Do Life-Cycles Affect Financial Reporting Quality?
Evidence from Emerging Market

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ABSTRACT
This paper aims to present the effect of life-cycle on financial reporting quality (FRQ). I used Discretionary accruals, small profit, and audit aggressiveness to test the FRQ from different approaches for Borsa Istanbul-listed companies between 2008 and 2017. The sample comprises 1,645 observations, 217 companies, and nine years. I estimated the life stages with Dickinson’s (2011) cash flow patterns. Following Hansen et al. (2018), I assigned values of 0, 0.25, 0.5, 0.75, and 1 for introduction, growth, mature, shake-out, and decline, respectively. The findings for small profit and discretionary accruals are consistent with conjecture. Discretionary accruals and small profit decrease as the companies move forward in their life-cycles. On the other hand, audit aggressiveness increases when the firms grow further in their life-cycles. I observed a negative coefficient, but it was insignificant for the other dependent variables. The findings provide an insight into the effect of life-cycle stages on FRQ. My results showed that the introduction and decline stages negatively affect FRQ. My results also showed that audit aggressiveness of Turkish companies decreases with increased listing duration.

Keywords: Life-Cycle Stages, Financial Reporting Quality, Earnings Management, Discretionary Accruals, Audit Aggressiveness, Small Profits

JEL Classification: C33, C40, M41, M49

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1. INTRODUCTION

This paper researches the effect of the life-cycle on financial reporting quality. The previous literature mainly chose a single measure of financial reporting quality. In this paper, I wanted to observe whether moving forward in life-cycle stages results in an increase in every financial reporting quality (FRQ) measurement. Different from the previous literature, I tested the relationship using three different proxies for FRQ. I used aggressiveness, discretionary accruals, and small profit reporting as FRQ proxies. The relationship between life-cycle stages and audit aggressiveness was not tested in the previous literature. To my knowledge, this is the first paper that focuses on the life-cycle stages in Borsa Istanbul (hereafter BIST) listed companies. This paper investigates whether an FRQ proxy is prioritized as the companies mature over stages in an emerging market. Turkey is an emerging market, and its stock exchange is relatively younger than western counterparts. This paper aims to understand whether life-cycle stages affect FRQ in BIST-listed companies. The majority of companies are not subject to an independent audit, and FRQ becomes a management consideration for initial public offering and subsequent years. I determined companies’ life-cycle stages with cash flow patterns based on Dickinson’s (2011) paper and assigned a value between 0 and 1 following Hansen et al. (2018).

The relationship is essential because life-cycle stages are not based on the age of the company. As the companies grow older (age) and/or larger (size, employment), it does not mean that they will mature over time. Internal (e.g., management perspective, innovation skills, financial position) and external (e.g., national economy, political developments, trade with new markets) factors are the primary sources of this difference between age/size, and maturity. A company can reach further stages faster compared to its peers depending on these factors. The company may expand horizontally and vertically. The management can increase the variety of product range. The magnitude and complexity of the activities will increase by moving forward through the stages. Many economics and business scholars approached the companies’ growth from a biological approach (Levie & Lichtenstein 2010). According to S. Chen et al. (2002), when current earnings are relatively less informative, or when future earnings are relatively more uncertain, managers tend to disclose balance sheet information voluntarily. Their empirical evidence showed that balance disclosures are higher in younger companies.

Life cycles consist of five stages of introduction, growth, mature, shake-out, and decline. Naming and numbers of the stages vary in the literature. Accounting and finance literature have used size (Klein & Marquardt, 2006), tangibility (Khan & Watts, 2009), retained earnings (DeAngelo et al., 2006), costing system (Kallunki & Silvola, 2008), employment (Dinlersoz et al., 2019), age (Doyle et al., 2007a; Drake et al., 2009; La Rocca et al., 2011; Oliver, 2001; Wasley & Wu, 2006), asset growth (Bayat & Bargez Noshahr, 2018), and multi-criteria proxies (Anthony & Ramesh, 1992; Desai et al., 2006; Elsayed & Paton, 2009; Faff et al., 2016; Lester et al., 2003; Pashley & Philippatos, 1990) to determine the companies’ life-cycle stages. According to Dickinson (2011), the cash flow pattern proxy utilizes the financial information set contained in operating, investing, and financing cash flows. It helps to capture differences in a company's profitability, growth, and risk. The author stated that the combination of cash flow patterns represents a company's operational capabilities and resource allocations.

My dataset constitutes BIST-listed companies for nine years and 217 companies with 1,645 observations. I estimated the life stages with (Dickinson, 2011) cash flow patterns for each observation. Following Hansen et al. (2018), values of 0, 0.25, 0.5, 0.75, and 1 were assigned for introduction, growth,

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2 Please see Levie and Lichtenstein (2010) for a more detail analysis on life-cycle models.
mature, shake-out, and decline, respectively. I estimated the discretionary accruals for industry/year with (Kothari et al.’s (2005, KLW hereafter) “Performance matched discretionary accrual model” and used the absolute value of the model's residual. I used a 0-0.025 threshold to detect small profit and marked the observations that fall into the threshold. I estimated audit aggressiveness with Gul et al.’s (2013, GWY hereafter) model. In addition to the life-cycle, I utilized firm-level control variables to test my model. My results showed that financial reporting quality does not always increase as the companies move further into their life-cycle stages. My results showed that audit aggressiveness (small profits) increases in the later (early) stages. I constructed a robustness test based on the listing duration, and analysis showed that the audit aggressiveness declines with the listing duration. The listing duration-based life-cycle variable resulted in insignificant but negative coefficients for dependent variables.

Supported with the theoretical review, this paper contributes to the accounting literature by providing a perspective on the cycle's effect on financial reporting from an emerging market. To my knowledge, this is the first paper in Turkey that provides evidence about the life-cycle stages. My results showed advancing in life-cycle stages does not always increase FRQ. Different than the previous literature, I showed that different FRQ measures earn prioritization as life-cycle stages move forward. Empirical evidence showed that audit aggressiveness increases as companies move forward in their life-cycle stage. On the other hand, the tendency to report small profit decreases as they proceed through the life-cycle stages. The life-cycle stage variable resulted in a negative coefficient, but it was statistically insignificant in my analysis. In my robustness tests, I used the quintiles of age to assign the life-cycle stage. I observed a positive coefficient for the age-based life-cycle variable for all dependent variables, but they were insignificant. I substituted the variable with age, and results did not differ materially.

The remainder of this paper is organized as follows. Section 2 presents Turkey’s institutional setting. Section 3 reviews the theoretical literature to develops my paper’s hypothesis. Section 4 discusses the empirical literature review and presents hypothesis development. Sample, financial reporting quality proxies, life-cycle stage measurement, and econometric model are presented in Section 5. I discussed my empirical results and robustness tests in Section 6. Section 7 concludes the paper.

