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Manuscript Title: Corporate Social Responsibility and Firm Life Cycle: Empirical Evidence from the Pharmaceutical Industry in China.

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Corporate Social Responsibility and Firm Life Cycle: Empirical Evidence from the Pharmaceutical Industry in China.

Abstract: The study examines the relationship between corporate social responsibility (CSR) and the corporate life cycle (CLC) of the Chinese pharmaceutical listed companies for the duration of 2010 to 2018. The firm cash flow pattern is used as a proxy for the CLC. The study results indicate that the relationship between CSR and CLC is positive and linear in all the phases of the CLC including, the introduction, growth and maturity stage. Although the relationship is smaller and more significant at the maturity phase. The research further shows that investors incorporating social responsibilities values play a key role in the firm cash flow performance (CFP) across all the firm stages. Whilst, employees espousing social responsibility tenets can only improve CFP in the decline or shakeout stages. Likewise, embedding CSR into the customers group only improves CFP at the maturity stage. Applying the lag effects lead into the same study results. The finding for the bi-directional causality indicate that although CSR can positively influence CFP, CFP is ultimately more associated with the firm unobservable characteristics rather than performance attributed to CSR. On the whole, our study results point to positive causality between CSR and CFP across all the firm life stages and the CSR has a mediating effect on each life cycle.

Keywords: China; Corporate Life Cycle; Corporate Performance; Corporate Social Responsibility; Pharmaceutical Industry

1. Introduction

The evolution of corporate social responsibility (CSR) and the likelihood of its effect on the pharmaceutical industry financial performance is becoming more prominent in China as the sector continues to experience rapid growth. The industry has also undergone continuous and unexpected CSR related incidents, such as low drug quality, fake medicines, commercial bribe, environmental pollutions, and superfluously high drug prices (Hou & Zhang, 2014). These have caused severe damages to the reputation of companies involved as well as incurring penalties for their acts. Whilst, some pharmaceutical companies (e.g. Fosun Pharma) have tried to create more value through CSR activities. Therefore, it is imperative to examine the relationship between CSR and pharmaceutical companies' financial performance to assess any potential trend in this area.

Besides, this paper contributes to calls for research that explores the effects brought by the corporate life cycle (CLC) on the relationship between CSR and corporate financial performance (CFP) with specific focus on emerging economies, such as China (see Habib & Hasan, 2019). Studying the CSR-CFP relationship within a narrowly focused industry, similar to the one presented in this paper, is also likely to generate further insights in relation to the CSR research area (Rhou et al., 2016). Moreover, our case study, China, is home for the second-largest pharmaceutical market, controlling 10% of the world's market. The pharmaceutical market in China is also experiencing fast growth, with rate ranging between 12.4% (from 2011 to 2016) to 8.1% (from 2016 to 2021) (Daemmrich & Mohanty 2014). This is in addition to the unique regulatory settings applied to the pharmaceutical industry in China. Therefore, researching CSR-CFP in the context of the Chinese pharmaceutical industry is deemed to be intuitive. This would complement the current inconclusive research results on the association between CSR and CFP (McWilliams & Siegel, 2001).

Additionally, only small anecdotal evidence exist on the CSR-CFP relationship from a CLC perspective (e.g. Elsayed & Paton, 2009). The studies, which attempted to do so also have limited sample data, extending between one year to three years. Besides, these few studies do not specify the CSR-CFP relationship across the various CLC stages. Therefore, this study tries to address these research's caveats and attempt to provide empirical evidence on the CSR-CFP relationship based on different stakeholder groups and across CLC stages.

Building on the current literature on CSR-CFP relationship and effect brought by CLC (Habib & Hasan, 2019) the study finds supporting evidence that there is a linear and positive relationship between CSR and CFP. Our findings also show that CLC has mediating effect on

the CSR-CFP causality. The study provides evidence that CSR is very important across all the CLC stages particularly for the investors group. However, when employees group are considered, CSR can only improve CFP in the decline/shake-out stage. While CSR improves CFP in the maturity stage when CSR is geared towards customers. When endogeniety issues are taken into account the study finds that CFP is driven more by unobservable firm characteristics than CSR performance, which is consistent with Nelling & Webb (2009).

The remainder of the paper is organised as follows. The next section examines the relevant literature on CSR and research hypotheses development. In section three we discuss the research methodology and the study model. The following section presents and discusses the research findings and map this with the pertinent literature. The final section concludes the paper and provides implications and directions for future research.

2. Literature Review

CSR has been evolving since the 1930s (Carroll, 1979) and research in this area has continued growing as businesses use CSR as a tool to discharge their accountability duties towards their stakeholders. However, Sternberg (1998), among the key proponents of shareholder value and critics of CSR, argue that for companies to spend their economic resources in satisfying stakeholders other than shareholders may reduce profits and harm shareholders' wealth (Solomon, 2021). Despite of the criticism, awareness of social responsibility for companies' good is growing to encompass economic responsibility to maximise shareholders' wealth, legal, ethical, and discretionary responsibilities.

On the whole, scholars agree that CSR necessitates firm to deliver on its responsibilities towards stakeholders including shareholders, employees, customers, suppliers, government, environment, and the society (e.g. Yang et al., 2019).

CSR and CFP Causality

The study of CSR and CFP's relationship helps to understand companies' social responsibility adoption to improve FP (Galbreath, 2018). The empirical results on this area are overall mixed (see Vogel, 2005). A linear relationship is found to exist between the variables representing CSR and those of CFP, but the direction of relationship can be both negative and positive (Danso et al., 2019; Haffar & Searchy, 2017). For example, Orlitzky & Schmidt (2003) find positive relationship based on a series of value-creation theories. The theories adopted assume that CSR adoption reduces firm risk (Minor & Morgan, 2011). A negative relationship between

CSR and CFP is said to exist when actions related to CSR incur avoidable costs resulting in a competitive disadvantage (Waddock & Graves, 1997).

