SHARIAH COMPLIANT FIRMS AND RISK SHARING UNDER PANDEMIC ERA

Faruk Balli[1] and Jardine A. Husman[2]

[1] School of Economics and Finance, Massey University, New Zealand, F.Balli@massey.ac.nz
[2] Bank of Indonesia, Jakarta, Indonesia, jardine@bi.go.id

ABSTRACT

In this paper we analyse the Shari'ah Compliant (here after SC) firms and how do they share the output risk under pandemic era. Firms that are accepted to be SC, have been exposed to financial ratio restrictions (like debt ratios, profit ratio or current assets). For those firm not able to use debt to eliminate the income shocks, It is expected that firms after a negative output shock would be reflected to shareholders. In this paper, we measure to what extent SC firms share the risk of income shocks with the market and shareholders. Under pandemic era, SC firms have been exposed to substantial negative income shocks. For the sake of holding their SC certificates, debt leverage is not considered as an option but dropping (or cutting down) dividend payments would make the firms look bad, if they have not done it before. At this stage, firms that have the flexibility to share their income shocks with both market and shareholders before, i.e, produce more on boom market and distribute more dividends and produce less on recession and distribute less dividends, are performed better – stock prices returned to original levels earlier-during the pandemic area

I. INTRODUCTION

Many empirical studies have promoted the dividends smoothing models pioneered by Lintner (1956)'s model to understand patterns of how firms pay dividends across time. Empirical studies have shown that firms aim to present credible information on future earnings of the firms to attract investors. Thus, dividend smoothing is considered an important criterion for managers to provide credible information to stakeholders. Recent studies (Anderson and Carverhill, 2012; Balli *et al.* 2018; Balli *et al*. 2022) also postulate that financial flexibility significantly impacts dividend decisions made by managers, simultaneously suggesting systematic variations in smoothing conduct. In this study, we investigate dividend smoothing strategies from a Shari'ah Compliant (hereafter SC) perspective. In particular, we explore the impact of being an SC firm on the dividend streams, particularly in the pandemic era.

Starting from Miller and Modigliani (1961), early studies emphasize that firms' capital structure is irrelevant to dividend policies, whereas recent studies (Fama,1974; Myers, 1984; Myers and Majluf, 1984; Brav, Graham, Harvey, and Michaely, 2005) have demonstrated that dividend policy is not independent from capital structure of the firms. Rather, it depends on firms' debt and investment positions. Indeed, dividend smoothing is important for the firms for signalling to the market and stakeholders. Most firms use debt and investment channels to smooth their corporate payouts. Lambrecht and Myers (2012) propose an identity and show that firms need to sacrifice investments and undertake more debts to smooth their dividends. Following Lambrecht and Myers (2012), Hoang and Hoxha (2016) decompose the net income shocks and quantify how much net shocks are smoothed by investment and debt for the sake of smoothing the dividend or payouts.

Payout policy has been analysed both theoretically and empirically since Lintner's pioneering study, impact of payout policy on the capital structure decisions, and managers usually adjust the target payout ratio based upon the value of available investments as well as changes in net income. Miller and Modigliani (1961) defend that firms' policy is not dependent on its earnings or capital structure. However, they admit that dividend payments have signalling effect as they convey information about future cash flows and earnings of the firm. Recent studies focus on the optimum payout (dividend) ratios that maximizes the firms' values. The literature on payout policies has mostly concentrated on asymmetric information and agency considerations.

Theoretically, signalling and agency theory identifies various determinants of dividend policy. They have been studied extensively, even though there is a no solid consensus on the literature on the determinants of the dividend policy. Brav et al. (2005) explore the importance of liquidity for investment and dividend policy relationship. DeAngelo and DeAngelo (1990) study NYSE firms for a particular time span and test how do they change their dividends when there is a certain shock in the market. Jensen (1986) argues that managers accumulate debt for the sake of dividend smoothing. His study also mentions about the adjustments in firm investment based on cash flow shocks, which also have implications for debt policy. Aivazian, Booth & Cleary (2006) explore interactions between investment, dividend and debt on dividend smoothing. This study clearly analyses the

importance of borrowing and restriction of the investment channels to smooth the dividends.