2. BACKGROUND

Geographically and socially, Turkey (officially Republic of Turkey) is the bridge between Europe and Asia. The country's founding fathers used French, German, Italian, and Swiss laws to establish the secular law system. Turkey signed the Customs Union agreement with the European Union (hereafter EU) on December 31, 1995. The country's EU membership candidacy has been on-going since 1999. According to the Central Intelligence Agency's report, 99.8% of the population is Muslim. On the other hand, Shari'a Law does not affect the country's secular code law system. Turkey's first capital market was established as the Istanbul Stock Exchange (hereafter ISE) was founded on December 26, 1985, and renamed to Borsa Istanbul on April 5, 2013. Capital Market Authority (hereafter CMB) regulates BIST-listed companies' disclosures, financial statements, announcements, corporate governance, and other requirements. Banks dominate Turkey's economy. In 2018, banks were six of the ten highest taxpayer institutions. BIST's most populated sectors are manufacturing companies and financial institutions (including holdings) with 175 and 127 companies, respectively. The main index is BIST100, and it contains 100 companies with the highest market capitalization, and nine of 100 are banks. According to the Revenue Administration, the Central Bank of Turkey (hereafter CBT) is the highest taxpayer in 2018. Including CBT, there were six banks in the first ten and four in the first five.
Due to the country's EU membership candidacy, listed companies have been preparing their financial statements following International Financial Reporting Standards (hereafter IFRS) since 2005. Public interest entities and companies meeting Public Oversight, Accounting, and Auditing Standards Authority's (hereafter POAASA) two-of-three criteria1 prepare their financial statements following IFRS. These companies are also subject to independent audit. Big4 accounting firms dominate the Turkish audit market and their partners are busier than non-Big4 counterparts (Ocak, 2018). For private companies outside of POAASA criteria, financial reporting depends on the tax regulations, and an independent audit is not mandatory for these companies. Thus, it can be said that management's understanding of financial reporting quality depends on corporate tax payments. Turkey's institutional setting does not force the majority of companies to have a higher quality of financial statements. Thus, companies do not need an independent audit until they become a public interest entity or are listed in BIST. Starting with the fiscal year 2009, companies announce their financial statements, notifications, meetings, and present their company details via the Public Disclosure Platform (hereafter PDP). Central Securities Depository (hereafter CSD) records and reports equity and debt instruments. The market value of assets under custody (equity and debt securities of companies, government debt securities, mutual and exchange funds, structured products, and asset-backed securities) is 252.55 billion USD on August 31, 2020.

Turkey has been dealing with political crises since the multi-party system started in 1945. The country lived through two coup d' états (1960 and 1980) and three military memorandums (1971, 1997, and 2007). On July 15, 2016, a fraction in the armed forces attempted another coup d' états. The country's most profound economic crisis happened in 2001 due to a political dispute between the president (Ahmet Necdet Sezer) and prime minister (Bulent Ecevit). Political and economic instability affected the Turkish's capital market development. Ararat and Ugur (2003) stated that the Turkish capital market's main characteristics are low liquidity, high volatility, high cost of capital, and limited new capital formation. In later research, Ugur and Ararat (2006) reported a positive relationship between corporate governance reforms and macroeconomic stability since 2002. According to the authors, macroeconomic stability reduced the risk and increased the Turkish stock market's returns. By thus, new investors entered the market, and volatility out-of-company performance diminished. The authors claimed that these external developments made companies invest in corporate governance reforms. Günay (2016, 2019) pointed out that political events (including coup attempt) do not significantly affect BIST volatility than pre-November 2011.

3. THEORETICAL LITERATURE REVIEW

Business and economics scholars estimated the companies’ growth and the effect of growth on the organizations circa 1960 (Levie & Lichtenstein, 2010). A company is born, then grows, reaches a level of maturity, activities start to decline, and its life will be over when the operations are not sustainable anymore. Prior literature defined the life-cycles using the metaphor of organisms to support the advancement through stages. However, despite the fundamental and up-to-a-limit similarity, the metaphor does not show the transition between stages (Levie & Lichtenstein, 2010). Internal and external factors affect the pace and speed of transition. The duration to crossover the stages may be different for every company, and companies do not only move forward through the cycles. According to the model classification of Miller and Friesen (1984) mentioned that 75% of the “birth” cycle, companies in their sample progressed to the “growth” phase immediately. There is no generally accepted number of stages in the economics and business literature. According to Levie and
Lichtenstein’s (2010) detailed analysis, prior literature classified life-cycle from 3 to 11 stages, and the most frequent classifications have three, four, or five stages. The authors divided the prior literature as “Stages of growth models” and “Dynamic states model.” According to the authors, stages of growth models follow a pattern similar to biological life, limiting stages and transitions. On the other hand, dynamic states models represent an infinite number of stages, and thus there may be any number of dynamic states during its existence.

The growth of the company comes with different consequences. Whetten (1987) defined growth as a by-product of other strategies because successful goods/services foster growth. Mueller (1972) stated that in a typical growing company, the management decentralizes the decision-making tools. According to the author, the primary purpose of decentralization is to involve those with adequate information and incentives to ensure uncertainty decisions. Mueller (1972) also claimed that large companies that should not be growing at all grow faster than young companies with an innovative idea. Smith et al. (1985) pointed out that short-term accomplishments are achievements for young organizations' managers. According to the authors, managers seek short-run, result-oriented, quantitative priorities for performance, and keeping suppliers' support. The authors mentioned that management would prioritize different practices of management in each life-cycle. Mintzberg (1984) claimed that life-cycle transitions also create a change of power, its configuration. The author also pointed out that the external coalition's structure affects the internal coalition's composition and organizational power configuration. Jawahar and Mclaughlin (2001) mentioned that companies' stakeholder strategy changes across stages due to its importance in organizational survival. The authors stated that companies would act proactively to attract investors and creditors to find more funding and longer tenure, respectively.

According to Doyle et al. (2007b), companies with staffing issues (“inadequate segregation of duties,” “inadequate qualified staffing and resources,” or “lack of a full-time CFO”) are in the early stage of life-cycle. The authors stated that these companies have the lowest restructuring costs and the highest sales growth. Greiner (1972) defined the transition process as the company’s evolutions creating its own revolutions, such as a transition from centralized to decentralized management. The author also mentioned that management’s solution to each revolution determines whether the company can move forward to its life-cycles. According to the author, a company may not grow in size but may face the same managerial practices and issues over time. The author claimed that with increased size, companies’ communication and coordination issues become larger, new functions arise, duties become more interrelated, and levels of management hierarchy spread. Adizes (1979) explained the change in organizational behavior using the PAEI (Produce, Administration, Entrepreneurship, Integration) roles model and divided the life into ten stages (Courtship, Infancy, Go-Go, Adolescent, Prime, Mature, Aristocratic, The Early Bureaucracy, Bureaucracy, Death). The author stated that different roles gain importance or disappear as the organization passes from one stage to another, and organizational behavior responds to the changes due to the role prioritization.

Following Gort and Klepper (1982), Dickinson (2011) used the “organic” approach and defined five life-cycle stages. The author used agency (Jensen, 1986) and pecking-order (Myers, 1984) theories to assign the cash-flow pattern to the life-cycle stage. According to Dickinson (2011), cash-flow patterns present a better proxy than performance and age proxies due to the non-linear relationship between these proxies and life-cycle stages. Dickinson (2011) also stated that cash-flow patterns reflect the behavioral changes between the life-cycle stages such as positive operating cash flow is a signal of increased efficiency that will happen in growth and mature stage companies. The other advantage of using the cash-flow patterns is that cash-flow classification has a crucial role in the market capitalization.
and stock returns prediction. Using the economic theory, Dickinson (2011) claimed that cash-flow patterns show how companies’ strategy choice affects operational capabilities and resources allocation.