On the other hand, a number of research papers (e.g. Barnett & Salomon, 2012; Flammer, 2015) question the linearity of CSR-CFP relationship. The main reason given is the measurement problem (see Haffar & Searcy, 2017) of CSR performance as many studies use different measures of CSR leading inconclusive results. Despite these counter arguments, some researchers still reveal a U-relationship between CSR and CFP (Chen et al., 2018; McWilliams & Siegel, 2001). For example, Chen et al. (2018) use the prospect theory and find a U-shaped relationship between CSR and CFP. The diminishing returns caused by CSR actions could lead, however, to CSR investment costs to increase quickly (Flammer, 2015). Therefore, there could be an inverted U-shaped relationship between CSR and CFP (Haans et al., 2016). Based on this literature, the study aims to test two main research hypotheses:

H1: CSR is positively correlated with CFP across firm life cycle stages.

H2: The impact of CSR on CFP differs across stakeholder groups over the life cycle stages.

3. Theoretical Framework

Predominantly, shareholder and stakeholder theories are used in the discourse that reflects firm objective (Keay, 2008). However, this objective is highly debatable and ascertainment of company purpose is critical in underpinning corporate governance. Hence, to increase shareholders' wealth Donaldson & Preston (1995) suggest that managers need to pay attention to other stakeholder relationships with legitimate interests in corporate activity. This aligns with Freeman (1984: 46) advocates that companies need to concentrate on stakeholder relationship subject to firm effect. Consequently, companies have a responsibility to other stakeholders, to realise the joint development of corporate value and social responsibility.

The resource-based theory (RBV) (see Barney, 1991; Crick & Crick, 2021; Helfat & Peteraf, 2003) provides a theoretical perspective in analysing and discussing the competitive advantage and transitions across CLCs (Miller & Friesen, 1984). The RBV theory assumes that 'competitive heterogeneity' (Barney 1991: 105) is based on a resource that provide firm with competitive advantage for its value, rarity, immobility, and non-substitutable (Barney, 1991). This resource base determines organisational transition across the CLC stages. One of the advantages of proper allocation of the resource is that companies may make above-average profits and achieve long-term superior performance (Wernerfelt, 1985).

Helfat & Peteraf (2003) extend RBV and propose the dynamic resource-based theory (DRBV), which is different from RBV in a sense that companies develop competitive advantages over time along with corporate life, instead of at a given year only. The DRBV incorporates the creation and obtainment of capabilities and, states that companies with effective management of resources and capabilities develop competitive advantages over time. Therefore, organisational competitiveness and performance are different in various stages of CLC. This is because firms possess different levels of resource base and capabilities in each stage (Hasan & Cheung, 2018).

Whereas, CLC theory suggests that companies have different firm characteristics when they progress along CLC stages (Helfat & Peteraf, 2003). Companies differ, for example, in cash flow activities, capabilities, resource endowment, risk attitude and strategies (Dickinson, 2011; Miller & Friesen, 1984). In the maturity stage firms tend to be conservative, older and larger, with diluted ownership, preferring both participative and centralised management approach (Miller & Friesen 1984). Resources may be constrained and therefore companies in different life cycle stages may choose to focus on a particular group of stakeholders and perform the most relevant and urgent social responsibilities (Yang et al., 2019). For example, companies in the introduction stage may focus on CSR towards investors because they have limited capital and want more investors' investments.

Bearing the theoretical consideration above Habib & Hasan (2019) calls for further research on the impacts of the CLC on corporate governance and socially responsible behaviours in an international context. They assert specifically lack of research on the implications of CLC in emerging countries. They find that prior research is more descriptive, using predominantly shareholder or stakeholder theories and lacks empirical validation of the used theories.

Therefore, this study fills an important research gap by combining stakeholder theory, dynamic RBV, and CLC theory and examine the relationship between CSR and CFP at each CLC stage using the Chinese pharmaceutical industry as a case study. The primary justification for using a combination of theories is that it will enable us to analyse CSR performance from different perspectives and draw any relevant conclusions in this regard.

4. Research Methodology and Data

4.1. Estimation Methods and Models

To examine the CSR–CFP causality under different CLC stages the Ordinary Least Square (OLS) regression is used. In the first stage of building the regression model, the main predictors

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are identified and the weakest predictors are dropped out. We continue the procedure until the independent variables remaining in the analysis are significant with p-value at or smaller than α (Sun & Ding, 2020). Equation (1) presents the remaining variables used to account for change in firm performance for which we use ROA as a proxy. In the second step, we include CSR as an independent variable alongside the remaining control variables (see Equation 2). In this stage we also we include ROA as the primary measure for CFP and use EPS and NI in the robustness checks.

$$ROA = \alpha + \beta_1\ SIZE + \beta_2\ LEV + \beta_3\ OWNER + YEAR + \varepsilon \qquad (1)$$
$$ROA = \alpha + \beta_1\ CSR + \beta_2\ SIZE + \beta_3\ LEV + \beta_4\ OWNER + YEAR + \varepsilon \qquad (2)$$

As denoted in Equation (3) we then examine the relationship between the performance of CSR across different groups of stakeholder and CFP. We break down the stakeholders to seven groups based on their CSR impact: (1) shareholders (SCR); (2) creditors (LCR); (3) employees (ECR); (4) customers (CCR); (5) suppliers (PCR); (6) government (GCR); and (7) societal community (UCR).

$$ROA = \alpha + \beta_1\ SCR + \beta_2\ LCR + \beta_3\ ECR + \beta_4\ CCR + \beta_5\ PCR + \beta_6\ GCR + \beta_7\ UCR + \beta_8\ SIZE + \beta_9\ LEV + \beta_{10}\ OWNER + YEAR + \varepsilon \qquad (3)$$

To ensure we appropriately account for the long-term equilibrium between CSR performance and CFP, we follow Shahzad & Sharfman (2017) and repeat equations (1), (2) and (3) by including the lagged ROA as an independent variable.

