equity is lower for firms with higher levels of comparable financial statements, while Kim and Lim (2017a) document that comparability is negatively associated with equity investors' incentives to acquire private information. Prior research also examined

the impact of comparability on the debt market. Fang et al. (2016) find that the cost of debt reduces as comparability increases and Kim et al. (2013) report that comparability reduce firms risk due to reduction in uncertainties of pricing information. Hasan et al. (2020) also support this perspective by providing evidence from banks. There is evidence to suggest that comparability increases signalling of private information and Choi et al (2019) and Kim et al. (2018) support this assertion. Habib et al. (2020) investigate the information efficiency of stock prices for firms with comparable financial statements and find that the comparability and idiosyncratic return volatility inversely related. Similarly, Kim et al. (2020) find that comparability lowers the degree of delayed trading volume prior to earnings announcements. Adding another perspective to the financing implications, Habib et al. (2017) investigate whether comparability affects cash holding policy. As comparability increases the information environment by reducing information asymmetry and uncertainties among investors and analysts, they suggest that comparable firms are less likely to face financial frictions and more likely to access external finance. Therefore, they are less likely to engage in cash hoarding behaviour.

De Franco et al. (2011) argue that comparability facilitates a better understanding of how economic events translate into firm performance. Besides, analysts do not have to exercise caution and judgement in understanding and analyzing comparable financial statements because comparable statements constitute good benchmarks for the peer firms (De Franco et al., 2011). Furthermore, higher levels of comparability facilitate subjective judgements of accounting information users among comparable peers (Kim et al., 2013).

Across-firm financial statement comparability is a fundamental qualitative characteristic in increasing information comparison. Therefore, one would expect that comparability improves the quality of the disclosure environment. Some studies examine

disclosure quality implications of comparability. Kim et al. (2016) find evidence to suggest that managerial opportunistic disclosure incentive to withhold bad news is lower for more comparable firms, which ultimately results in lower stock price crash. Sohn (2016) suggests that more comparable firms have lower accrual manipulation as opposed to real activity manipulation. Choi et al. (2019) suggest that higher levels of financial statement comparability increase earnings persistence and predictability as well as accrual quality.

Despite the importance of comparability as a qualitative characteristic of financial reporting, there is a paucity of research that examines the determinants with a few exceptions. Internal governance mechanisms such as an effective board of directors have a fiduciary duty to enrich the quality of the information environment (Fama and Jensen, 1983). Given that comparability fulfils the role of reducing information asymmetry and information acquisition cost for stakeholders, board of directors are more likely to encourage comparability. Endrawes et al. (2018) provide evidence to support this assertion. They conclude that effective audit committee attributes such as independents and size positively associated with comparability. Auditor quality is also found to increase comparability (Francis et al. 2014). Based on the legitimacy theory, De Franco et al. (2019) argue that managers try to gain legitimacy for their strategic imperatives by mimicking the strategies and policies of larger and more established peers in the industry. They provide empirical evidence to support this assertion. Specifically, firms have higher financial statement comparability with industry peers located in the same metropolitan than with industry peers situated outside the same metropolitan (De Franco et al., 2019). Another stream of studies examined the role of accounting standards and regulations as a mechanism of affecting comparability. For instance, Brochet, et al. (2013) and Barth, et al. (2012) study the effect of the mandatory

adoption of IFRS on comparability. Further, Dhole, et al. (2015) examine the role of the SEC's XBRL Mandate on accounting comparability. Prior research also finds that higher proprietary costs discourage firms from reporting more comparable financial statement (Imhof et al., 2017). As comparability generates various benefits by increasing the quality of information environment and reducing information acquisition cost, it is important to understand what factors drive comparability.

2.3 Firm life cycle and financial statement comparability

Drawing insights from the dynamic resource –based view, Boyd et al. (2010) argue that reputation is an important and time-varying intangible resource that has positive performance implications. Reputation is a multidimensional perspective and is determined through a set of interrelationships among internal and external factors (Boyd et al., 2010, Barney, 1991). Linking FLC to the credit ratings, Blomkvist et al. (2020) suggest that mature firms possess a higher reputation than the introduction and decline firms in the FLC. Thus, we argue that firms in the introduction stage have lower reputation and their reputation grows when they evolve along the FLC. Mature firms have a long operating history (Easley & O'Hara, 2004) and investors and lenders are familiar with these firms. Mature firms also have a long history of existence in the market and are more closely followed by analysts and investors (Hasan and Habib, 2017), and they develop a reputation amongst analysts. As financial statement comparability facilitates meaningful comparisons among firms, analysts are more likely to make intense inferences about economic similarities and differences across comparable firms. Therefore, mature firms with higher analysts following face the demand to disclose comparable information (Lang & Lundholm, 1993). Higher comparability enhances legitimacy and credibility of the financial statements, and justifies managerial decisions compared to peers' accounting choices (Dickinson et al., 2019). Further comparability

reduces information-processing costs and increases information-processing efficiency for investors and analysts. Therefore, we argue that mature firms prepare comparable financial statements to showcase their credibility, legitimacy and decision-making processes around accounting choices to maintain their reputation.

We also argue that firms in the decline stage of FLC are less likely to have comparable financial statements. Firms at the decline stage is usually characterized by a lack of innovation and reduction in profitability, liquidation of some operations, risk aversion, and have a negative tone in their financial disclosure report (Bakarish et al., 2019). Accordingly, they are least concerned about maintaining reputation. Consequently, we argue that these firms are unlikely to produce financial statements that allow comparisons.

Contrasting view could also exist. Firms in the earlier stages of FLC (i.e., introduction and growth stage) may produce comparable financial statements to signal that they are similar to the industry counterparts. Introduction and growth stage firms are faced with more uncertainties and goal ambiguity relative to mature firms (Hasan & Habib, 2017). DiMaggio and Powell (1983) suggest that uncertainty and ambiguous organisation goals are powerful forces that encourage imitation, which leads to mimic industry peers. Therefore, one can argue that firms in the introduction and growth stages of FLC, which are characterized by uncertainty and goal ambiguity, are more likely to imitate their industry peers. Comparability of financial statements will signal the firms' mimicking behaviour to the investors, which helps them to secure their position amongst the industry peers. In addition, the introduction and growth stage firms are more likely to prepare comparable financial statements to reduce information asymmetry and gain access to low cost financing. Precisely, introduction and growth firms have higher financing needs than mature firms (Dickinson, 2011). However, they face greater challenges in acquiring finance due to high cost of capital arising from

increased information asymmetry (Hasan et al., 2015). Prior research finds that comparability is positively associated with a lower cost of capital (Fang et al., 2016; Imhof et al., 2017). Therefore, introduction and growth stage firms' comparability could be higher to access low-cost financing by reducing information asymmetry.