4. EMPIRICAL LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Dickinson et al. (2018) found that analysts’ earnings and accounting information forecasts are each informative for market values, but conditions differ for the life-cycle stage. Regarding their evidence, investors put more weight on analysts’ forecasts for growth and mature companies. On the other hand, investors find accounting information to be more relevant for stock prices and stock returns of companies in the introduction and decline stages. According to de Oliveira and Girão (2018), analysts’ earnings forecasts are affected more problematically for introduction and decline stage companies. The authors also stated that optimistic or pessimistic bias decreases in the decline stage compared to non-mature stages. Abdullah and Mohd-Saleh (2014) used mature companies as a baseline for the conservatism level of conservatism to bad news. They reported that growth (decline) companies are less (more) than mature companies. Hansen et al. (2018) found a different result in terms of conservatism. The authors claimed that unconditional reporting conservatism decreases over the life-cycle stages, but conditional reporting conservatism is not related to life-cycle stages. X. Chen et al. (2010) stated incorporation of life-cycle variables into the accrual model reduces the likelihood of both type I and II errors, and it also significantly improves the explanatory power of the accrual model. Hribar and Yehuda (2015) reported that accruals and free cash flows have a strong and negative correlation in the maturity and decline stages. Their evidence showed that the cash-flow anomaly subsumes the accruals anomaly in maturity and decline stages.

Anthony and Ramesh (1992) reported that unexpected sales growth and unexpected capital investment show a monotonic decline from growth to decline stages. Faff et al. (2016) found that investments and equity issuance vary with the life-cycle. Their evidence also showed that debt issuance and cash holdings increase (decrease) in the introduction and growth (mature and shake-out/decline) stages. Park and Chen (2006) reported that the market evaluates accounting information differently for different stages. The authors also stated that accounting conservatism affects the relationship between valuation and life-cycle. They claimed that investors price lower (higher) for the decline (growth) conservative accounting practices. In similar research, Bixia (2007) suggested that capital markets are aware of information conveyed in the firm life-cycle stage and incorporate it when they interpret risk factors. Nagar and Sen (2017) stated that decline stage companies are more likely to use classification shifting in order to beat or meet earnings benchmarks.

Hasan et al. (2016) found that the life-cycle stage is significantly correlated with tax avoidance. According to their results, while tax avoidance is positively associated with introduction and decline stages, the authors observed a negative association with growth and mature stages when the shake-out stage is the benchmark. Mangoting and Onggara (2019) reported similar results for tax avoidance and life-cycle stages. The authors stated that tax avoidance is significantly positive in the introduction and decline stages and significantly negative in growth and mature stages. Regarding their evidence about the life-cycle related to earnings persistence, Martinez and Bassetti (2016) claimed that life-cycle stages must be added to the analysis to test book-tax difference and earnings persistence relationship. Hasan and Habib (2017) used the shake-out stage as the baseline, and they documented that idiosyncratic risk is higher for the introduction and decline stages, while it is lower for the growth and maturity stages. Hasan et al. (2015) reported that the cost of equity shows a U-shaped pattern. Their evidence showed
that the cost of equity increases in the introduction and decline stages and decreases in the growth and mature stages.

According to Owen and Yawson (2010), there is a highly significant and positive relationship between the life-cycle and the likelihood of becoming a bidder. The authors also stated that making cash and mixed deals are positively correlated with the life-cycle. Using Chinese-listed non-financial companies from 2007 to 2016 Shahzad et al. (2020), found that idiosyncratic risk, market risk, and total risk are significantly higher during the introduction, growth, and decline stages due to their competitive advantages, resource base, and capabilities being limited. Their empirical evidence showed that these risks are lower during the mature stage. Bravo (2019) showed the relationship between a firm's beta and the various corporate stages. The author mentioned that the relationship between beta and the life-cycle is prompted by initially significant volatile expected future cash flows. The volatility declines as the company establish its position in the market and stabilize its revenue and earnings. Yang and Shyu (2019) stated that the group's effect on the company's performance is highest in the mature stage. The authors' empirical evidence showed that financial institutional ownership has a negative impact on the decline stage companies.

Lee and Choi (2018) found that companies' corporate social responsibility (CSR) engagement differs in their life-cycles. The authors reported that there is a positive (negative) correlation with growth (decline) companies and CSR engagement. Shahzad et al. (2019) reported that corporate risk-taking is higher (lower) during the introduction and decline stages (mature and growth stages). Their empirical evidence showed a negative (positive) relationship between corporate risk-taking and both current and future performance during the introduction and decline (mature and growth) stages. Yoo et al. (2019) reported that research and development (R&D) expenditures have different effects in terms of future performance, future uncertainty, and capital market response. According to the authors' empirical evidence, R&D expenditures decrease (increases) the future performance for the introduction (mature) stage. The authors also claimed that the introduction stage companies receive a negative response from the capital market for their R&D expenditures. Bhattacharya et al. (2019) reported that a non-linear relationship exists between a company's life-cycle stage and its propensity to pay dividends. Measuring the life cycle with Retained Earnings-to-Total Equity ratio proposed by Drake et al. (2009), Budiarso et al. (2019) found that mature (growing) Indonesian companies pay more (less) dividends than counterparts because they are larger and more profitable.

Following the prior literature, I developed the following hypothesis:

H1A: Moving forward in their life-cycle stages does not affect the financial reporting quality of companies (Expected sign varies with hypothesis).

   H1A1: Moving forward in their life-cycle stages does not affect audit aggressiveness of the companies (Expected Sign for H1A1 [-]).

   H1B: Moving forward in their life-cycle stages does not affect discretionary accruals of the companies (Expected Sign for H1B1 [-]).

   H1C: Moving forward in their life-cycle stages does not affect small profit reporting of the companies (Expected Sign for H1C1 [-]).
5. RESEARCH DESIGN

5.1. Sample

I used the audited financial data from BIST-listed companies between the years 2009 and 2017. My sample comprises 217 companies, nine years, and 1,645 observations in an unbalanced panel dataset. I used two resources to download the data. Financial variables, Sharia compliance, reporting lag, and listing duration were downloaded from Thomson Reuters Eikon Database. I obtained the institutional ownership data from Central Securities Depository (CSD). I used the industry classification of BIST. Table 1 reports sample distribution per year sector.