4.2. Study Model Variables

The study model has one dependent variable, which is corporate financial performance (CFP). Three proxies are used to account for CFP: two accounting measures - return on assets (ROA) and net income (NI); and one market based measure - earnings per share (EPS). ROA is computed by dividing net income over total assets (Galant & Cadez, 2017). NI is calculated as total revenues minus total costs and expenses in a given a year (Galant & Cadez, 2017). EPS is measured by dividing net income over the number of shares and this reflects firm profitability (Ullmann, 1985).

4.2.1. Corporate Social Responsibility

We measure the independent variable, CSR performance, using the CSR score (Xiong et al., 2016). For other independent variables, we use asset-liability ratio to measure CSR performance towards creditors, accounts payable turnover ratio to determine CSR towards suppliers, and tax-assets ratio to measure CSR towards the government. In the remaining stakeholders' performance' measures we use CSR scores, which we obtain from the HEXUN database.

4.2.2. Corporate Life Cycle

In the study model CLC is a categorical variable for investigating CSR-CFP relationship over the different life stages of the firm life cycle. To determine each stage of company life we adopt Dickinson's (2011) cash flow method. At the introduction stage, the firm will have positive net financing cash flow (FCF) and negative for both net operating cash flows (OCF) and investing cash flows (ICF). The net ICF is negative at the growth stage while both OCF and FCF are positive. At the maturity phase, OCF is positive and both ICF and FCF are negative. Any firm not exhibiting the above criteria is classified in the decline/shake-out.

4.2.3. Control variables

The study model has three control variables. The first variable is company size (SIZE), measured as the natural log of total assets (Al-Hadi et al., 2019; Rhou et al., 2016). The second variable is leverage (LEV) calculated as the ratio of short- and long-term debt over total assets (Al-Hadi et al., 2019). The third variable, company ownership (OWNER), is a dummy control variable, taking the value of 1 for a state-owned enterprise (SOE) listed firm and 0 otherwise. According to Zhang et al. (2014), non-SOEs have better CFP than SOEs due to corporate-level management and macro-level system reasons. Traditionally SOE's are associated with industries that are highly capital intensive, have heavy asset attributes, exhibit a high proportion of non-operating assets and have low financial efficiency (Zhang et al., 2014).

It is worth noting that after the financial crisis of 2008 China experienced a slowdown in the structural adjustment and reform of SOEs, which resulted in low CFP of SOEs (Li & Zhang, 2010). After 2008, China has also introduced large-scale economic stimulus plans to maintain steady and rapid economic growth. This has allowed SOEs to undertake new large

projects. However, the speed of the structural adjustment and deepening reform of SOEs has slowed down in recent years, which is likely has lowered SOEs' CFP compared to non-SOEs.

Finally, to account for time trends the study model controls for year-specific events (Al-Hadi et al., 2019). A list of variables and their definitions are provided in Table 1 below.

Table 1: List of variables and their measurement

Variable denotations	Variable meaning	Formula	Source
Financial performance measures:			
ROA	Return on assets	Net income / Total assets	Thomson Reuters & CSMAR
EPS	Earnings per share	Net income / Number of shares	Thomson Reuters & CSMAR
NI	Net income	Revenue – costs – expenses	Thomson Reuters & CSMAR
CSR measures:			
CSR	Total CSR performance	Total CSR score	HEXUN database
SCR	CSR Performance towards investors	CSR score in investors	HEXUN database
LCR	CSR Performance towards creditors	Asset-liability ratio = Liability/Assets	Thomson Reuters & CSMAR
ECR	CSR Performance towards employees	CSR score in employees	HEXUN database
CCR	CSR Performance towards customers	CSR score in customers	HEXUN database
PCR	CSR Performance towards suppliers	Accounts payable turnover ratio = Accounts payable / turnover	Thomson Reuters & CSMAR
GCR	CSR Performance towards the government	Tax-assets ratio = Tax paid / Total assets	Thomson Reuters & CSMAR
UCR	CSR Performance towards the societal community	CSR score in the societal community	HEXUN database
Other variables:			
LCS	Corporate life cycle stage	A dummy variable of life cycle stages (introduction, growth, maturity, and decline)	Classification based on cash flow patterns of a firm
SIZE	Company size	Natural log of total assets, i.e., ln(Total assets)	CSMAR
LEV	Level of indebtedness of a company	the short-term and long-term debt divided by total assets	CSMAR
OWNER	Company nature	takes the value of 1 if the final owner is state-owner enterprises (SOE), and 0 if otherwise	CSMAR
YEAR	Year dummy		

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4.3. Data Sample and Data Collection

The data for the Chinese pharmaceutical companies' CSR and CFP have been obtained from two different databases, HEXUN and CSMAR, for the period running from 2010 to 2018 inclusively. The sample period begins in 2010 when the CSR scores from HEXUN became first available (Wen et al., 2020). CSMAR provides the CSR and CFP dataset for the Chinese stock market listed firms (Du & Boateng, 2015).

We started with an initial sample size of 1,920 pharmaceutical companies. Following Yang et al. (2019), we excluded 30 listed companies with special treatments, consisting of companies with two/three consecutive years of operating loss or have stocks with a suspended trading warning. A further 262 companies were deleted for missing data, leaving a final sample of 1,628 companies. Table 2 shows the distribution of companies in the different phases of the CLC.