All these aforementioned studies provide solid evidence that capital structure is relevant for understanding firm's dividend policy strategies. There is a strong relationship between debt, investment and dividends and firms change the amounts of debt or investment to smooth the dividends (Aivazian et al, 2006). When we consider Shari'ah Compliant (SC) firms, relationship between these three instruments will be more important. The literature has shown that being SC and maintaining SC brings extra burden to companies to follow.[1] For SC firms, at the same time, to adopt a dividend smoothing policy where the debt channel will mostly be limited, is indeed harder. Thus, we can understand that one of the legs from 3 basic variables will not be used affectively. Here our main question comes; Will there be a trade-off between dividend smoothing and being SC? In this paper, we analyse this trade-off further.

The demand for the Islamic finance is increasing in the last years and financial markets and firms consider the Islamic market as a big potential. Most of the firms in the developed financial markets consider adopting Shari'ah Compliant constraints for the sake of attracting financial investors who care about the Islamic standards. However, one of the most important constraint firms would face after being SC is restricting of the debt issues below 33% of the total assets and keep it in this level, thus firms will be unable to extend to use debt channel to smooth dividends throughout the time periods. In this paper, we examine the implications of SCR on payout smoothing policy of firms under debt restrictions and investment vulnerability while firms' response a negative income shock: a response to changes in net income. The payout smoothing strategies for SC is important not only for corporate managers and their policy-making strategies, but also to shareholders planning portfolios and to economists to understand the functioning of the Shari'ah compliant capital markets and instruments. Though dividend smoothing has been widely reported in the literature, only a handful of studies consider to study the nature of the SC firms' actions to income shocks. Our study fills this void and explicitly characterizes the aspect of dividend smoothing before and after the restrictions on debt as leverage to income shocks.

Our results is revenant to explain the competing agency cost issue inherited to the aspect of dividend smoothing. This study enriches the prevailing literature in two principal means. First, this is the first study that explores the causal relationship between debt constraint and dividend (payout) policy in a natural experiment. Second, we contribute to the theoretical arguments on financial flexibility in shaping corporate dividend decisions. Our empirical results are consistent with theoretical expectations. We report significant decrease in dividend smoothing once the firms become SC. The restriction on debt results dividend stream more correlated with temporary net income growth.

The rest of the paper is organized as follows. The next section describes data used in the present study while section 3 details the methodology. Section 4 presents the results and, finally, section 5 concludes.

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1 The Shari'ah Compliance requirements (hereafter SCR) adoption process asks firms to meet certain conditions including restricting financial ratios within specific limits.

II. DATA AND DESCRIPTIVE STATISTICS

In this paper, we employ the Sharia compliant (SC) and non-Shari'a compliant (Non-SC) firms to observe the impact of being SC on the dividend smoothing during global crises. In other words, we have two sets of listed firms from the US market, one is SC firms and another is a comparison group with similar characteristics but not labelled as Shari'a compliant. As of December 2020, we have a total of 1066 SC US firms, identified by Ideal Ratings. Separately, we have collected 8675 non-Sharia compliant firms for the comparison purpose. The number of SC firms keep fluctuating, since on monthly basis, firms can be delisted from being SC. Accordingly, for the sake of not to be affected by this delisting, we identify a firm to be SC if that firm becomes SC for full year. However, to measure the amount of changes of earnings absorbed by borrowing, investment and the amount remained unabsorbed, we obtain yearly data on financial variables such as net income, short term and long-term debt, cash balances, cash dividends, stock repurchases and equity issuances from Compustat over the period 1982–2021.

Table 1 contains the descriptive statistics for the main variables employed in this paper.

Table 1.
Summary Statistics

Entire Sample	Mean	Standard Deviation	Skewness	Kurtosis
Net Income	12.45	10.34	2.22	16.44
Debt	13.68	16.19	3.45	5.34
Investment	14.54	16.01	0.42	8.45
Payout(Dividend)	12.53	14.09	3.45	24.55
SC Firms	**Mean**	**Standard Deviation**	**Skewness**	**Kurtosis**
Net Income	12.51	9.67	0.97	11.52
Debt	11.45	6.54	4.35	2.43
Investment	13.86	6.34	-0.34	2.45
Payout	12.45	15.66	3.43	4.53
Non-SC Firms	**Mean**	**Standard Deviation**	**Skewness**	**Kurtosis**
Net Income	12.30	15.65	2.22	16.44
Debt	13.05	13.23	3.45	5.34
Investment	14.89	15.33	0.42	8.45
Payout (dividend)	12.89	11.43	3.45	24.55

We have divided the sample into 2 subsamples, Shariah Compliant Firms and Non-Shariah Compliant Firms. We have provided the logs of the net income, debt, investment and dividend variables in Table 1. Mean of the variables are not so different from each other in the sub panels indicating that SC and Non-SC firms are not so different from each other. A small note, the total debt of the SC firms are slightly lower compared to Non-SC ones and investment in the Non-SC firms are slightly higher than the SC firms.