Based on the above discussion, we develop the following hypothesis in the alternate form.

Hypothesis: The mature stage of the firm life cycle is positively associated with financial statement comparability.

4. Methodology

4.1 Sample

We start with a sample of 100,326 firm-year observations from 1981-2019 for which data on comparability measures are available. We exclude 25,120 observations belonging to financial (SIC 6000–6900) and regulated industries (SIC 4900-4939) firms. We also drop 7,276 observations where the firm is incorporated outside US, has financial year duration other than 12 months, and currency code is not USD. Finally, another 10,407 observations were deleted due to missing information for the control variables. Our final sample consists of 57,523 firm-year observations relating to 6,455 unique firms from 1987 to 2019. All financial data were sourced from the CRSP/COMPUSTAT merged database. Table 1 presents sample selection criteria.

<Insert Table 1 about here>

4.2 Life cycle stages

According to Dickinson (2011), assessing the FLC at the firm level is challenging due to certain factors such as firms have many different product life cycles which may be overlapping, some firms operate in multiple industries, and the diversity of product range.

We follow Dickinson (2011) and measure FLC proxies and classify the sample into different FLC stages based on the below cash flow patterns, net operating cash flows (OPCF), net investment cash flows (INCF) and net investment cash flows (FINCF)

(1) Introduction: if $OPCF < 0$, $INCF < 0$ and $FICF > 0$;

(2) Growth: if $OPCF > 0$, $INCF < 0$ and $FICF > 0$;

(3) Mature: if $OPCF > 0$, $INCF < 0$ and $FICF < 0$;

(4) Decline: if $OPCF < 0$, $INCF > 0$ and $FICF > \text{or} = 0$; and

(5) Shake-out: the remaining firm years are classified into the shake-out stage.

In our robustness tests, we use an alternative measure for Maturity firms, $\Delta RE/TA$, which is measured as change in retained earnings-to-total assets following (DeAngelo et al., 2006). This proxy measures the extent to which a firm is self-financing or reliant on external capital. Accordingly, a higher RE/TA infers that the firm is more likely to be mature or old having declining investment, while the firm with a low RE/TA are more likely to be young and growing.

4.3 Measuring comparability

We follow De Franco et al. (2011) and argue that two firms' accounting systems are more comparable if they report similar accounting numbers given the same set of economic events. Accordingly, we use the financial statement comparability measure of De Franco et al. (2011), which has been extensively employed in recent accounting and finance research (Chen et al., 2018; Endrawes et al., 2018; Fang et al., 2016; Kim et al., 2016; Habib et al., 2017; 2020a; 2020b Zhang et al., 2020; Kim et al. 2020; Hasan and Habib 2020). De Franco et al.

(2011) uses the following time-series regression using firm i 's 16 previous quarters of earnings and stock returns:

$$EARNINGS_{it} = \alpha_i + \beta_i RETURN_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where, $EARNINGS$ is the quarterly net income before extraordinary items scaled by the beginning-of-period market value of equity, and $RETURN$ is the raw stock return during quarter t . The estimated coefficients $\hat{\alpha}$ and $\hat{\beta}$ are firm i 's accounting system or a function that maps firm i 's economic events (returns) into accounting numbers (reported earnings). Similarly, the accounting system of firm j from the same 2-digit SIC industry as firm i is proxied by $\hat{\alpha}$ and $\hat{\beta}$, which is estimated using the firm j 's earnings and returns. Then, we quantify the similarities in the accounting systems of firms i and j by comparing their respective accounting response to the same set of economic determinants. In other words, we calculate the predicted earnings of firms i and j using their accounting functions with firm i 's economic events,

$$E(EARNINGS)_{i,i,t} = \hat{\alpha}_i + \hat{\beta}_i RETURN_{i,t} \dots \dots \dots (2)$$

$$E(EARNINGS)_{i,j,t} = \hat{\alpha}_j + \hat{\beta}_j RETURN_{i,t} \dots \dots \dots (3)$$

where $E(EARNINGS)_{i,i,t}$ is firm i 's predicted earnings given firm i 's accounting function and firm i 's return in period t , and $E(EARNINGS)_{i,j,t}$ is firm j 's predicted earnings given firm j 's accounting function and firm i 's return in period t . The pair-wise comparability between firms i and j $COMPACCT_{i,j,t}$ is calculated as the negative value of the average absolute difference between the predicted earnings using firm i 's and firm j 's accounting functions:

$$COMPACCT_{i,j,t} = -\frac{1}{16} \sum_{t-15}^t |E(EARNINGS)_{i,i,t} - E(EARNINGS)_{i,j,t}| \dots \dots \dots (4)$$

We estimate $COMPACCT_{i,j,t}$ for each firm i and firm j combination, where ($i \neq j$, $j = 1, \dots, j$), for j firms within the same 2-digit SIC industry. A smaller difference between

$E(EARNINGS_{i,i,t} - E(EARNINGS)_{i,j,t})$ suggests a higher value of $COMPACCT_{i,j,t}$ and indicates a higher level of comparability between firm i's and firm j's accounting functions. Finally, we measure firm I's comparability $COMPACCT_{i,j,t}$ using (1) M4_COMP, $COMPACCT_{i,j,t}$ of 4 firms j with the highest comparability to firm I during year t, (2) M10_COMP, $COMPACCT_{i,j,t}$ of 10 firms j with the highest comparability to firm I during year t, and (3) IND_COMP, the median $COMPACCT_{i,j,t}$ for all firms j in the same industry as firm i during year t.