5.2. Research Model

I constructed my research model based on the previous literature and analyzed the effect of the life-cycle stage on the financial reporting quality. I measured the financial reporting quality with three different proxies. I used KLW (2005) and GWY (2013) to estimate the discretionary accruals and audit aggressiveness, respectively. I marked the companies that reported a profit to beat the earnings benchmark. Also, I labeled the companies' life-cycles using Dickinson (2011). Supported by the previous literature (please see Literature Review), I developed the following model. Table 2 presents the definitions of the variables.

\[
\text{FRQ}_{it} = \text{LCS}_{it} + \text{SHARIA}_{it} + \text{INST}_{it} + \text{LIST}_{it} + \text{SIZE}_{it} + Q_{it} + \text{TANG}_{it} + \text{CHOLD}_{it} + \text{OCF}_{it} + \text{OCFD}_{it} + \text{REVG}_{it} + \text{REVD}_{it} + \text{LOSS}_{it} + \text{DIV}_{it} + \text{LAG}_{it} + \text{Years Fixed} + \text{Industry Fixed}
\] (1)

5.3. Measuring Financial Reporting Quality

My measures consist of discretionary accruals, audit aggressiveness, and small profits. I used KLW (2005) and GWY (2013) to estimate the discretionary accruals and audit aggressiveness, respectively. I calculated the small profit for 0 and +0.025 levels of net income after taxes divided by lagged assets.

5.3.1. Audit Aggressiveness

My first measure is audit aggressiveness (AGG). I measured the audit aggressiveness using GWY (2013) with logistic regression to predict modified audit opinions using Equation 2. The dependent variable is modified opinion, which equals one if the client receives a modified opinion, otherwise 0. A higher result obtained from Equation 3 signals that auditor has a lower tendency to issue a modified audit opinion (Gul et al., 2013) and results to decrease the financial reporting quality (Xiaolin Chen et al., 2017).

\[
\text{Modified}_{it} = \beta_0 + \beta_1 \text{Quick Ratio}_{it} \\
+ \beta_2 (\text{Receivable} + \text{Other Receivables} + \text{Inventories}_{it}) / (\text{Total Assets}_{it}) + \beta_3 \text{ROA}_{it} + \beta_4 \text{LOSS}_{it} \\
+ \beta_5 \text{Leverage}_{it} + \beta_6 \text{LogSize}_{it} + \beta_7 \text{LogAge}_{it} + \text{Sector Fixed}_{it} + \epsilon_{it}
\] (2)

\[
\text{AGG} = \text{Predicted Opinion} - \text{Actual Opinion}
\] (3)

5.3.2. Discretionary Accruals

My second FRQ measure is discretionary accruals (DACC). For each BIST industry group and year combination with at least six companies, I estimated the discretionary accruals by using the absolute of...
residuals obtained from KLW (2005). For the industries with less than six companies, I merged their years to reach the observation of six per industry.

\[
\frac{TA_{it}}{A_{it-1}} = \alpha \left[ \frac{1}{A_{it-1}} \right] + \beta_1 \left[ \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right] + \beta_2 \left[ \frac{PPE_{it}}{A_{it-1}} \right] + \beta_3 \left[ ROA_{it-1} \right] + \varepsilon_{it}
\]

(4)

where \( TA_{it} \) is total accruals calculated with balance sheet approach in year \( t \); \( \Delta REV_{it} \) is revenues in year \( t \) less revenues in year \( t-1 \); \( \Delta REC_{it} \) is receivables in year \( t \) less receivables in year \( t-1 \); \( PPE_{it} \) is property, plant, and equipment in year \( t \); \( ROA_{it} \) is Return on Asset ratio in year \( t-1 \); \( A_{it-1} \) is lagged assets; \( \varepsilon \) is error term in year \( t \); \( i \) notation stands for company.

5.3.3. Small Profits

Figure 1 reports ROA histogram using the frequency interval of 0.006. Using -0.025 and +0.025 as ROA bands, 14.90 (7.35) of observations in the 0 to 0.025 (-0.025 to 0) band. To test the relationship between life-cycles and earnings benchmark, I estimated the model with logistic regression for small profits.

5.4. Life Cycle Determination

Table 3 presents the life-cycle determination using Dickinson’s (2011) cash flows as proxies. Following Hansen et al. (2018), I assigned a value of 0, 0.25, 0.5, 0.75, or 1 for LCS as introduction, growth, mature, shake-out, and decline stages.

6. EMPIRICAL RESULTS AND DISCUSSION

I cross-sectionally ran KLW (2005) and GWY (2013) models to each industry/year. I constructed the dependent variable DACC and AGG using each unit's residual dependent variables from the residuals of KLW (2005) and GWY (2013).

6.1. Descriptive Statistics

Table 4 reports the descriptive statistics for continuous variables. Extreme values were confirmed with financial statements published on PDP. I did not winsorize any variable for the analysis. Table 5 reports the descriptive statistics for categorical variables. Table 6 provides the means for each variable per life-cycle stage. The table shows that the mean of the dependent variables does not always vary following the cycle stages. The mean of audit aggressiveness increases moving forward to the decline stage, while small profit's mean is lower in the later stages. The mean of small profit reporters is highest in the introduction and growth stages, and it declines in mature and shake-out stages. An increase in the mean is observed in the decline stage. Discretionary accruals have different results than the other dependent variables. The mean of discretionary accruals is positive in introduction and decline stages, negative in growth & mature stages, and zero in the shake-out stage. Table 7, Table 8, and Table 9 report the t-test of differences of means for life-cycle stages. Table 10 presents the correlation matrix of the dependent and independent variables. Statistical significance is presented in brackets. The highest correlation (0.59) occurred between institutional ownership and size. The lowest correlation (-0.37) is between loss and dividends payment.

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3Interval is 0.005 in Burgstahler and Dichev (1997).
6.2. Results

Table 11 reports the results for linear and logistic regressions with year and industry fixed effects. Standard errors are robust at the industry/year level (Zeileis, 2004). The first and second columns in Panel A report the results for audit aggressiveness and discretionary accruals models, respectively. Panel B reports the results for small profits with pseudo-R-square (Zhang, 2018).

My results showed that financial reporting quality does not always increase with the life-cycle stage. According to my empirical evidence, audit aggressiveness increases (coefficient 0.08 | t-stat 1.98) as the companies move forward in their life-cycle stages. The variable did not have statistically significant results (-0.01 | -0.42) for discretionary accruals. On the other hand, I found that companies do not tend to report small profits in the later stages of the life-cycle (-0.10 | -3.22). I can state that different financial reporting quality measures are affected in different stages. My result confirmed that moving further in the life-cycle stage does not always increase the financial reporting quality. Increased market capitalization reduces audit (-0.02 | -2.18), and small profit (-0.02 | -2.72). The variable resulted in 10% significance for the discretionary accruals (0.01 | 1.79). I observed a positive (negative) relationship between loss reporting and audit aggressiveness (0.09 | 3.36) & discretionary accruals (0.02 | 2.16) (small profit, -0.34 | -17.20). Longer reporting lag signals the tendency toward small profit (0.14 | 2.00). The variable was not statistically significant for audit aggressiveness and discretionary accruals.

Statistical analysis showed that dividend payment reduces small profit (-0.08 | -3.99). According to my analysis, cash holding reduces small profit (-0.28 | -5.54) but increases the discretionary accruals (0.14 | 4.20).