Table 2 report the correlation matrix of the dependent and independent variables used in the paper. We use logarithmic transformation and first differences of the variables for a number of reasons. First, we employ these transformed variables in the equation; and second, log differenced version of the variables does not have any unit root patterns. Furthermore, taking logarithm helps to eliminate any possible heteroscedasticity and autocorrelation issues.

Table 2.
Correlation Matrix

	Δlog NI	Δlog ND	Δlog Investment	Δlog Payout
Δlog NI	1			
Δlog Debt	0.02	1		
Δlog Investment	0.06	0.34	1	
Δlog Payout	0.04	-0.05	-0.15	1

We present the correlation matrix to explore if there is any multicollinearity problem. However, it is seen that the correlation matrix has values between -0.05 to 0.34, which is safe from multicollinearity in the models. At first glance, correlations are in low levels as it is expected. Payouts are almost uncorrelated with NI (consistent with dividend smoothing); whereas the investment changes is mostly correlated with debt changes. It is intuitive as the investment is mostly compensated with the debts, Payout changes and investments are negatively correlated, as increases in dividends are due to the sacrifice of the investments or vice versa.

According to the literature, firms typically smooth shocks in earnings through dividend smoothing. Firstly, Lambrecht and Myers (2012) and Hoang and Hoxha (2016) document that most firms prefer to smooth payouts to keep them stable, typically through changes in debt and investment to neutralise the effects of the fluctuations in net income. More specifically, Lambrecht and Myers (2012) show that undesired income shocks are primarily absorbed by debt financing, while Hoang and Hoxha (2016) indicates that positive shocks in times of favourable conditions lead to the decision of an increase in corporate investment. Consistent with these premises, we are particularly interested in whether the adoption of SCR triggers significant changes in firms' intertemporal budget constraint and if these changes cause an interaction of the three corporate financing decisions, namely investment, debt, and dividend policies. This is because under the SCR conditions, a firm may face additional constraint – certain limits imposed to the debt ratio (up to 33%), which would limit its capability of debt financing in the case of severe negative income shocks. On the other hand, SCR do not apply any restrictions on the changes in investment, which means that in the case of positive shocks to net income, firms might be able to smooth them through investment expansion without major disturbances. In the context of these important managerial and policy questions, our research is the first paper that empirically analyses the impact of adopting SCR on firms' payout smoothing policies through adjustments in debt and investment to smooth the net income fluctuations.

This study enriches the prevailing literature in two principal means. First, this is the first study that explores the causal relationship between debt constraint and payout policy in a natural experiment. Second, we contribute to the theoretical arguments on financial flexibility in shaping corporate dividend decisions. Our empirical results are consistent with theoretical expectations. We report significant shrinkage in dividend smoothing once the firms are Shari'ah compliant. The restriction on debt results dividend stream more correlated with temporary net income growth.

III. METHODOLOGY
In this part, we present the empirical model to quantify the dividend (payout) smoothing for US firms. Firms' dividend smoothing strategies are developed first by Lintner (1956). Later, Lambert and Myers (2012) use the following equation to describe the interrelation among debt, investment and dividend.

$$\Delta Debt_i + Net\ Income_i =\ Investment_i + Payout_i \qquad (1)$$

Lambert and Myers (2012) state that firms need to borrow money in order to achieve certain level of investment and payouts. In this model firm can adjust the variabilities in *Net Income$_i$* by changing net *Debt$_i$* which is the repayment of debt, increase in borrowings, and changes in cash balances. The model above is consistent with the inter temporal budget constraint theory and dividend smoothing theory from many perspectives. Those firms short in their income will borrow money to stabilize dividend and investments. Inversely, firms have higher income than they expected might lend or save more for future negative income shocks. For instance, the payouts used in Lambrecht and Myers (2012) model contains of both cash dividends and stock repurchases to indicate a total payout therefore we use the dividend and payout terms interchangeably.