4.4 Empirical models for hypothesis testing

To investigate whether mature firms are associated with higher comparability, we estimate the regression presented in Model 5.

$$\begin{aligned}
 COMPACCT_{i,t} = & \alpha + \beta_1 LCYCLE_MATURE_{i,t} + \beta_2 FIRMSIZE_{i,t} + \beta_3 ROA_{i,t} + \\
 & \beta_4 FIRMRISK_{i,t} + \beta_5 SALES_GROWTH_{i,t} + \beta_6 CAPEX_RATIO_{i,t} + \\
 & \beta_7 TOP_AUDITOR_{i,t} + \beta_8 M2B_RATIO_{i,t} + \beta_9 FOREIGN_OP_{i,t} + \beta_{10} OPER_CYCLE_{i,t} + \\
 & \beta_{11} TANGIBLE_{i,t} + \beta_{12} LOSS_DUM_{i,t} + \beta_{13} LEVERAGE_{i,t} + \sum Year_t + \sum Industry_t + \\
 & \varepsilon_{i,t} \dots \dots \dots (5)
 \end{aligned}$$

$LCYCLE_MATURE_{i,t}$ and $COMPACCT_{i,t}$ are measured as described in Sections 4.2 and 4.3, respectively. $FIRMSIZE$ is the natural log of total assets, ROA is income before extraordinary items scaled by lagged total assets, $FIRMRISK$ is 5-year running standard deviation of ROA, $SALES_GROWTH$ is Changes in sales from year t-1 to year t, divided by sales in year t-1, $CAPEX_RATIO$ is the ratio of capital expenditure to Total assets, $TOP_AUDITOR$ is dummy variable equals 1 if the firm is audited by one of the top 8 auditors,

and 0 otherwise, *M2BRATIO* is the ratio of market value of equity and book value of equity, *FOREIGNOP* is Dummy variable equals 1 if the firm has foreign operations and 0 otherwise, *OPER CYCLE* is the operating cycle, *TANGIBLE* is the net property, plant, and equipment to total assets ratio, *LOSSDUM* is a dummy variable equals 1 if the firm incurs net loss in current fiscal year, and 0 otherwise, and *LEVERAGE* is the ratio of total debt and total assets. We winsorise the continuous variables at the 1st and 99th percentiles to deal with extreme observations and outliers. All variables are defined in Table 2.

<Insert Table 2 about here>

5. Empirical Results

5.1 Descriptive statistics

Table 3 presents the descriptive statistics of the variables used in this study. Panel A reports pooled descriptive statistics for the continuous dependent and control variables. *M4_COMP* has a mean of -0.707 and ranges between -25.72 and -0.10. The mean and median *M10_COMP* for the sample firms was -1.005 and -0.450, respectively, and the mean (median) for *IND_COMP* was -3.517 (-2.850). As per Panel B, about 42% of the sample are mature-stage firms, followed by 28% in the growth stage and 13% in the introduction stage. About 10% and 7% of the firms belong to shake-out and decline stage of the FLC. Nearly 33% of the observations have incurred a loss in year *t*. More than 80% of the firm-year observations were audited by one of the top eight auditors, and about 93% of the sample observations have foreign operations. Panel C shows life cycle-wise descriptive statistics. The mean values of ROA is negative in the introduction, decline, and shakeout stages (-0.26, -0.24 and -0.01), while this is positive and has increased over the growth and maturity stages (0.05 and 0.06). *FIRM RISK* is quite high in the introduction stage (mean value is 0.20) and

this has reduced to a mean value of 0.08 in the growth stage and has further reduced at the maturity stage (0.06). The sales growth is highest at the introduction stage (0.26), and has gradually reduced in the growth and maturity stages (0.21 and 0.08). These trends are in line with the life cycle theory.

Table 4 presents correlation coefficients between the variables used in the empirical models. The correlation between MATURE and each of the comparability measures is positive and significant. The direction of other correlations is as expected and unreported VIF values suggest that there is no multi-collinearity issues.

<Insert Table 3 about here>

<Insert Table 4 about here>

Figure 1 shows how the three proxies of comparability, M4_COMP, M10_COMP and IND_MED_COMP are placed across different stages of FLC. Figure 1 depicts that comparability increases from the introduction to the growth stage and remains somewhat constant from the growth to the mature stage but decreases from the mature to the shake-out stage and from the shake-out to the decline stage, resembling an inverted “U” shape pattern. This pattern is similar to the CSR disclosure across different firm life cycles as in Hasan and Habib (2017).

<Insert Figure 1 about here>

5.2 Multivariate statistics

Table 5 presents the results of the multivariate regression where the dependent variables are the three proxies for comparability. Higher values for any of these proxies imply more comparability, and thus a positive association between the life cycle stages and any of the comparability proxies indicates increased levels of comparability of financial statements. As shown in Table 5, the coefficient of LCYCLE_MATURE is positive and statistically

significant across all models with different measures of comparability, i.e., M4_COMP, M10_COMP and IND_COMP. Considering this, we infer that firms in the mature stage of the FLC produce more comparable financial statements. The tabulated results are also economically meaningful. For example, compared to the reference category of other firms, comparability is 0.073 point higher for a mature-stage firms when comparability is measured using M4_COMP. When the comparability is measured using M10_COMP (IND_COMP), comparability in mature firms is 0.099 (0.19) point higher.

<Insert Table 5 about here>

In Table 6, we re-estimated our baseline equation using dummy variables indicating different stages of FLC. Our reference category is the mature stage firms. As shown in Table 6, all three measures of comparability measures are negatively and significantly associated with the LCYCLE_INTRO, suggesting that firms in the introduction stage of the FLC produce less comparable financial statements as opposed to the reference category of the mature stage firms. From an economic sense, firms in the introduction stage of the FLC have 0.101 point less comparable financial statements (M4_COMP) than that of the mature stage firms. The difference becomes -0.149 and -0.389 for LCYCLE_INTRO firms when the comparability is measured using M10_COMP (IND_COMP) when compared to the mature firms. Similarly, LCYCLE_DECLINE is also negatively and significantly associated with all three measures of comparability (M4_COMP, M10_COMP and IND_COMP). Financial statement comparability score is 0.29 points lower for firms in the decline stage of the FLC compared to that of the mature stage firms. Such difference becomes magnified (-0.396 and -1.049) when the comparability is measured using M10_COMP (IND_COMP) relative to the mature firms. LCYCLE_SHAKE and comparability measures are also negatively and significantly associated. For instance, the financial statement comparability figure (M4_COMP) in the shakeout stage is on average 0.205 point lower than that of the mature

stage firms. Financial statement becomes even less comparable (-0.262 and -0.407) for LCYCLE_SHAKE when the comparability is measured using M10_COMP (IND_COMP). These findings infer that firms in the introduction, decline and shakeout stages of FLC are less likely to produce comparable financial statements relative to the mature stage firms. We do not find significant coefficients for LCYCLE_GROWTH stage and any of the comparability measures. This suggest that financial statement comparability amongst firms in the same Fama-French industry is not significantly different between mature stage and growth stage firms. This is also reflected in the Figure 1, which suggest that growth and mature stage firms life cycles have somewhat similar levels of comparability.