I used Sharia compliance as an ethics proxy. My results showed that Sharia compliance reduces the discretionary accruals (-0.01 | -2.04). On the other hand, with 10% statistical significance, I observed higher audit aggressiveness (0.04 | 1.73) in the Sharia-compliant companies than the non-compliant counterparts. I used the listing duration and institutional ownership as governance proxies. The results also showed that as listing duration reduces the discretionary accruals (-0.01 | -2.43), increased, and institutional ownership reduces the small profit reporting (-0.10 | -2.68). My empirical evidence showed that leverage increases the discretionary accruals (0.02 | 3.03) and small profit (0.07 | 4.74). I used operating cash flow and 3-year volatility to observe their effect on the financial reporting quality. Operating cash flow reduces the small profit reporting (-0.10 | -2.77). Operating cash flow volatility resulted in 10% significance for small profit reporting (-0.08 | -1.67) and discretionary accruals (0.05 | 1.78). I also used revenue growth and 3-year volatility as revenue-based variables. Revenue deviation resulted in a 10% significance in the audit aggressiveness model (0.07 | 1.77). Revenue growth reduces small profit reporting (-0.10 | -4.10). Size decreases the discretionary accruals (-0.01 | -2.04) and resulted in 10% significance for audit aggressiveness (-0.01 | -1.69).

6.3. Robustness Tests

Following the prior literature, I tested my analysis with an alternative life-cycle proxy (Habib et al., 2019; Hansen et al., 2018; Hasan et al., 2016). I divided the age for each year into quintiles of life-cycles and modified Equation (1) as follows:

\[ FRQ_{it} = ABC_{it} + SHARIA_{it} + INST_{it} + LIST_{it} + SIZE_{it} + Q_{it} + TANG_{it} + CHOLD_{it} + OCF_{it} + OCFD_{it} + REVG_{it} + REVD_{it} + LOSS_{it} + DIV_{it} + LAG_{it} + Years Fixed + Industry Fixed \]

(5)
Table 12 reports the results for the robustness test. I observed material differences from the primary analysis presented in Table 11. Age-based cycle variables resulted in positive coefficients but were statistically insignificant. With 10% statistical significance, I observed lower discretionary accruals (-0.01 | -1.94) and higher audit aggressiveness (0.04 | 1.77) in Sharia-compliant companies. Size reduces audit aggressiveness (-0.01 | -2.18) and discretionary accruals (-0.01 | -2.24). The age-based cycle model showed that market capitalization reduces audit aggressiveness (-0.02 | -2.33) and small profit (-0.02 | -2.70). Leverage increases discretionary accruals (0.02 | 3.14) and small profit (0.07 | 4.90). Empirical evidence showed that cash holding increases discretionary accruals (0.15 | 4.16) and reduces small profit (-0.29 | -5.59). Loss reporting increases audit aggressiveness (0.09 | 3.26) and discretionary accruals (0.02 | 2.17) but reduces small profit (-0.33 | -17.10). Institutional ownership (-0.10 | -2.78), operating cash flow (-0.12 | -3.03), revenue growth (-0.10 | -3.87), and dividend payment (-0.09 | -4.07) reduce small profit. Listing duration decreases discretionary accruals (-0.01 | -2.75). With 10% significance, my age-based cycle analysis showed that while operating cash deviation reduces small profit (-0.08 | -1.69), reporting lag has a positive effect on small profit (0.13 | 1.93). Revenue deviation resulted in 10% significance with a positive coefficient (0.07 | 1.78) for the audit aggressiveness model.

7. SUMMARY AND CONCLUSION

This paper investigated the life-cycle stage and FRQ relationship in Turkey. The previous literature mainly chose a single measure of financial reporting quality. I wanted to test whether moving forward in the life-cycle stage results in an increase in every FRQ measurement. Different than the previous literature, I tested the relationship using three different proxies for FRQ. I used aggressiveness, discretionary accruals, and small profit reporting as FRQ proxies. The relationship between life-cycle stages and audit aggressiveness was never tested in the previous literature. Due to the country's institutional setting, management's understanding of financial reporting quality depends on corporate tax payments. The institutional setting of Turkey does not force the majority of companies to have higher quality financial statements. Thus, companies do not need an independent audit until they become a public interest entity or are listed in BIST. This paper investigates whether moving forward in the life-cycle stage affects FRQ in the Turkish context.

The previous literature used a variety of criteria (size, tangibility, retained earnings, costing system, employment, age, asset growth, and multi-criteria) to determine the companies' life-cycle stages. In this paper, I used Dickinson's (2011) cash flow pattern-based approach. According to the author, cash flow patterns utilize the financial information set contained in operating, investing, and financing cash flows. It helps to capture differences in a company's profitability, growth, and risk. The author stated that the combination of cash flow patterns represents a company's operational capabilities and resource allocations. I determined the life-cycle stages of companies with cash flow patterns depending on Dickinson's (2011) paper. Following Hansen et al. (2018), I assigned values of 0, 0.25, 0.5, 0.75, and 1 for introduction, growth, mature, shake-out, and decline stages, respectively. I estimated audit aggressiveness with GWY's 2013 model. I used the discretionary accruals for industry/year with KLW's (2005) "Performance matched discretionary accrual model" and used the absolute value of the model's residual. I used a 0-to-0.025 threshold to detect small profit and labeled the observations that fall into the threshold.

4When I run the test with age as a variable, it did not provide materially different results.
I used 1,645 observations over nine years, with 217 companies to investigate the effect of life-cycle stages on FRQ in BIST-listed companies. To my knowledge, this is the first paper that focuses on the life-cycles in the Turkish context. My results showed that financial reporting quality does not always increase with the life-cycle stage. According to my empirical evidence, audit aggressiveness increases as the companies move forward in their life-cycle stages. The variable resulted in a negative coefficient for discretionary accruals, but it was not statistically significant. On the other hand, I found that companies do not tend to report small profits in the later stages of the life-cycle. I can state that different financial reporting quality measures are prioritized in different stages. My statistical analysis showed that audit aggressiveness increases (decreases) in the later (earlier) stages. On the other hand, I found that small profit reporting increases (decreases) in the earlier (later) stages. My result confirmed that moving further in the life-cycle stage does not always increase the financial reporting quality. I ran a robustness test based using the quintiles of age. The variable resulted in a positive coefficient for FRQ measures but was statistically insignificant. When I ran the test with age as a variable, it did not provide materially different results.

This paper contributes to the accounting literature by providing a perspective on the cycle's effect on financial reporting from an emerging market using a theoretical framework. To my knowledge, this is the first paper in Turkey that provides evidence about the life-cycle stages. My results showed advancing in life-cycle stages does not always increase FRQ. Different than the previous literature, I showed that different FRQ measures earn prioritization as life-cycle stages move forward. Empirical evidence showed that audit aggressiveness increases as companies move forward in their life-cycle stage. On the other hand, the tendency to report small profit decreases as they proceed through the life-cycle stages. The life-cycle stage variable resulted in a negative coefficient, but it was statistically insignificant in my analysis. There are limitations to this research. I did not use governance (board composition, CEO/CFO qualifications, etc.) or a wider variety of audit-based (audit firm size, auditor gender, audit report type) variables. Future research can assess the cycle transition duration, corporate governance quality, top management characteristics, and independent audit qualifications for life-cycle analysis.
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### TABLES AND FIGURES