Equation (1) reveals that firms uses debt in order to balance the change in the income to stabilize the investment and dividends. Hoang and Hoxha (2016) state that increase in investment is more correlated with the net income; when net income increases firms present higher investment, when negative output shocks exist, the investment has been affected negatively. Hoang and Hoxha (2016) have found that firms mostly do not touch dividends much and it stays rather stable, consistent with the dividend smoothing hypothesis.

Again following Lambrecht and Myers (2012) and Hoang and Hoxha (2016), we assumed that firms aim to smooth their payouts thus payout smoothing is the ultimate aim. We develop our methodology, using a similar theoretical background from risk-sharing (income and consumption smoothing) models developed by Asdrubali, Sørensen, and Yosha (1996) and Sørensen and Yosha (1998). The aforementioned studies developed a variance decomposition approach in order to decompose the GDP shocks with different channels including credit or capital markets or fiscal policies. These studies have inspired many studies where the GDP shocks are decomposed into foreign aid (Balli *et al.* 2019), exports, net factor income (Balli et al 2012; Balli et al. 2014) and remittance channels (Balli

and Rana 2015), capital gains (Balli et all; 2012) in different studies. In a different study, Balli, Pericoli and Pierucci (2016) apply the similar variance decomposition methodology for the first time to test the role and the extent of smoothing channels at a micro level using a sample of UK households.

Hoang and Hoxha (2016), adapted the Asdrubali et al. (1996) methodology into the firms' level studies and have used equation 1. Following Hoang and Hoxha (2016), adapted the Asdrubali et al. (1996) we use the following identity and transform the Equation (1) as follows.

$$Net\ Income_i$$
$$= \frac{Net\ Income_i}{Net\ Income_i + \Delta Debt_i} \times \frac{Net\ Income_i + \Delta Debt_i}{Payout_i}$$
$$\times Payout_i \tag{2}$$

Firms are able to buffer the net income shocks via borrowings, which is imitated by the difference between *Net Income$_i$* and *Net Income$_i$+ΔDebt$_i$*. Next smoothing channel is the investment channel where the investment channel is formulated as the difference between *Net Income$_i$+ΔDebt$_i$* and *Payout$_i$*. Debt and investment channels quantify the amount of the net income shocks. The unsmoothed part refers the correlation between payout growth and net income growth.

Consistent with Hoang and Hoxha (2016), we apply variance decomposition of firm earnings growth in order to get regression equations that will allow us to document the magnitude of fluctuations to *Net Income$_i$* absorbed by channels of *Debt$_i$* and investment. We log transform and first difference the variables in Equation (2) to express them as growth rates. Finally, we multiply both sides by *ΔlogNet Income$_i$* and get the following decomposition of the cross-sectional variance in

$$Net\ Income_i:$$
$$var\{\Delta logNet\ Income_i\} = cov\{\Delta logNet\ Income_i, \Delta logNet\ Income_i -$$
$$\Delta log(Net\ Income_i + \Delta Debt_i)\ \} + cov\{\Delta logNet\ Income_i, (\Delta log(Net\ Income_i +$$
$$\Delta Debt_i) - \Delta logPayout_i)\} + cov\{\Delta logNet\ Income_i, \Delta logPayout_i\} \tag{3}$$

After dividing both sides by the variance of the *ΔlogNet Income$_i$* we obtain the slopes of the coefficients from the 3 panel estimations.

The coefficients from Equation (3) are obtained from the following three panel regressions:

$$\Delta logNet\ Income_{it} - \Delta log(Net\ Income_{it} + \Delta Debt_{it})$$
$$= \beta_D \Delta logNet\ Income_{it} + \epsilon_{itD} \tag{4a}$$

$$\Delta log(Net\ Income_{it} + \Delta Debt_{it}) - \Delta logPayout_{it}$$
$$= \beta_I \Delta logNet\ Income_{it} + \epsilon_{itI} \tag{4b}$$

$$\Delta logPayout_{it} = \beta_P \Delta logNet\ Income_{it} + \epsilon_{itP} \tag{4c}$$