<Insert Table 6 about here>

5.4 Robustness tests

To establish robustness of our main regression results presented above, we perform additional tests as discussed below.

5.1 Propensity Score Matching

Armstrong et al. (2012) note two limitations of using the traditional linear regression approach used in the previous section. First, this approach relies on a linear functional form linking comparability with firm life-cycle and other control variables. To the extent that this linearity assumption is violated, the model becomes miss-specified and can produce biased estimates. Second, to the extent that there is endogenous matching of life cycle proxies and financial statement comparability on the basis of some unobserved characteristics, this gives rise to the possibility of omitted variable bias. We address these econometric concerns using propensity score matching. First, we conduct propensity score matching whereby we form matched pairs of firm-years that are otherwise similar along all of their (observable) economic

characteristics, but most dissimilar in terms of comparability. After matching on these variables, any difference in comparability can be more appropriately attributed to differences in firm life-cycle rather than to differences in the other variables, regardless of the underlying structural form.

Table 7 compares the comparability for firms at the maturity stage of their life-cycle with those of firms not at the maturity stage that have been matched via propensity score matching with the former. We first estimate the probability that a firm is a mature-stage firm. This probability (i.e., the propensity score) is the predicted value from a logit regression using the same controls as those included in our baseline equation. The logit regression results are reported in Column (1) of Panel A of Table 7. The results show that mature firms are larger, more profitable, and have higher asset tangibility. One of the top auditors also audits these firms and they have foreign operations. These firms are also characterized by lower leverage, lower firm risk, capital expenditure ratio, and operating cycle. The pseudo R-square for the regressions is high with a value of 0.171. Next we adopt the nearest neighbour approach to ensure that mature firms (i.e., the treatment group) are sufficiently similar to the matched firms not at the maturity-stage of their life-cycle (i.e., the control group). Specifically, each mature-stage firm is matched to a firm not at the maturity-stage and with the closest propensity score. We further require that the maximum difference between the propensity score of each firm with CSR award and that of its matched peer does not exceed 1% in absolute value.

<Insert Table 7 about here>

To verify that firms in the treatment and control groups are indistinguishable in terms of observable characteristics, we conduct two diagnostic tests. The first test consists of re-estimating the logit model for the post-match sample. The results are shown in Column (2) of Panel A of Table 7. With the exception of firm risk, none of the coefficient estimates is

statistically significant, suggesting that there are no distinguishable trends between the two groups. Furthermore, the coefficients in Column (2) are generally much smaller in magnitude than those in Column (1), suggesting that the results in Column (2) are not simply an artefact of a decline in degrees of freedom in the restricted sample. Finally, the pseudo R-square drops substantially from 0.171 to 0.001 for the post-match sample. This suggests that the propensity score matching removes all observable differences other than the difference in the presence of a mature-stage firm.

The second test consists of examining the difference for each observable characteristic between the treatment firms and the matched control firms. The results are presented in Panel B of Table 7. Again, none of the differences in observable characteristics between the treatment and control firms is statistically significant. Overall, the diagnostic test results suggest that the propensity score matching removes all observable differences other than the difference in firm-life-cycle. Thus, this increases the likelihood that any difference in comparability between the two groups is due to the difference in firm-life cycle.

Finally, Column 3 of Panel A of Table 7 reports the re-estimation of our baseline regression using the propensity score-matched sample. The results indicate a significant difference in financial statement comparability between firms at the mature stage and those without.

5.2 Alternative measure of FLC

Following prior literature (DeAngelo et al., 2006; Hasan and Habib, 2017) we use RE/TA (retained earnings to total assets) as an alternative measure for FLC to ascertain robustness of our findings. RE/TA measures the extent to which a firm is self-financing or reliant on external capital. Firms with lower RE/TA ratio can be categorised as young and growing while firms with higher RE/TA can be categorised as mature or old with declining

investment (DeAngelo et al., 2006). We regress comparability measures on RE/TA and other control variables. The results are presented in Table 8. RE/TA is positively and significantly associated with all three measures of comparability M4_COMP, M10_COMP and IND_MED_COMP ($\beta=0.049$, $p<0.000$; $\beta=0.074$, $p<0.000$; $\beta=0.272$, $p<0.000$).

<Insert Table 8 about here>

5.3 Change analysis

We also examine robustness of our results using change analysis. We believe a change analysis may reduce potential bias of our original findings by minimizing unobserved effects that are fixed over time. Following Hasan and Habib (2017), we assert that, if a firm's maturity drives the increase in comparability of financial statements, then the firm's progression to maturity from other life cycle stages should exhibit an increase in comparability levels. Accordingly, we adapt our model presented in the equation 5 to a change specification. In the change model, we regress changes in comparability on changes in the firm maturity ($\Delta RE/TA$) along with changes in other control variables. The results are presented in Table 9. We continue to find a positive and significant association between maturity stage of FLC and changes in comparability over time for M4_COMP, M10_COMP and IND_MED_COMP ($\beta=0.016$, $p<0.10$; $\beta=0.026$, $p<0.05$, $\beta=0.121$, $p<0.000$). Overall, our originally documented results based on Table 5 holds.

<Insert Table 9 about here>

7. Conclusion

FLC theory suggests that firms evolve through distinct life cycle stages. Revenue generation, profitability and cash flows are uncertain during the introduction and growth stages

(Habib & Hasan, in press). Introduction, growth, maturity, shakeout and decline phases of FLC reflect the evolution in organization, financing, investment, and structure that firms experience (Miller and Friesen, 1984). Although not all firms go through each phase around the same duration, each stage of the FLC have its own unique characteristics. The changing internal and external operating environments at each stage affect fundamental business models. As a result, motivation to disclose comprehensive high quality information differs depending on the requirements and characteristics of each life cycle stage. There is limited number of studies, which examined the extent of disclosures across different life cycle stages. Financial statement comparability is the extent of similarity between the financial statements of two firms, which have faced similar economic transactions as the economic transactions map into financial accounting systems. Comparability reduces information acquisition cost increases quality of financial information presented in the financial statements (De Franco et al., 2011). Thus, we argue that mature firms of the FLC tend to produce comparable financial statements as opposed to the firms in other phases of FLC because those firms seek in maintaining reputation amongst the stakeholders. We provide empirical evidence to support the reputation hypothesis. Specifically we find that mature firms are more likely to produce comparable financial statements relative to other firms. Propensity score matching and change models substantiate our findings. However, we provide caution with respect to causation interpretation in our study. Dickinson (2011) FLC classification requires the inclusion of four life cycle stages as explanatory variables in the regression model. Therefore, it is a challenging task to find instrumental variables that are related to all life cycle stages at a given point in time. Thus, we identify this as a limitation in our study.