Table 2: Number of companies in the CLC stages for the period 2010 to 2018

Corporate life cycle stages	Introduction	Growth	Maturity	Decline	Shake-out	Total
Sample size	137	578	664	38	211	1628
Percent	8.4	35.5	40.8	2.3	13	100

5. Study Results and Discussions

This section presents and discusses the research findings and incorporates relevant literature to support the arguments made on the role of CSR in determining financial performance at different LCS. Panel A of Table 3 provides descriptive statistics of all variables used in the estimation model for the overall CLS for 1,628 companies, while Panel B shows the distribution of the mean of each variable for each CLS for these companies. Panel A exhibits that there is a significant range between the maximum and the minimum for the return on assets (ROA), CSRP, CSRP towards investors and suppliers.

Table 3: Descriptive statistics

Panel A: Pooled					
N = 1628	Mean	Median	Maximum	Minimum	Standard Deviation
ROA	6.48	6.22	49.39	-91.22	7.33
CSR	27.07	24.83	87.02	-10.01	14.85
CSR towards investors	16.27	17.44	27.7	-9	6.15
CSR towards creditors	0.33	0.29	2.53	0.01	0.21
CSR towards employees	1.84	1.09	10	0	2.19
CSR towards customers	2	0	20	0	5
CSR towards suppliers	2.35	0.53	213.25	-51.34	11.13
CSR towards the government	0.01	0.01	0.08	-0.02	0.01
CSR towards the societal community	6.02	5.82	17	-10	3.3
Company size	21.81	21.74	26.03	17.43	1.05
Leverage	0.11	0.07	0.74	0	0.12
Panel B: Life-cycle wise					
	Introduction stage	Growth stage	Maturity stage	Decline/shake-out	
ROA	1.92	6.06	8.12	5.63	
CSR	19.53	27.28	29.17	25.09	
CSR towards investors	11.72	16.35	17.7	14.76	
CSR towards creditors	0.43	0.36	0.28	0.33	
CSR towards employees	1.19	1.77	2.03	1.9	
CSR towards customers	1	2	2	2	
CSR towards suppliers	6.08	2.85	1.26	2.07	
CSR towards the government	0.01	0.01	0.01	0.01	
CSR towards the societal community	5.34	6.24	6.09	5.68	
Company size	21.88	21.87	21.79	21.66	
Leverage	0.2	0.14	0.07	0.09	

The ROA mean increases from the introduction stage to the maturity stage, then decreases in the decline/shake-out stage (see Panel B). These results indicate an inverted U shape for the mean with a peak occurring in the maturity stage. Similar patterns are observed for CSR performance in relation to the investors and employees groups. The leverage mean and CSR performance towards the creditors and suppliers groups also signify a U shape pattern with the lowest mean taking place in the maturity stage. While the SIZE mean decreases from the introduction stage to the decline/shakeout stage. On the whole, CSR's descriptive results across different stakeholder groups support the life cycle theory and dynamic resource-based theory that CSR is different at meeting each stakeholder needs due to the variations in the firm available resources and capabilities in each stage of its life cycle (Hasan & Cheung, 2018).

The correlation coefficients presented in Table 4 indicate that ROA and the CSRP are significantly correlated at the 0.01 level across the stakeholder groups, indicating that CSR is an important driver of firm performance. The highest correlation is 0.781 between CSRP for the creditors group and leverage.

Table 4: Study variables correlations

	1	2	3	4	5	6	7	8
ROA (1)	1							
CSR (2)	0.675**	1						
CSR towards investors (3)	0.805**	0.854**	1					
CSR towards creditors (4)	-0.465**	-0.296**	-0.440**	1				
CSR towards employees (5)	0.203**	0.510**	0.240**	0.014	1			
CSR towards customers (6)	0.184**	0.525**	0.211**	-0.026	0.525**	1		
CSR towards suppliers (7)	-0.397**	-0.212**	-0.346**	0.412**	-0.058*	0.004	1	
CSR towards the government (8)	0.830**	0.656**	0.665**	-0.342**	0.202**	0.150**	-0.336**	1
CSR towards the societal community (9)	-0.129**	0.224**	-0.071**	0.198**	0.095**	0.187**	0.326**	0.205**
Company size (10)	-0.037	0.216**	0.122**	0.292**	0.194**	0.122**	0.116**	0.023
Leverage (11)	-0.449**	-0.298**	-0.409**	0.781**	-0.060*	-0.037	0.320**	-0.374**
Company ownership (12)	-0.122**	0.007	-0.113**	0.223**	0.170**	0.180**	0.258**	-0.073**
Introduction stage (13)	-0.221**	-0.238**	-0.237**	0.162**	-0.100**	-0.059*	0.129**	-0.221**
Growth stage (14)	-0.068**	-0.018	-0.015	0.144**	-0.046	-0.005	0.099**	-0.078**
Maturity stage (15)	0.236**	0.204**	0.214**	-0.219**	0.077**	0.041	-0.156**	0.254**
Decline/shake-out (16)	-0.061*	-0.072**	-0.089**	-0.017	0.033	-0.004	-0.018	-0.072**
	9	10	11	12	13	14	15	16
CSR towards the societal community (9)	1							
Company size (10)	0.192**	1						
Leverage (11)	0.142**	0.241**	1					
Company ownership (12)	0.138**	0.155**	0.093**	1				
Introduction stage (13)	-0.032	0.024	0.226**	0.015	1			
Growth stage (14)	0.021	0.029	0.221**	-0.074**	-0.225**	1		
Maturity stage (15)	0.01	-0.011	-0.288**	0.026	-0.252**	-0.616**	1	
Decline/shake-out (16)	-0.017	-0.042	-0.075**	0.053*	-0.129**	-0.315**	-0.353**	1

Note: The superscripts of *, ** indicate 10% and 15% statistical significance respectively.