Where β_D obtained from the equation(4a) by regressing *ΔlogNet Income$_i$-Δlog(Net Income$_i$+ΔDebt$_i$)* on *ΔlogNet Income$_i$*, β_I is obtained from regressing *Δlog(Net Income$_i$+ΔDebt$_i$)-ΔlogPayout$_i$* on *ΔlogNet Income$_i$* and represents the investment channel; and finally, β_P obtained by regressing *ΔlogPayout$_i$* on *ΔlogNet Income$_i$* In economic sense, the summation of these coefficients will be equal to 1, where

$$\beta_D + \beta_I + \beta_P = 1 \tag{5}$$

Equations (4a)- (4c) are panel estimation for the entire sample where i corresponds the firms and t represent year. We can economically interpret a hypothetical 100% increase in the growth rate of *Net Income$_{it}$* as the above variables in the equations are expressed in growth rates. If the fluctuations in the net income is 100% absorbed by debt, then β_D coefficient will be 1 other channel will not be effective. Similarly, if the fluctuations in net income smoothed via investment by 100% then β_I coefficient approaches to the 1 and other coefficients approached to 0. Summation of the $\beta_D+\beta_I$ represents the amount of the net income shocks smoothed via debt and investment channel. Ideally, full smoothing (payout smoothing) exists when the summation of $\beta_D+\beta_I$ approached to 1 and β_P approaches to zero. In that case, the debt and investment channels are successful enough to smooth net income shocks, firm's payout will be uncorrelated with the net income shocks. This is considered as the full dividend smoothing. As the β_P coefficient deviates from 0 and approaches to 1, this implies the dependence of the dividends to net income, the extent of the full smoothing decreases.

In order to control for the autocorrelation and heteroskedasticity, we assumed that error terms follow and AR(1) process. We restrict the parameter for AR(1) term to be identical for all counties. We allow for firm-specific variances of the error terms. Following Sørensen and Yosha (1998), Balli et al (2011), Balli et al.(2012) and Balli et al.(2013); the estimation is carried out using a two-step generalized least squares (GLS) procedure: (i) First we estimate the entire panel employing an OLS model, then we obtain the residuals from the first step is used to estimate variance for each firm and corrected for heteroscedasticity. Unless stated otherwise, we use differenced data at a yearly frequency.

IV. ESTIMATION RESULTS

We start our analysis by estimating the roles of debt, investment channels in smoothing net income shocks. We also estimate the amount of the unsmoothed part, which is considered as the payout smoothing. Empirically we estimate the equations 4a, 4b and 4c and present the results in Table 3 and 4, for SC and non-SC firms. We present our benchmark results in the first columns of the Table 3 and Table 4. We find that 30% of the net income shocks are buffered by debt holdings for Shari'ah Compliant (SC) firms for the entire period, whereas same channel smooth 46% of the net income shocks for Non SC firms in Table 4. This is quite expectable and in line with the Shari'ah Compliant restrictions for the firms. For

the sake of maintaining the Shari'ah certificate, firms are not able to increase their debt to asset ratio above 33%, therefore it is less likely for SC firms to smooth their net income shocks by borrowing, whereas non-SC firms do not have this kind of restriction, therefore the extent of the debt channel is higher for non-SC firms, compared to SC firms.

Restriction on the debt channel makes the SC firms to use the investment channel more actively to smooth the net income shocks. Table 3 presents that 61% of the net income shocks are absorbed with investment channel for SC forms, whereas the extent of the same channel drops to 50% for non-SC firms. We observe that SC firms sacrifice more from their investments for the sake of smoothing their net income and maintaining their SC certificate. However, we observe that non-SC firms smooth the net income evenly between two channels: investment and debt.

Table 3.
Dividend (Payout) Smoothing Channels: SC Firms

	Full Period (1982-2021)	Post Pandemic (2019-2021)
Debt (β_D)	30%*** (1%)	27%*** (1%)
Investment (β_I)	61*** (1%)	57%*** (2%)
Payout (β_P)	9%*** (1%)	16%*** (2%)

Notes: This table displays the benchmark results from estimating the variance decomposition equations. The numbers displayed represent the percentage of fluctuation of firm earnings absorbed by borrowing (β_D) and investment (β_I). Payout (β_P) represents the amount of fluctuations unabsorbed. Also, it measures the response of payouts to fluctuat in earnings. The measure for payouts is the sum of cash dividends and stock repu hases net of equity issues. β_D is the slope coefficient from a regression of $\Delta\log$ I − $\Delta\log(NI + \Delta D)$ on $\Delta\log$ NI β_I is the slope coefficient from a regression of $\Delta\log(NI + \Delta D) - \Delta\log P$ on $\Delta\log$ NI. β_P is the slope coefficient from a regression of $\Delta\log$ P on $\Delta\log$ NI***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively and t statistics are reported in parenthesis.