Accounting regulators and practitioners repeatedly stress the beneficial role of comparability in financial reporting, arguing that it enhances the usefulness of financial statements for investors' decision-making. Financial statement comparability across firms is

an essential qualitative characteristic that is required by the financial reporting frameworks (IASB, 2018). Given the regulatory and practical imperativeness of comparability, it is important to examine what factors determine comparability. Given the paucity of research on the determinants of comparability (De Franco et al., 2019), we propose that more research could be conducted using empirical estimates of comparability by De Franco et al. (2011).

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Table 1: Sample Selection and Industry Distribution

Panel A: Sample Selection

Criteria	Observations
Firm-year observations for comparability measure (1981-2019)	100,326
Less: Financial and regulated observations (SIC 6000-7000, SIC 4900-4939)	(25,120)
Less: Observations with non-US firms, period duration other than 12 months and currency code other than USD	(7,276)
Less: Missing control variables for the baseline regression model	(10,407)
Final Sample (6,455 unique firms: 1987-2019)	57,523

Panel B: Industry Distribution

2-Digit SIC	Industry	Observations	%
01-14	Agriculture & mining	3,063	5.32
15-17	Building construction	335	0.58
20-21	Food & kindred products	1,475	2.56
22-23	Textile mill products & apparels	650	1.13
24-27	Lumber, Furniture, Paper, and Printing	2,594	4.51
28-30	Chemical, Petroleum, and Rubber & Allied Products	8,292	14.42
31-34	Metal	2,956	5.14
35-39	Machinery, electrical, computer equipment	19,017	33.06
40-48	Railroad, Communications and Other Transportation	2,837	4.93
50-51	Wholesale goods, building materials	3,639	6.33
53-59	Store merchandise, auto dealers, home furniture stores	2,173	3.78
70-79	Business services	7,631	13.27
80-99	Others	2,861	4.97
	Total	57,523	100

Table 2: Variable Definition

Variable	Definition
M4_COMP	Firm-year level accounting comparability, which is the average of the top four comparability combinations for firm <i>i</i> and other firms in the same 2-digit SIC in a given year
M10_COMP	Firm-year level accounting comparability, which is the average of the top ten comparability combinations for firm <i>i</i> and other firms in the same 2-digit SIC in a given year
IND_COMP	Firm-year level accounting comparability, which is the industry median of comparability combinations for firm <i>i</i> and other firms in the same 2-digit SIC in a given year
LCYCLE_INTRO	Dummy variable equals 1 if the net cash flow from financing activities is positive while the net cash flow from operating and investing activities are both negative, and 0 otherwise
LCYCLE_GROWTH	Dummy variable equals 1 if the net cash flow from investing activities is negative while the net cash flow from operating and financing activities are both positive, and 0 otherwise
LCYCLE_MATURE	Dummy variable equals 1 if the net cash flow from operating activities is positive while the net cash flow from financing and investing activities are both negative, and 0 otherwise
LCYCLE_DECLINE	Dummy variable equals 1 if the net cash flow from operating activities is negative, the net cash flows from financing and investing activities are either positive or negative and positive respectively, and 0 otherwise
LCYCLE_SHAKE	Dummy variable equals 1 if the firm year does not belong to any of the other life cycle categories
FIRM SIZE	Natural log of total assets
SALES GROWTH	Changes in sales from year $t-1$ to year t , divided by sales in year $t-1$
ROA	Income before extraordinary items \div Total assets in year $t-1$
LEVERAGE	Total debt \div Total assets
CAPEX	Capital expenditure \div Total assets
LOSSDUM	Dummy variable equals 1 if the firm incurs net loss in current fiscal year, and 0 otherwise
TANGIBILITY	Net Property, Plant, Equipment \div Total assets
M2B RATIO	Market value of equity \div Book value of equity
OPER_CYCLE	$(\text{Average accounts receivable} \div \text{Daily sales}) + (\text{Average inventory} \div \text{Daily cost of goods sold}) - (\text{Average accounts payable} \div \text{Daily purchase})$
TOP AUDITOR	Dummy variable equals 1 if the firm is audited by one of the top 8 auditors, and 0 otherwise
FOREIGN_OP	Dummy variable equals 1 if the firm has foreign operations and 0 otherwise.
FIRM RISK	5-year running standard deviation of ROA

Table 3: Descriptive Statistics
 Panel A: Continuous Variables

Variable	N	Mean	Median	SDEV	Min	Max
M4_COMP	57523	-0.707	-0.290	1.297	-25.720	-0.010
M10_COMP	57523	-1.005	-0.450	1.634	-27.240	-0.020
IND_COMP	57523	-3.517	-2.850	2.427	-36.330	-0.350
FIRM SIZE	57523	5.634	5.531	2.198	-0.675	13.221
LEVERAGE	57523	0.222	0.189	0.207	0.000	0.939
ROA	57523	-0.014	0.035	0.208	-1.132	0.327
FIRM RISK	57523	0.094	0.051	0.128	0.004	0.869
SALES GROWTH	57523	0.135	0.072	0.419	-0.749	2.754
CAPEX RATIO	57523	0.055	0.037	0.058	0.000	0.329
M2B RATIO	57523	0.814	1.000	0.389	0.000	1.000
OPER_CYCLE	57523	2.919	1.990	4.582	-14.042	29.250
TANGIBILITY	57523	0.933	1.000	0.249	0.000	1.000