*Table 1: Sample Distribution per Industry and Year*

| Industry                                                                 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total |
|-------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|-------|
| Education, Health, Sports and Other Social Services                      | 119  | 121  | 130  | 122  | 135  | 147  | 146  | 143  | 142  | 1,205 |
| Administrative and Support Service Activities                            | 12   | 12   | 14   | 13   | 14   | 14   | 13   | 12   | 118  |       |
| Manufacturing                                                            | 12   | 12   | 18   | 20   | 21   | 20   | 19   | 20   | 20   | 162   |
| Construction and Public Works                                            | 6    | 6    | 6    | 6    | 7    | 7    | 6    | 6    | 56   |       |
| Agriculture, Forestry and Fishing                                        | 6    | 6    | 6    | 6    | 7    | 7    | 6    | 6    | 56   |       |
| Transportation, Telecommunication, and Storage                          | 6    | 6    | 6    | 6    | 7    | 7    | 6    | 6    | 56   |       |
| Total per Year                                                           | 154  | 158  | 176  | 171  | 189  | 202  | 203  | 198  | 194  | 1,645 |
Table 2: List of Variables

| Variable | Definition                                                                                                                                                                                                 | Source  |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| FRQ      | FRQ is the financial reporting quality measured with discretionary accruals, small profit, and audit aggressiveness.                                                                                       | Eikon   |
| DACC     | Discretionary accruals calculated with Kothari, Leone, and Wasley (2005).                                                                                                                                   | Eikon   |
| SP       | 1 if the company earnings divided by lagged assets is between 0 and 0.025.                                                                                                                                   | Eikon   |
| AGG      | Audit aggressiveness calculated with Gul, Wu, and Yang (2013).                                                                                                                                              | Eikon   |
| LCS      | Assigned a value of 0, 0.25, 0.5, 0.75, or 1 for introduction, growth, mature, shake-out, and decline stages (Hansen et al., 2018) proposed by Dickinson (2011).                                               | Eikon   |
| SHARIA   | 1 if the company is Sharia-compliant.                                                                                                                                                                          | Eikon   |
| INST     | Institutional ownership divided by total ownership.                                                                                                                                                           | CRA     |
| LIST     | Listing Duration                                                                                                                                                                                             | Eikon   |
| SIZE     | Natural logarithm of total assets in the period t.                                                                                                                                                           | Eikon   |
| Q        | Market capitalization in the period t.                                                                                                                                                                         | Eikon   |
| TANG     | Net Property, Plant, Equipment divided by lagged assets.                                                                                                                                                      | Eikon   |
| LEV      | Total Liabilities divided by lagged assets.                                                                                                                                                                   | Eikon   |
| CHOLD    | Sum of Cash Holdings and Short-Term Investments divided by lagged assets.                                                                                                                                     | Eikon   |
| OCF      | Operating Cash Flow divided by lagged assets.                                                                                                                                                                 | Eikon   |
| OCFD     | Standard deviation of OCF divided by lagged assets and prior two years                                                                                                                                       | Eikon   |
| REVG     | Change in Revenue divided by lagged assets                                                                                                                                                                   | Eikon   |
| REVD     | Standard deviation of revenue divided by lagged assets and prior two years                                                                                                                                   | Eikon   |
| LOSS     | 1 if the company reported loss in the period t.                                                                                                                                                              | Eikon   |
| DIV      | 1 if the company paid dividends in the period t.                                                                                                                                                              | Eikon   |
| LAG      | Reporting lag                                                                                                                                                                                                | Eikon   |

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Table 3: Life Cycle Determination using Dickinson (2011)

| Cash Flow Type | 1 | 2 | 3 | 4 | 4 | 4 | 5 | 5 |
|----------------|---|---|---|---|---|---|---|---|
| Operating      | - | + | + | - | + | + | - | - |
| Investing      | - | - | - | - | + | + | - | + |
| Financing      | + | + | - | - | + | - | + | - |

1. Introduction 2. Growth 3. Mature 4. Shake-Out 5. Decline

Table 4: Descriptive Statistics for Continuous Variables

|        | MIN | 1Q  | MEAN | 3Q  | MAX | SD  |
|--------|-----|-----|------|-----|-----|-----|
| AGG    | -0.97 | -0.23 | -0.11 | -0.09 | 3.39 | 0.43 |
| DACC   | -0.79 | -0.07 | 0.00  | 0.06 | 0.88 | 0.15 |
| FLCV   | 0.00  | 0.25  | 0.40  | 0.50 | 1.00 | 0.28 |
| INST   | 0.00  | 0.09  | 0.38  | 0.62 | 0.99 | 0.31 |
| LIST   | 2.71  | 8.14  | 8.43  | 9.06 | 9.37 | 0.93 |
| SIZE   | 15.06 | 18.36 | 19.52 | 20.42 | 24.13 | 1.64 |
| Q      | 0.34  | 0.98  | 1.57  | 1.66 | 13.51 | 1.25 |
| TANG   | 0.00  | 0.20  | 0.38  | 0.52 | 3.40 | 0.27 |
| LEV    | 0.01  | 0.36  | 0.66  | 0.80 | 17.61 | 0.70 |
| CHOLD  | 0.00  | 0.02  | 0.11  | 0.15 | 2.32 | 0.15 |
| OCF    | -1.71 | -0.01 | 0.06  | 0.12 | 6.14 | 0.25 |
| OCFD   | 0.00  | 0.04  | 0.11  | 0.12 | 3.70 | 0.22 |
| REVG   | -1.75 | 0.00  | 0.14  | 0.21 | 5.19 | 0.37 |
| REVD   | 0.00  | 0.06  | 0.20  | 0.23 | 3.13 | 0.29 |
| LAG    | 3.93  | 4.20  | 4.31  | 4.33 | 6.08 | 0.19 |

Table 5: Variables’ Means per Cycles for Dichotomous Variables

|        | MIN | 1Q  | MEAN | 3Q  | MAX | SD  | N=1 |
|--------|-----|-----|------|-----|-----|-----|-----|
| SP     | 0.00 | 0.00 | 0.15 | 0.00 | 1.00 | 0.36 | 252 |
| SHARIA | 0.00 | 0.00 | 0.29 | 1.00 | 1.00 | 0.46 | 484 |
| LOSS   | 0.00 | 0.00 | 0.28 | 1.00 | 1.00 | 0.45 | 454 |
| DIV    | 0.00 | 0.00 | 0.38 | 1.00 | 1.00 | 0.49 | 632 |