Table 4 depicts the estimation results based on Equation 1, which is the first step of applying the two-step backward regression model. The table identifies the three most significant control variables, namely SIZE, LEV, and OWNER that are included in the next step. Table 8 displays the short-run and long-run effects of independent variables on CFP. The three control variables are statistically significant at 1% level for the overall CLC in column (1) of Table 5. The signs of the relationships are in line with the research expectations. Similar results are generated when applying ROA lag in one year as the dependent variable.

Table 5: Study results based on regression Equation (1)

Variables	Pre sign	(1) Whole LCS	(2) Introduction	(3) Growth	(4) Maturity	(5) Decline/ shakeout
Regression on ROA in current year						
Constant		***	-	-	-	***
		(-2.299)	(-0.616)	1.233	(-0.572)	(-3.384)
Company size		0.138***	0.113	0.042	0.115***	0.291***
	+	(5.314)	(1.031)	(1.013)	(2.815)	(3.843)
Leverage		-0.403***	-0.201**	-0.405***	-0.427***	-0.174***
	-	(-16.243)	(-1.982)	(-9.788)	(-11.172)	(-2.565)
Company ownership		-0.101***	-0.194**	-0.148***	-0.130***	-0.034
	-	(-4.034)	(-2.121)	(-3.603)	(-3.226)	(-0.477)
YEAR		yes	yes	yes	yes	yes
Adj. R^2		0.172	0.057	0.191	0.218	0.076
F		27.820***	1.679***	12.385***	15.102***	2.556***
Regression on ROA in next year						
Constant		**	*	-	-	***
		(-2.265)	(1.764)	(1.254)	(0.231)	(-4.317)
Company size		0.115***	-0.103	0.006	0.059*	0.332***
	+	(4.231)	(-0.950)	(0.137)	(1.362)	(4.382)
Leverage		-0.285***	-0.223**	-0.276***	-0.290***	-0.135**
	-	(-10.923)	(2.219)	(-6.267)	(-7.128)	(-1.990)
Company ownership		-0.050**	-0.124*	-0.071*	-0.050	-0.045
	-	(-1.899)	(-1.374)	(-1.637)	(-1.164)	(-0.624)
YEAR		yes	yes	yes	yes	yes
Adj. R^2		0.085	0.074	0.087	0.114	0.072
F		12.995***	1.894***	5.626***	7.494***	2.467***

Note: The t-statistic is reported in parentheses. The superscripts of *, **, *** indicate 10%, 5% and 1% statistical significance respectively. The sign (+) indicates a positive relationship between the variables. The sign (-) indicates a negative relationship between the variables.

In the short run, firms with a larger company size are more likely to have better CFP in each of the CLC stages. With SIZE found to be statistically significant for firms in the maturity and decline/shakeout stages. While larger firms are less likely to have better CFP in the long run if they are in the introduction stage. Firms with higher LEV are also less likely to have a better CFP. LEV is statistically significant for firms in each CLC stage at 0.01 or 0.05 level. OWNER, instead, is statistically significant for firms in all stages, except during the decline/shakeout stage for the short-run and the maturity and decline/shakeout stage in the long-run. The overall results are consistent with the research expectations, as they indicate that a non-SOE with a greater SIZE and less LEV is more likely to have better CFP in most of the CLC stages.

Table 5 presents the results of the second step of the regression model estimation (Equation 2) and includes CSRP and control variables that exhibit high level of significance. The results indicate that the CSR-CFP relationship is linear and significantly positive across all CLCs ($p<0.01$), supporting our research hypothesis H1. This confirms the notion presented by the stakeholder theory that CSR activities play a direct role in satisfying the needs of the stakeholders throughout the CLCs, which ultimately result in an increase in the firm financial performance (Freeman, 1984).

The results further show that in the introduction stage (see Table 5 column 2) CSR performance is significantly and positively related to CFP ($p<0.01$). The difference between the research expectation and our result could be due to the investors and the government effect since CSR for these two stakeholder groups is the most significant at increasing CFP in the introduction stage. In addition, when a firm give further consideration to its investors it is likely to help the firm to gain more access to capital and resources, leading to an improved CFP. According to Dickinson (2011) and CLC theory (Helfat & Peteraf, 2003), companies in the introduction stage require huge amount of capital investment from investors for them to be in a positive net cash flow position. As a result, they need to perform better CSR activities to attract resources and capital from investors in order to enhance their CFP.

Besides, having a government that embraces CSR activities could help firms obtain more technology support to improve CFP. The competitiveness and performance of the pharmaceutical industry varies across various CLCs stages because pharmaceutical companies possess different resource base and capabilities levels (Hasan & Cheung, 2018). Besides, these type of firms in the introduction stage tend to lack capital for further development (Helfat &

Peteraf, 2003). Therefore, firms in the introduction stage aspire to perform better in CSR to satisfy the government expectations as this will enable them to gain more technological support and assistance and therefore improve their CFP. Government support helps pharmaceutical companies to develop their capabilities, compete against peer companies and respond quickly to technological changes. To obtain this support, the firms in the introduction stage need to consider the incentives and interests of the government responsively.

In the growth and maturity stages (see Table 6 columns 3 and 4) CSR performance is significantly and positively related to CFP ($p<0.01$), supporting our research hypotheses H1. The finding reflects firms' cash flow patterns and the concept presented by the dynamic resource based theory that companies in these two stages possess rich capital resources and wider customer base. Consequently, firms are likely to enjoy positive operating cash flows during the two stages and have better financial performance due to the increase in investment and efficiency (See Wernerfelt, 1985; Dickinson, 2011).