Panel B: Dummy Variables

Variable	Value=0	%	Value=1	%
LCYCLE_MATURE	33,265	57.83	24,258	42.17
LCYCLE_INTRO	50,256	87.37	7,267	12.63
LCYCLE_GROWTH	41,448	72.05	16,075	27.95
LCYCLE_DECLINE	53,347	92.74	4,176	7.26
LCYCLE_SHAKE	51,776	90.01	5,747	9.99
LOSSDUM	38,316	66.61	19,207	33.39
TOP AUDITOR	10,695	18.59	46,828	81.41
FOREIGN_OP	3,830	6.66	53,693	93.34

Panel C: Descriptive Statistics across Corporate Life-Cycle Stages

	Introduction (N=7,267)			Growth (N=16,075)			Maturity (N=24,258)			Decline (N=4,176)			Shake-Out (N=5,747)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
M4_COMP	-1.06	-0.52	1.55	-0.56	-0.24	1.05	-0.58	-0.23	1.13	-1.18	-0.56	1.74	-0.89	-0.35	1.64
M10_COMP	-1.50	-0.79	1.96	-0.80	-0.37	1.33	-0.83	-0.36	1.42	-1.64	-0.86	2.17	-1.24	-0.54	2.04
IND_COMP	-4.69	-3.87	3.02	-3.09	-2.61	1.93	-3.07	-2.62	1.96	-5.27	-4.29	3.32	-3.82	-3.03	2.73
FIRM_SIZE	4.09	3.95	1.69	5.99	5.94	1.97	6.23	6.23	2.19	4.06	3.97	1.63	5.20	5.07	2.20
LEVERAGE	0.24	0.19	0.24	0.25	0.24	0.20	0.21	0.19	0.19	0.18	0.07	0.24	0.18	0.10	0.21
ROA	-0.26	-0.15	0.34	0.05	0.05	0.11	0.06	0.06	0.09	-0.24	-0.19	0.28	-0.01	0.02	0.15
FIRM RISK	0.20	0.13	0.20	0.08	0.05	0.10	0.06	0.04	0.07	0.19	0.13	0.19	0.10	0.06	0.11
SALES GROWTH	0.26	0.10	0.69	0.21	0.14	0.37	0.08	0.06	0.22	0.11	-0.03	0.71	0.04	0.01	0.38
CAPEX RATIO	0.05	0.03	0.05	0.08	0.05	0.08	0.05	0.04	0.05	0.03	0.02	0.04	0.04	0.02	0.04
TOP_AUDITOR	0.70	1.00	0.46	0.85	1.00	0.36	0.85	1.00	0.36	0.74	1.00	0.44	0.77	1.00	0.42
M2B RATIO	3.69	2.21	6.77	2.90	2.10	3.69	2.77	1.98	3.98	3.06	1.82	6.16	2.50	1.61	4.32
OPER_CYCLE	0.92	1.00	0.27	0.93	1.00	0.26	0.94	1.00	0.23	0.92	1.00	0.27	0.93	1.00	0.26
FOREIGN_OP	99.54	84.94	149.03	68.41	65.03	107.57	78.33	71.29	86.79	100.74	76.12	169.45	94.12	80.34	117.13
TANGIBILITY	0.18	0.12	0.18	0.32	0.23	0.26	0.30	0.24	0.22	0.16	0.10	0.16	0.21	0.14	0.20

Table 4: Correlation Table

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
[1] M4_COMP	1.00														
[2] M10_COMP	0.98***	1.00													
[3] IND_COMP	0.78***	0.81***	1.00												
[4] MATURE	0.09***	0.09***	0.16***	1.00											
[5] FIRM SIZE	0.13***	0.14***	0.20***	0.23***	1.00										
[6] LEVERAGE	-0.18***	-0.19***	-0.11***	-0.03***	0.22***	1.00									
[7] ROA	0.20***	0.22***	0.38***	0.29***	0.33***	-0.07***	1.00								
[8] FIRM RISK	-0.18***	-0.19***	-0.35***	-0.25***	-0.33***	-0.07***	-0.53***	1.00							
[9] SALES GROWTH	0.04***	0.05***	0.01***	-0.12***	-0.03***	0.00	-0.04***	0.16***	1.00						
[10] CAPEX RATIO	0.03***	0.03***	0.10***	-0.04***	0.05***	0.11***	0.08***	-0.06***	0.06***	1.00					
[11] TOP_AUDITOR	0.10***	0.10***	0.13***	0.08***	0.35***	0.08***	0.12***	-0.12***	0.01**	0.06***	1.00				
[12] M2B RATIO	0.08***	0.08***	0.04***	-0.03***	0.02***	-0.07***	-0.06***	0.12***	0.11***	-0.01**	0.02***	1.00			
[13] FOREIGN_OP	0.04***	0.04***	0.02***	0.03***	0.09***	-0.04***	0.00	-0.03***	-0.02***	-0.05***	0.05***	0.01***	1.00		
[14] OPER_CYCLE	0.05***	0.06***	0.04***	-0.02***	-0.12***	-0.09***	-0.00	-0.03***	-0.09***	-0.27***	-0.04***	-0.03***	0.03***	1.00	
[15] TANGIBILITY	-0.06***	-0.07***	0.07***	0.10***	0.16***	0.30***	0.11***	-0.19***	-0.03***	0.64***	0.06***	-0.09***	-0.06***	-0.30***	1.00
[16] LOSSDUM	-0.25***	-0.27***	-0.36***	-0.29***	-0.30***	0.08***	-0.64***	0.35***	-0.04***	-0.08***	-0.12***	0.01*	-0.01	0.01***	-0.08***