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## Table 6: Variables’ Means per Cycles

|       | 1     | 2     | 3     | 4     | 5     |
|-------|-------|-------|-------|-------|-------|
| AGG   | -0.15 | -0.11 | -0.12 | -0.08 | 0.00  |
| DACC  | 0.07  | -0.03 | -0.02 | 0.00  | 0.04  |
| SP    | 0.20  | 0.18  | 0.12  | 0.13  | 0.14  |
| SHARIA| 0.23  | 0.32  | 0.33  | 0.23  | 0.24  |
| INST  | 0.26  | 0.38  | 0.47  | 0.33  | 0.25  |
| LIST  | 8.14  | 8.48  | 8.57  | 8.48  | 8.16  |
| SIZE  | 18.91 | 19.73 | 19.96 | 19.14 | 18.60 |
| Q     | 1.50  | 1.49  | 1.70  | 1.60  | 1.38  |
| TANG  | 0.38  | 0.43  | 0.37  | 0.30  | 0.31  |
| CHOLD | 0.07  | 0.14  | 0.11  | 0.14  | 0.09  |
| OCF   | -0.11 | 0.09  | 0.14  | 0.07  | -0.04 |
| OCFD  | 0.14  | 0.09  | 0.08  | 0.11  | 0.23  |
| REVG  | 0.20  | 0.13  | 0.14  | 0.07  | 0.05  |
| REVD  | 0.27  | 0.17  | 0.17  | 0.21  | 0.28  |
| LOSS  | 0.45  | 0.25  | 0.18  | 0.27  | 0.43  |
| DIV   | 0.23  | 0.31  | 0.55  | 0.37  | 0.15  |
| LAG   | 4.31  | 4.31  | 4.32  | 4.30  | 4.31  |

1. Introduction 2. Growth 3. Mature 4. Shake-Out 5. Decline

## Table 7: Difference of Means Test for Audit Aggressiveness (AGG)

| Introduction | 2 | Mean | Mean | t-stat | p-value |
|--------------|---|------|------|--------|---------|
| Growth       | -0.15 | -0.11 | -1.11 | 0.27   |
| Mature       | -0.15 | -0.12 | -1.01 | 0.31   |
| Shake-Out    | -0.15 | -0.08 | -1.60 | 0.11   |
| Decline      | -0.15 | 0.00  | -1.97 | 0.05   |
| Mature       | -0.11 | -0.12 | 0.26  | 0.80   |
| Shake-Out    | -0.11 | -0.08 | -0.83 | 0.41   |
| Decline      | -0.11 | 0.00  | -1.52 | 0.13   |
| Mature       | -0.12 | -0.08 | -1.05 | 0.29   |
| Shake-Out    | -0.12 | 0.00  | -1.64 | 0.10   |
| Decline      | -0.08 | 0.00  | -0.95 | 0.34   |
Table 8: Difference of Means Test for Discretionary Accruals (DACC)

| 1                  | 2        | Mean | Mean  | t-stat | p-value |
|--------------------|----------|------|-------|--------|---------|
| Introduction       | Growth   | 0.07 | -0.03 | 7.93   | 0.00    |
| Introduction       | Mature   | 0.07 | -0.02 | 8.03   | 0.00    |
| Introduction       | Shake-Out| 0.07 | 0.00  | 4.60   | 0.00    |
| Introduction       | Decline  | 0.07 | 0.04  | 1.23   | 0.22    |
| Growth             | Mature   | -0.03| -0.02 | -1.04  | 0.30    |
| Growth             | Shake-Out| -0.03| 0.00  | -1.73  | 0.09    |
| Growth             | Decline  | -0.03| 0.04  | -3.40  | 0.00    |
| Mature             | Shake-Out| -0.02| 0.00  | -1.19  | 0.23    |
| Mature             | Decline  | -0.02| 0.04  | -3.08  | 0.00    |
| Shake-Out          | Decline  | 0.00 | 0.04  | -2.00  | 0.05    |

Table 9: Difference of Means Test for Small Profit (SP)

| 1                  | 2        | Mean | Mean  | t-stat | p-value |
|--------------------|----------|------|-------|--------|---------|
| Introduction       | Growth   | 0.20 | 0.18  | 0.64   | 0.52    |
| Introduction       | Mature   | 0.20 | 0.12  | 3.14   | 0.00    |
| Introduction       | Shake-Out| 0.20 | 0.13  | 2.15   | 0.03    |
| Introduction       | Decline  | 0.20 | 0.14  | 1.58   | 0.12    |
| Growth             | Mature   | 0.18 | 0.12  | 2.66   | 0.01    |
| Growth             | Shake-Out| 0.18 | 0.13  | 1.68   | 0.09    |
| Growth             | Decline  | 0.18 | 0.14  | 1.15   | 0.25    |
| Mature             | Shake-Out| 0.12 | 0.13  | -0.30  | 0.76    |
| Mature             | Decline  | 0.12 | 0.14  | -0.50  | 0.62    |
| Shake-Out          | Decline  | 0.13 | 0.14  | -0.22  | 0.83    |

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Table 10: Correlation Matrix

|    | 1   | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   |
|----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|    | 1.00| -0.01| 1.00 | (0.64)| -0.06| 0.04 | 1.00 | (0.01)| (0.09)| 0.07 | -0.09| -0.08| 1.00 | (0.01)| (0.00)| (0.00)| 0.03 | -0.04| 0.00 | 0.01 | 1.00 |
| 2  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    | (0.01)|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 6  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 7  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 8  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 9  |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 10 |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 11 |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 12 |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

1 AGG 2.DACC 3.BEAT 4.FLC 5.SHARIA 6.INST 7.LIST 8.SIZE 9.Q 10.TANG 11.LEV 12.CHOLD 13.OCF 14.OCFD 15.REVG 16.REVD 17.LOSS 18.DIV 19.LAG
|   | 13 | 0.02  | -0.23 | -0.06 | 0.16 | 0.01 | 0.12 | 0.10 | 0.11 | 0.12 | 0.00 | 0.29 | 0.23 | 1.00 |
|---|----|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
|   |    | (0.49)| 0.00  | (0.01)| 0.00 | 0.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 |      |
|   |    | 0.06  | 0.03  | -0.05 | 0.03 | -0.09 | -0.11 | -0.09 | -0.13 | 0.12 | -0.10 | 0.47 | 0.09 | 0.30 |
|   |    | (0.02)| (0.26)| (0.05)| (0.26)| (0.00)| (0.00)| (0.00)| (0.00)| (0.00)| (0.00)| (0.00)| (0.00)|      |
|   |    | -0.01 | -0.05 | -0.04 | -0.11 | -0.01 | 0.08 | -0.05 | 0.06 | 0.07 | -0.03 | 0.18 | 0.09 | -0.06 |
|   |    | (0.73)| (0.06)| (0.12)| (0.00)| (0.59)| (0.00)| (0.07)| (0.02)| (0.01)| (0.20)| (0.00)| (0.00)| (0.01) |
|   |    | 0.05  | -0.02 | -0.04 | -0.02 | -0.09 | -0.08 | -0.15 | -0.12 | 0.05 | -0.14 | 0.33 | 0.05 | 0.04 |
|   |    | (0.07)| (0.34)| (0.15)| (0.32)| (0.00)| (0.00)| (0.00)| (0.05)| (0.00)| (0.00)| (0.03)| (0.15)| 0.00 |
|   |    | 0.00  | 0.02  | -0.26 | -0.09 | -0.07 | -0.20 | -0.02 | -0.24 | -0.03 | 0.17 | 0.18 | -0.21 | -0.12 |
|   |    | (0.84)| (0.42)| (0.00)| (0.00)| (0.01)| (0.00)| (0.32)| (0.00)| (0.22)| (0.00)| (0.00)| (0.00)| (0.00) |
|   |    | 0.01  | -0.10 | -0.08 | 0.08  | -0.01 | 0.34 | 0.15 | 0.41 | 0.08 | -0.09 | -0.12 | 0.10 | 0.11 |
|   |    | (0.77)| 0.00  | (0.00)| (0.00)| (0.71)| 0.00 | 0.00 | 0.00 | (0.00)| (0.00)| (0.00)| (0.10)| (0.01) |
|   |    | 0.01  | -0.01 | 0.04  | -0.01 | 0.02 | 0.06 | -0.03 | 0.09 | 0.02 | 0.05 | 0.09 | -0.03 | 0.01 |
|   |    | (0.61)| (0.60)| (0.08)| (0.79)| (0.41)| (0.02)| (0.19)| (0.00)| (0.52)| (0.05)| (0.00)| (0.17)| (0.61) |
|   |    | 0.01  | -0.01 | 0.04  | -0.01 | 0.02 | 0.06 | -0.03 | 0.09 | 0.02 | 0.05 | 0.09 | -0.03 | 0.01 |