Table 6: Study results based on regression Equation (2)

Variables	Pre sign	(1) Whole LCS	Pre sign	(2) Introduction	Pre sign	(3) Growth	Pre sign	(4) Maturity	Pre sign	(5) Decline/shakeout
Regression on ROA in current year										
Constant						***				
		(0.942)		(0.128)		(6.473)		0.756		(-0.111)
CSR	+	0.399***	-	0.537***	+	0.366***	+	0.310***	-	0.541***
		(16.143)		(6.974)		(9.677)		(7.831)		(8.415)
Company size	+	0.012		-		-	+	0.029	+	-0.010
		(0.493)		-		-		(0.732)		(-0.162)
	-		-		-	-	-		-	
Leverage		-0.289***		-0.099		0.340***		-0.356***		-0.043
		(-12.124)		(-1.262)		(-9.049)		(-9.539)		(-0.757)
Company ownership	-		-		-	-	-			
		-0.129***		-0.239***		0.174***		-0.145***		-
		(-5.578)		(-3.119)		(-4.598)		(-3.783)		-
YEAR		yes		yes		yes		yes		yes
Adj. R^2		0.300		0.336		0.313		0.296		0.285
F		51.908***		6.671***		22.989***		20.484***		9.977***
Regression on ROA in next year										
Constant		-		***		***		*		***
		(-0.569)		(3.880)		(4.518)		(1.695)		(-3.501)
CSR	+	0.224***	-	0.260***	+	0.184***	+	0.272***	-	0.078
		(8.083)		(2.957)		(4.283)		(6.346)		(0.941)
Company size	+	0.045*		-		-	+	-0.031	+	0.283***
		(1.607)		-		-		(-0.717)		(3.329)
	-		-		-	-	-		-	
Leverage		-0.221***		-0.231***		0.246***		-0.232***		-0.112*
		(-8.287)		(-2.573)		(-5.793)		(-5.753)		(-1.559)
Company ownership	-		-		-					
		-0.066***		-0.152*		-0.086**		-		-
		(-2.538)		(-1.732)		(-1.996)		-		-
YEAR		yes		yes		yes		yes		yes
Adj. R^2		0.125		0.134		0.119		0.172		0.074
F		17.900***		2.733***		7.490***		11.555***		2.518***

Note: The t-statistic is reported in parentheses. The superscripts of *, **, *** indicate statistical significance to 10%, 5%, and 1% respectively. The sign (+) indicates a positive relationship between variables. A sign (-) indicates a negative relationship between variables.

In the short-run, the positive impact of CSR performance on CFP is the highest in the growth stage and the lowest in the maturity stage. The impact in the decline/shakeout stage and the introduction stage have overall similar coefficients, confirming the long-run lag effect of CSR investment on the company CFP performance (Shahzad & Sharfman, 2017). However, in the long-run, the positive CSR-CFP_{t+1} relationship is most significant in the maturity stage. An explanation to the finding is the lag effect of CSR investment resulting in the financial performance maximization at the maturity stage in the long term.

Table 7 depicts the results of the second step of the estimation by breaking down the CSR performance according to the stakeholder groups (see the Equation 3). These results are explained at each stage below.

Table 7: Study results based on regression Equation (3)

Variables	Pre sign	(1) Whole LCS	Pre sign	(2) Introduction	Pre sign	(3) Growth	Pre sign	(4) Maturity	Pre sign	(5) Decline/shakeout
Regression on ROA in current year										
Constant		-		***		-		-		-
		(0.233)		(-2.782)		(0.100)		(1.007)		(-1.206)
CSR towards investors		0.458***	+	0.590***	+	0.319***	+	0.433***	+	0.553***
		(22.520)		(7.382)		(12.350)		(16.186)		(8.221)
CSR towards creditors		-0.025		-0.100		-0.224***		-0.019	-	0.145**
		(-1.114)		(-1.081)		(-7.310)		(-0.650)		(1.902)
CSR towards employees		-0.052*	+	-0.187*	+	-0.099**	+	-0.114***	+	0.185*
		(-1.534)		(-1.587)		(-2.265)		(-2.474)		(1.549)
CSR towards customers		0.051*		0.101		0.113***	+	0.103**	-	-0.139
		(1.525)		(0.834)		(2.566)		(2.296)		(-1.153)
CSR towards suppliers		0.052***		0.088*		0.051***		0.030*	-	0.060
		(3.402)		(1.459)		(2.556)		(1.477)		(1.145)
CSR towards the government		0.517***		0.310***		0.656***		0.586***	-	0.306***
		(28.234)		(4.014)		(27.141)		(24.196)		(5.170)
CSR towards the societal community		-0.058***		-0.006		-0.139***		-0.098***	-	0.024
		(-3.716)		(-0.100)		(-6.672)		(-4.540)		(0.449)
Company size	+	-0.031**		-		-	+	-0.039*	+	0.018
		(-1.872)		-		-		(-1.740)		(0.289)
Leverage	-	0.016	-	0.060	-	0.130***	-	-0.017	-	-0.054
		(0.734)		(0.728)		(4.401)		(-0.613)		(-0.712)
Company ownership	-	0.002	-	0.054	-	0.002	-	0.012	-	-0.024
		(0.112)		(0.838)		(0.078)		(0.529)		(-0.456)
YEAR		yes		yes		yes		yes		yes
Adj. R^2		0.717		0.648		0.833		0.794		0.542
F		201.362***		14.292***		156.678***		120.125***		14.757***
Regression on ROA in next year										
Constant		-		***		-		*		*
		(-1.125)		(2.507)		(0.071)		(1.482)		(-1.726)
CSR towards investors		0.191***	+	0.171*	+	0.224***	+	0.362***	+	0.002
		(5.861)		(1.476)		(4.159)		(8.304)		(0.023)
CSR towards creditors		-0.238***		-0.014		0.031		0.018	-	-0.619***
		(-6.545)		(-0.101)		(0.484)		(0.386)		(-6.305)
CSR towards employees		0.038	+	-0.013	+	-0.130*	+	-0.061	+	0.351**
		(0.697)		(-0.075)		(-1.420)		(-0.822)		(2.254)
CSR towards customers		0.010		0.127		0.101	+	0.128*	-	-0.254*
		(0.189)		(0.723)		(1.107)		(1.770)		(-1.621)
CSR towards suppliers		0.029		-0.005		-0.001		0.109***	-	-0.008
		(1.186)		(-0.060)		(-0.018)		(3.237)		(-0.123)
CSR towards the government		0.302***		0.398***		0.353***		0.424***	-	0.101*