* p<0.10, ** p<0.05, *** p<0.01

Figure 1: Life-Cycle wise Mean Comparability Measures

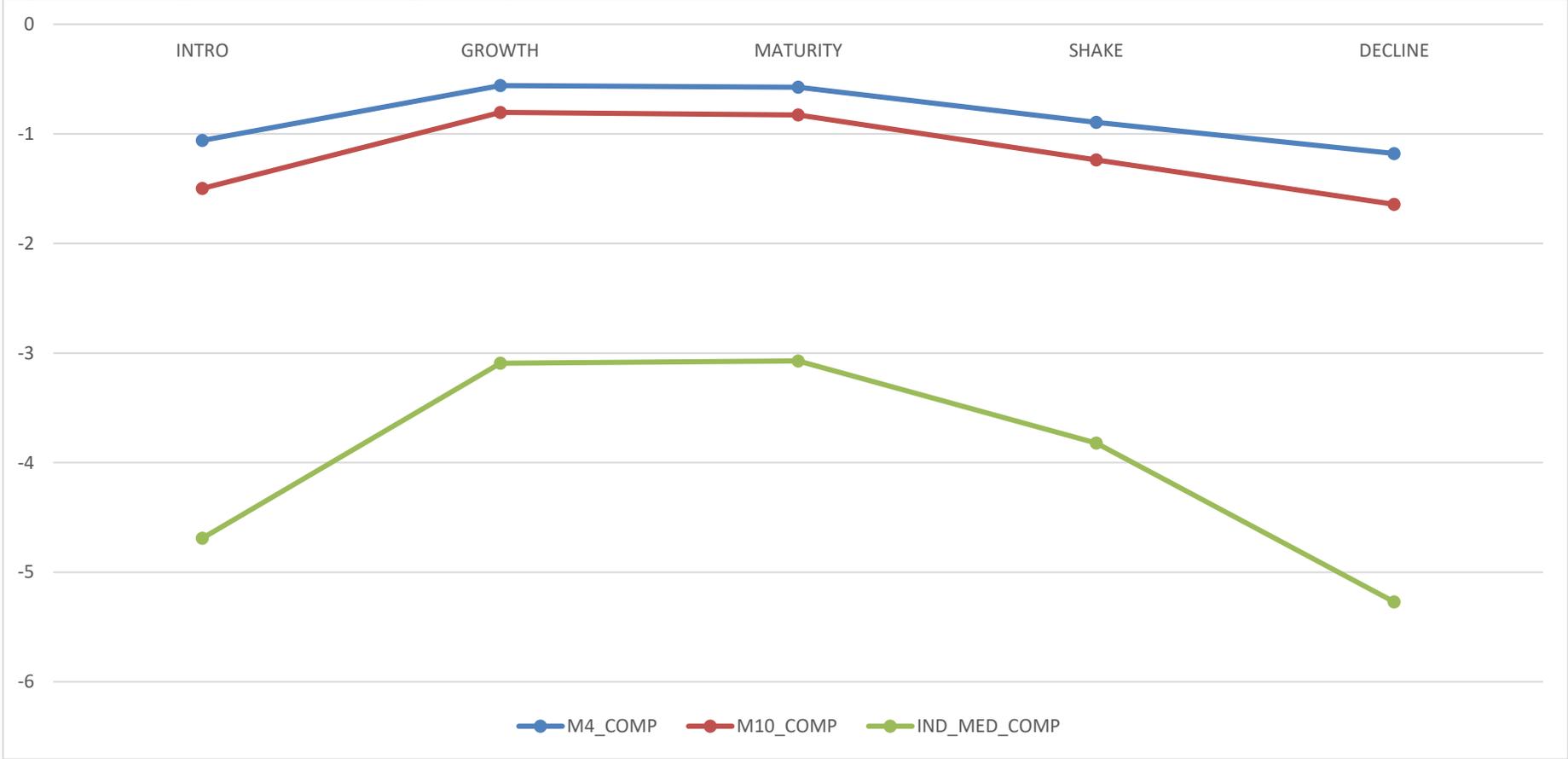


Table 5: Regression results for firm life cycle and financial statement comparability

	M4_COMP		M10_COMP		IND_COMP	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
LCYCLE_MATURE	0.073***	5.30	0.099***	5.91	0.190***	7.80
FIRM SIZE	0.071***	12.19	0.096***	12.91	0.197***	17.55
LEVERAGE	-0.912***	-14.21	-1.168***	-14.82	-1.806***	-16.08
ROA	0.171***	2.69	0.322***	3.97	2.367***	16.69
FIRM RISK	-1.595***	-15.01	-2.094***	-15.58	-4.070***	-16.78
SALES GROWTH	0.093***	6.03	0.123***	6.56	0.171***	5.44
CAPEX RATIO	1.950***	9.87	2.511***	10.17	3.591***	10.36
TOP AUDITOR	0.038	1.38	0.043	1.29	0.060	1.17
M2B RATIO	0.013***	7.77	0.016***	7.63	0.026***	7.41
FOREIGN_OP	0.044	1.23	0.052	1.19	0.071	1.17
OPER_CYCLE	0.000**	2.20	0.000**	2.35	0.001***	4.34
TANGIBLE	-0.259***	-3.12	-0.362***	-3.55	-0.501***	-3.58
LOSSDUM	-0.434***	-19.19	-0.581***	-20.66	-0.944***	-21.71
CONSTANT	-0.902***	-4.96	-1.224***	-5.54	-2.643***	-10.72
Year Controls	Yes		Yes		Yes	
Industry Controls	Yes		Yes		Yes	
Adjusted R-squared	0.197		0.237		0.344	
F-statistic	30.550		39.369		73.875	
Observations	57523		57523		57523	

Table 6: Regression results for firm life cycle and financial statement comparability

	M4_COMP		M10_COMP		IND_COMP	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
LCYCLE_INTRO	-0.101***	-3.70	-0.149***	-4.46	-0.387***	-7.41
LCYCLE_GROWTH	0.007	0.52	0.005	0.32	0.033	1.31
LCYCLE_DECLINE	-0.291***	-7.89	-0.396***	-8.88	-1.049***	-14.33
LCYCLE_SHAKE	-0.205***	-7.93	-0.262***	-8.38	-0.407***	-9.38
FIRM SIZE	0.066***	11.31	0.089***	11.98	0.181***	16.10
LEVERAGE	-0.942***	-14.51	-1.206***	-15.14	-1.878***	-16.63
ROA	0.111*	1.69	0.233***	2.80	2.082***	14.35
FIRM RISK	-1.580***	-14.87	-2.072***	-15.43	-4.003***	-16.54
SALES GROWTH	0.075***	4.91	0.100***	5.43	0.129***	4.17
CAPEX RATIO	1.676***	8.72	2.158***	8.95	2.873***	8.42
TOP AUDITOR	0.042	1.53	0.048	1.44	0.073	1.43
M2B RATIO	0.012***	7.61	0.015***	7.48	0.025***	7.29
FOREIGN_OP	0.038	1.08	0.045	1.03	0.053	0.88
OPER_CYCLE	0.000**	2.24	0.000**	2.41	0.001***	4.47
TANGIBLE	-0.273***	-3.27	-0.381***	-3.73	-0.559***	-4.01
LOSSDUM	-0.408***	-18.49	-0.546***	-19.86	-0.850***	-20.11
CONSTANT	-0.758***	-4.15	-1.032***	-4.65	-2.240***	-9.28
Year Controls	Yes		Yes		Yes	
Industry Controls	Yes		Yes		Yes	
Adjusted R-squared	0.200		0.240		0.351	
F-statistic	29.581		38.183		72.310	
Observations	57523		57523		57523	