The Last rows in both Table 3 and 4 represent the dividend smoothing. As it is explained before as the coefficient approaches to zero, we expect a full smoothing for firms and they have stable dividends, not being affected from net income fluctuations. From Table 3, we observe a coefficient of 9% and statistically significant, indicating that net income fluctuations only explain the 9% of the fluctuations of dividend changes for SC firms. However, we observe same coefficient as 4% for non-SC firms and it is not statistically significant. We are confident to say that dividends are not significantly correlated with net income fluctuations for non-SC firms, showing us the full dividend smoothing exist for non-SC firms. The main point we raise from analysing two tables is that SC firms sacrifice the debt channel and even they sacrifice from investment stability as well, but more importantly, they also give up from full dividend smoothing. We believe it is indeed too important for those firms to stay SC, as they forego important market indicators.

Table 4.
Dividend (Payout) Smoothing Channels: Non-SC Firms

	Full Period (1982-2021)	Post Pandemic (2019-2021)
Debt (β_D)	46%***	43%***
	(2%)	(1%)
Investment (β_I)	50***	52%***
	(1%)	(2%)
Payout (β_P)	4%	5%
	(3%)	(3%)

Notes: This table displays the benchmark results from estimating the variance decomposition equations. The numbers displayed represent the percentage of fluctuation of firm earnings absorbed by borrowing (β_D) and investment (β_I). Payout (β_P) represents the amount of fluctuations unabsorbed. Also, it measures the response of payouts to fluctuations in earnings. The measure for payouts is the sum of cash dividends and stock repurchases net of equity issues. β_D is the slope coefficient from a regression of $\Delta \log NI - \Delta \log(NI + D)$ on $\Delta \log NI$ β_I is the slope coefficient from a regression of $\Delta \log(NI + D) - \Delta \log P$ on $\Delta \log NI$. β_P is the slope coefficient from a regression of $\Delta \log P$ on $\Delta \log NI$***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively and t statistics are reported in parenthesis.

In the second columns of both tables, we redo the analysis for the pandemic era, to observe if there is a significant change. As we all know the markets shrink and firms take conservative positions in order to survive. Both SC and non-SC firms sacrifice from the dividend smoothing in the pandemic era. For SC firms, the extent of the smoothing via debt channel decreases to 27% from 30%, whereas the extent of the investment channel also decreases to 57%. The β_P is 16% and statistically significant (increased from 9%) , stating that SC firms sacrifice more in the pandemic era to stay SC. We also do the same analysis for the non-SC firms. We have not observed a big change for the non-SC firms, more importantly they did not sacrifice from full dividend smoothing. The β_P coefficient increases to 5% from 4% but we can say it is still statistically insignificant, providing strong evidence that non-SC firms still maintain to provide full dividend (payout) smoothing under pandemic, unlike SC firms.

V. CONCLUDING REMARKS

In this paper we analyse the Shari'ah Compliant (SC) firms and how do they share the output risk under pandemic era. Shari'ah Compliant constraints restrict firms from buffering net income fluctuations. We show that SC firms cannot use debt channel as effective as other firms therefore, they sacrifice from future investments and perfect dividend (payout) smoothing in order to keep their "Shari'ah Compliant certificates". During Pandemic firms have been exposed more net income shocks and they use debt to buffer the shocks. SC firms, instead, sacrifice more from dividend smoothing criteria, and therefore reflect the net income shocks on the dividend growth. Non-SC firms, conversely, still maintain dividend smoothing during the pandemic era. Under crises period, SC firms sacrifice from future investments and dividends to keep their SC certificate, but this can affect the shareholders future investment strategies. Overall, it is important to understand that SC firms' strategies are limited to smooth dividends, therefore investors would not need to treat SC firms as they do it is for Non-SC firms. The stock valuation models for the SC firms might need to be revised.

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