Variables	Pre sign	(1) Whole LCS	Pre sign	(2) Introduction	Pre sign	(3) Growth	Pre sign	(4) Maturity	Pre sign	(5) Decline/ shakeout
		(10.285)		(3.551)		(6.994)		(10.724)		(1.311)
CSR towards the societal community		-0.095***		-0.264***		-0.090**		-0.133***	-	-0.042
		(-3.764)		(-2.809)		(-2.069)		(-3.812)		(-0.595)
Company size	+	0.043*		-		-	+	-0.067*	+	0.159**
		(1.619)		-		-		(-1.836)		(1.947)
Leverage	-	0.093***	-	-0.138	-	-0.083*	-	0.005	-	0.347***
		(2.645)		(-1.159)		(-1.341)		(0.115)		(3.560)
Company ownership	-	0.028	-	-0.019	-	0.014		-		-
		(1.120)		(-0.200)		(0.340)		-		-
YEAR		yes		yes		yes		yes		yes
Adj. R^2		0.273		2.256		0.273		0.450		0.224
F		30.679***		3.490***		12.716***		27.776***		4.553***

Note: The t-statistic is reported in parentheses. The superscripts of *, **, *** indicate statistical significance to 10%, 5%, and 1% respectively. The sign (+) indicates a positive relationship between variables. A sign (-) indicates a negative relationship between variables.

Introduction stage

Column 2 (Table 7) shows that CSRP towards investors is significantly and positively related to CFP in the introduction stage (p<0.01). Whilst, CSRP towards employees is negatively related to CFP (p<0.1). Therefore, the results only support company responsibility towards investors and not to the employees. The finding of CSR towards employees is in contrast to what is presented in the current literature. For example, Sun & Yu (2015), using US companies, obtain a significant and positive relationship between CSR and employee cost. They assert that socially responsible firms incur higher labour costs due to the rewarding of employees with higher salaries. The different result attained in this study could be attributed to the high employment and the high average wage in the pharmaceutical industry (Koronios, 2020). The companies aim in the introduction, growth and maturity stages to boost their profits may also lead to cut in labour costs.

Growth and maturity stages

In the growth stage (see column 3, Table 7), CSRP towards shareholders is significantly and positively correlated with CFP (p<0.01). The CSRP towards customers and CFP causality, however, is only significant for the short-run (p<0.01). In contrast to the study expectation, the result shows that CSR performance towards employees is negatively correlated with CFP in the short- and long-run, at the 0.1 and 0.5 significance level.

In the short-run, the signs and significances of CSR towards shareholders, employees, and customers in the maturity stage (see column 4 in Table 7) are similar to those attained in the growth stage. In the long-run, the signs are also similar to those observed in the growth stage. However, in the long-run, there is no indication of significance for CSR towards employees ($p<0.1$). Therefore, hypothesis H2 only supports CSR towards shareholders and customers while excluding employees. This finding indicate that employees group is important but is not imperative as shareholders and customers groups when it comes at improving to CFP.

In the maturity stage, we find a significant and positive relation between CSRP towards customers and CFP. This result signifies the importance of customers group in the pharmaceutical industry at enhancing firm performance.

Decline/shakeout stage

The result in the decline/shake-out stage (see column 5 in Table 7) shows that, in the short-run, firms with a lower CSRP towards customers are likely to have a better CFP. However, CFP is positively associated with CSRP towards shareholders, creditors, employees, the government, suppliers, and the societal community. While the first four stakeholder groups (investors, creditors, employees, the government) have more significant impact on CFP.

In the long-run, only CSRP towards employees, the government, and shareholders is positively correlated with CFP. The two stakeholder groups, employees and the government, have the most significant impact. However, CSRP towards creditors, customers, suppliers, and the social community are all negatively related to CFP. Creditors and customers are the two stakeholder groups with the most significant negative influence. This can be attributed to the decline in customers' loyalty and creditors' confidence in the decline/shake-out stage.

CSRP towards suppliers indicate a positive impact on CFP in the short-run while it is negative in the long-run. Pharmaceutical firms with good CSRP towards suppliers are likely to ensure a sufficient supply of raw materials in the short term. However, in the long term, due to a long collection period observed in the pharmaceutical industry, suppliers are likely to become worried about receiving the payments and ask for credit period reduction to lower the bad debts.

Similar to the suppliers group CSRP towards the community is positively correlated with CFP in the short-run while exhibiting a negative influence in the long-run. This signifies that pharmaceutical firms with good CSRP towards the societal community could ensure a satisfactory firm reputation in the short term. However, in the long term, the community may start to worry about the sustainability of firms and therefore negatively influencing their CFP.

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The results attained for the CSRP towards the government and CFP is positive both in the short-run and long-run, at the 0.1 and 0.01 significance level. A plausible explanation for the finding is that government support - offering technical, financial and human resources - can help pharmaceutical firms to revive and survive in the decline/shake-out stage.