Table 7: Propensity Score-Matching

Panel A

	LCYCLE_MATURE				M4_COMP	
	Pre-Match (1)		Post-Match (2)		PSM (3)	
LCYCLE_MATURE					0.034**	2.38
FIRM SIZE	1.092***	9.46	0.991	-0.87	0.055***	8.23
LEVERAGE	0.324***	-13.70	1.043	0.48	-1.066***	-12.51
ROA	98.404***	27.71	1.275	1.41	0.838***	5.77
FIRM RISK	0.082***	-12.84	0.690*	-1.93	-3.209***	-16.71
SALES GROWTH	0.313***	-22.80	0.954	-0.97	0.135***	4.06
CAPEX RATIO	0.000***	-22.67	1.509	1.08	2.256***	7.50
TOP AUDITOR	1.131***	3.08	0.986	-0.34	0.022	0.69
M2B RATIO	1.000	0.14	0.998	-0.50	0.014***	4.99
FOREIGN_OP	1.137**	2.49	0.942	-1.09	0.091*	1.93
OPER_CYCLE	0.999***	-3.60	1.000	-0.05	0.000**	2.09
TANGIBLE	9.781***	21.76	0.872	-1.24	-0.356***	-3.63
LOSSDUM	0.716***	-9.56	1.034	0.89	-0.330***	-10.64
CONSTANT	0.707**	-2.30	1.227	1.22	-2.264***	-3.66
Pseudo/Adj. R2	0.171			0.001	0.200	
Wald Chi-/F-stat	4557.561		32.293		24.050	
N	57523		34598		34598	

Panel B: Differences in Firm Characteristics

	LCYCLE_MATURE = 1 (N = 17,299)	LCYCLE_MATURE = 0 (N = 17,299)	Difference	t-stat
FIRM SIZE	5.871	5.904	-0.033	-1.47
LEVERAGE	0.220	0.221	-0.002	-0.79
ROA	0.044	0.042	0.002	1.64
FIRM RISK	0.065	0.066	-0.001	-1.49
SALES GROWTH	0.089	0.090	-0.001	-0.28
CAPEX RATIO	0.053	0.053	0.000	0.64
TOP AUDITOR	0.830	0.832	-0.002	-0.44
M2B RATIO	2.577	2.588	-0.010	-0.27
FOREIGN_OP	0.935	0.938	-0.004	-1.37
OPER_CYCLE	83.300	82.815	0.485	0.45
TANGIBLE	0.276	0.277	-0.002	-0.72
LOSSDUM	0.229	0.231	-0.003	-0.57

Table 8: Alternate Measure of Firm Life-Cycle

	M4_COMP		M10_COMP		IND_COMP	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
RE/TA	0.049***	6.52	0.074***	7.71	0.272***	14.25
FIRM SIZE	0.063***	10.55	0.083***	10.94	0.147***	13.06
LEVERAGE	-0.896***	-13.76	-1.145***	-14.28	-1.684***	-14.56
ROA	-0.027	-0.45	0.015	0.20	1.198***	8.74
FIRM RISK	-1.472***	-13.80	-1.912***	-14.16	-3.406***	-14.34
SALES GROWTH	0.085***	5.56	0.111***	5.99	0.139***	4.53
CAPEX RATIO	1.850***	9.58	2.377***	9.79	3.235***	9.45
TOP AUDITOR	0.043	1.56	0.051	1.50	0.083	1.61
M2B RATIO	0.014***	8.10	0.017***	8.01	0.031***	8.21
FOREIGN_OP	0.047	1.30	0.055	1.25	0.072	1.19
OPER_CYCLE	0.000	1.32	0.000	1.30	0.000**	2.10
TANGIBLE	-0.250***	-3.03	-0.356***	-3.51	-0.539***	-3.90
LOSSDUM	-0.456***	-19.79	-0.613***	-21.40	-1.030***	-23.23
CONSTANT	-0.608***	-3.26	-0.810***	-3.56	-1.431***	-5.79
Year Controls	Yes		Yes		Yes	
Industry Controls	Yes		Yes		Yes	
Adjusted R-squared	0.199		0.240		0.363	
F-statistic	30.415		39.572		76.236	
Observations	57162		57162		57162	

Table 9: Change Analysis

	M4_COMP		M10_COMP		IND_COMP	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Δ RE/TA	0.016*	1.70	0.026**	2.36	0.121***	6.31
Δ FIRM SIZE	0.278***	12.87	0.365***	14.17	0.728***	17.71
Δ LEVERAGE	-0.460***	-7.48	-0.610***	-8.71	-1.103***	-11.23
Δ ROA	0.357***	9.12	0.476***	10.56	1.269***	18.77
Δ FIRM RISK	-1.313***	-12.55	-1.668***	-13.44	-2.639***	-13.29
Δ SALES GROWTH	-0.037***	-4.06	-0.041***	-3.88	-0.090***	-6.15
Δ CAPEX RATIO	0.414***	3.84	0.538***	4.36	0.945***	5.38
Δ TOP AUDITOR	-0.003	-0.31	-0.010	-0.88	-0.013	-0.72
Δ M2B RATIO	-0.000	-0.07	0.000	0.06	-0.002	-1.43
Δ FOREIGN_OP	-0.006	-0.34	-0.004	-0.21	-0.010	-0.37
Δ OPER_CYCLE	0.000	0.89	0.000	1.10	0.000	0.58
Δ TANGIBLE	0.126	1.18	0.185	1.50	0.420**	2.48
Δ LOSSDUM	-0.182***	-19.15	-0.247***	-21.87	-0.420***	-25.46
Δ CONSTANT	-0.052	-0.95	-0.169***	-2.70	-0.072	-0.88
Year Controls	Yes		Yes		Yes	
Industry Controls	Yes		Yes		Yes	
Adjusted R-squared	0.068		0.090		0.166	
F-statistic	15.335		19.252		35.879	
Observations	50636		50636		50636	