1 AGG 2.DACC 3.BEAT 4.FLC 5.SHARIA 6.INST 7.LIST 8.SIZE 9.Q 10.TANG 11.LEV 12.CHOLD 13.OCF 14.OCFD 15.REVG 16.REVD 17.LOSS 18.DIV 19.LAG

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### Table 11: Regression for Linear and Logistics Regression

| Variables | PANEL A       | PANEL B       |
|-----------|---------------|---------------|
|           | AGG           | DACC          |           | SP             |
| LCS       | 0.0796**      | -0.0048       | LCS       | -0.1020***     |
|           | (0.0402)      | (0.0116)      |           | (0.0318)       |
| SHARIA    | 0.0383*       | -0.0120**     | SHARIA    | -0.0269        |
|           | (0.0221)      | (0.0059)      |           | (0.0192)       |
| INST      | -0.0178       | 0.0128        | INST      | -0.0966***     |
|           | (0.0297)      | (0.0116)      |           | (0.0360)       |
| LIST      | -0.0043       | -0.0092**     | LIST      | -0.0055        |
|           | (0.0092)      | (0.0038)      |           | (0.0112)       |
| SIZE      | -0.0109*      | -0.0047**     | SIZE      | -0.0113        |
|           | (0.0064)      | (0.0023)      |           | (0.0075)       |
| Q         | -0.0168**     | 0.0049*       | Q         | -0.0220***     |
|           | (0.0077)      | (0.0027)      |           | (0.0081)       |
| TANG      | 0.0056        | -0.013        | TANG      | -0.0304        |
|           | (0.0321)      | (0.0127)      |           | (0.0321)       |
| LEV       | -0.0015       | 0.0226***     | LEV       | 0.0660***      |
|           | (0.0209)      | (0.0075)      |           | (0.0139)       |
| CHOLD     | -0.0158       | 0.1500***     | CHOLD     | -0.2820***     |
|           | (0.0677)      | (0.0357)      |           | (0.0510)       |
| OCF       | -0.0241       | -0.0279       | OCF       | -0.0997***     |
|           | (0.0464)      | (0.0206)      |           | (0.0360)       |
| OCFD      | 0.0182        | 0.0530*       | OCFD      | -0.0801*       |
|           | (0.0501)      | (0.0298)      |           | (0.0480)       |
| REVG      | -0.0269       | -0.0023       | REVG      | -0.1040***     |
|           | (0.0371)      | (0.0158)      |           | (0.0253)       |
| REVD      | 0.0723*       | -0.0003       | REVD      | 0.0168         |
|           | (0.0408)      | (0.0165)      |           | (0.0385)       |
| LOSS      | 0.0893***     | 0.0159**      | LOSS      | -0.3360***     |
|           | (0.0266)      | (0.0073)      |           | (0.0195)       |
| DIV       | -0.0171       | -0.0081       | DIV       | -0.0830***     |
|           | (0.0215)      | (0.0059)      |           | (0.0208)       |
| LAG       | 0.0579        | 0.0248        | LAG       | 0.1350**       |
|           | (0.0649)      | (0.0194)      |           | (0.0673)       |

Units: 217
Years: 9

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|                |       |       |       |       |
|----------------|-------|-------|-------|-------|
| Obs.           | 1,645 |       |       |       |
| F-Statistic    | 28.7958 | 58.4302 |       | 38.4389 |
| Adj. R-Sq      | 0.3573 | 0.5346 |       | 0.5346 |
| Chi-Sq         |       |       |       | 0.1800 |
| Pseudo R-Sq    |       |       |       | 0.1800 |
| Industries Fixed | Yes   |       |       |       |
| Years Fixed    | Yes   |       |       |       |

*p<0.1; **p<0.05; ***p<0.01
Table 12: Regression for Linear and Logistics Regression for Age-Based Cycle

| Variables | PANEL A | Variables | PANEL B |
|-----------|---------|-----------|---------|
|           | AGG     | DACC      |         |
| ABC       | 0.0433  | 0.0132    |         |
|           | (0.0366)| (0.0093)  |         |
| SHARIA    | 0.0390* | -0.0115*  |         |
|           | (0.0221)| (0.0059)  |         |
| INST      | -0.0136 | 0.0129    | -0.1010*** |
|           | (0.0295)| (0.0116)  |         |
| LIST      | -0.0086 | -0.0114***| -0.0995 |
|           | (0.0116)| (0.0042)  |         |
| SIZE      | -0.0141**| -0.0054**| -0.0102 |
|           | (0.0065)| (0.0024)  |         |
| Q         | -0.0179**| 0.0044    | -0.0225***|
|           | (0.0077)| (0.0028)  |         |
| TANG      | -0.0108 | -0.014    | -0.0167 |
|           | (0.0304)| (0.0126)  |         |
| LEV       | -0.0037 | 0.0233*** | 0.0711*** |
|           | (0.0208)| (0.0074)  |         |
| CHOLD     | -0.0172 | 0.1480*** | -0.2860***|
|           | (0.0672)| (0.0357)  |         |
| OCF       | -0.0115 | -0.0292   | -0.1180***|
|           | (0.0461)| (0.0206)  |         |
| OCFD      | 0.0193  | 0.0530*   | -0.0813* |
|           | (0.0488)| (0.0298)  |         |
| REVG      | -0.0306 | -0.0015   | -0.0971***|
|           | (0.0370)| (0.0157)  |         |
| REVD      | 0.0724* | -0.001    | 0.0142  |
|           | (0.0408)| (0.0166)  |         |
| LOSS      | 0.0872***| 0.0159**  | -0.3330***|
|           | (0.0267)| (0.0073)  |         |
| DIV       | -0.017  | -0.0087   | -0.0852***|
|           | (0.0216)| (0.0059)  |         |
| LAG       | 0.069   | 0.0262    | 0.1290* |
|           | (0.0638)| (0.0194)  |         |

Units: 217  Years: 9  Obs.: 1,645
F-Statistic: 28.6010  Chi-Sq: 37.2345
Adj. R-Sq: 0.3557  Pseudo R-Sq: 0.1744
|                        |        |
|------------------------|--------|
| Ind. Fixed             | Yes    |
| Years Fixed            | Yes    |

*p<0.1; **p<0.05; ***p<0.01
Figure 1: ROA Frequency

ROA Histogram

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