On the whole, the results show that company's accountability towards a wider stakeholder group is likely to be a direct contributor to the development of the corporate value and social responsibility (Freeman, 1984). Firms should also balance between stakeholders' interests in the long-term and have a full stakeholder focus (Yang et al., 2019). Moreover, the results confirm the life cycle theory that firm social responsibility differs across LCS in meeting stakeholders' needs (Carrasco, 2007).

Endogeneity

To address the endogeneity concerns attributed to the bidirectional causality between CSR performance and CFP, this study follows Qiu et al. (2016) application of Granger causality model with fixed effects. Generalised Least Square (GLS) model is used to control for unobservable variables and characteristics (Nelling & Webb, 2009). The primary justification is that the inclusion of lagged independent variables would show clearly the increase in the explanatory power on the used dependent variable (Rhou et al., 2016).

When we examine the impact of past CSRP and CFP on current CSRP, we find that current and lagged CSRP is positively and significantly related to each other ($p<0.01$). Current ROA is also positively and significantly correlated with CSRP ($p<0.01$). However, past-year CFP is negatively and significantly related to the current CSRP ($p<0.01$).

Analysing the impact of current CSRP and past CSR and past CFP on current CFP shows that current CSRP is positively and significantly correlated with the current CFP ($p<0.01$). Likewise, past CFP is positively and significantly related to current CFP ($p<0.01$). However, past CSR has negative association with the current CFP ($p<0.01$), which is in contrast to our research expectation. The explanatory power on the short-run CFP, after the inclusion of lagged CSR, has improved the F value from 17.9 to 97.15. These results support the notion that CSRP "Granger causes" CFP, that is, current-year CSRP helps at predicting CFP.

On the whole, the results show that the estimations using lagged independent variables are similar to the estimation using the contemporaneous independent variable. The significance and direction CSR-CFP relationship are consistent with the estimates using the current independent variable. Therefore, we deduce that endogeneity is not present in the study models.

Robustness tests

As a robustness check, this study uses EPS and net income as two CFP indicators. In addition, following Zhou et al. (2017), this study randomly deletes 20% of sample size and regresses on the remaining 80% sample firms to see any changes in the research findings. The results remain robust using alternative proxies of CFP and changing sample size.

6. Conclusions and Study Implications

Using data from the pharmaceutical industry in China the study examined the relationship between CSR and CFP across the main CLC stages. The study further explored the causality between the main dimensions of CSR and CFP taking into account the precepts of CLC. The research generates a number of intuitions on CSR and its implication for CFP. First, the results support a linear and positive relationship between CSR and CFP. Second, in the presence of the control variables, the curvilinear model indicate a direct causality between CSR and ROA. However, the explanatory power of the curvilinear model is overall weaker than the linear model. Third, the study finds that the CLC has a mediating effect on the CSR–CFP relationship.

The research exhibits that CSR–CFP are positively correlated for companies that are in the introduction stage and this extends to the remaining life cycle stages. This signifies that engaging in CSR activities enable firms to enhance their cash flow position, to attract more investments and to obtain more technological support, which ultimately help them improve their financial performance. It is worth noting that the CSR–CFP coefficient in the maturity stage is the smallest among those obtained for all the CLC stages.

The results attained for the relationship between CSR performance across each group of stakeholder group and by CLC stages show that embracing CSR is more significant for the investors group in all the CLC phases. Whilst advocating CSR can only improve CFP for the employees group in the decline/shakeout stage and reduces CFP in the remaining CLC stages. This signifies that creating value for the investors is the primary goal for firms in the introduction, growth and maturity stages. In contrast, survival is the main goal for firms when they are in the decline/shakeout stage. The decline in CFP attributed to the employees group is due to the additional employment costs, such as wages, which are likely to increase after the introduction stage. The findings also show that CSR improves CFP for the customers group in in the maturity stage while engaging in CSR activities improves CFP for the remaining groups

in the decline/shakeout stage, which can be attributed to the firm approach to be innovative and develop effective survival strategies in this stage.

Finally, this study examines bi-directional causality between CSR and CFP. The results indicate that CSR in the current year is negatively affected by prior CFP. However, current CFP is positively influenced by current firm CSR performance. This implies that a 'virtuous circle' may exist leading to the two different outcomes attained for the CSR–CFP relationship. When controlling for the omitted variables in the fixed-effect GLS model the research shows that both current and past CSR performances are significant determinants of CFP. However, when controlling for the firm fixed effects, the relationship of CSR–CFP does not have the same strength as previously reported in the study by Qiu et al. (2016). The study concludes that CFP is more driven by the unobservable firm characteristics than CSR performance, which is consistent with Nelling & Webb (2009).

Our study makes various important research contributions. First, the results generated in the study will enable managers in Chinese pharmaceutical companies or other similar firms across to globe to have a better understanding of the attributes of CSR, its effect on CFP and firm stakeholders. The research findings provide managers with vital insights on how CLC stages influence CFP. Besides, managers can use the study results to inform the way they allocate company resources to CSR activities and link this to CFP. Second, this research inform policymakers on the importance of CSR and the need to introduce rules and policies that would stimulate CSR activities across the CLC stages. The current regulations on CSR activities are still in the early stage in many emerging countries, such as China, and extensive work is needed to fully develop this crucial area.

In terms of future research while this study focuses on the pharmaceutical industry other studies could extend this to other sectors and make a comparison across the industries. Other researchers may also perform similar investigations in other countries and compare their results to the ones presented in this paper. Also, while CSR performance is positively correlated with CFP we cannot imply that CSR is the only primary driver of CFP. Therefore, future research can focus on the impact of other unobservable firm characteristics on CFP.

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