



## Working Capital Management and Firm's Profitability: A Study of Selected Blue-chip Companies in China

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### Abstract

Managing short-term capital efficiently and effectively presents one of the key success factors for modern companies. Working capital refers to the difference between current assets and current liabilities. It is one of the company's short term indicators for operational efficiency and liquidity. This study focuses on the relationship between working capital components on the company's profitability in selected blue-chip companies in China. 50 of the largest companies in the Shanghai Stock Exchange (SSE50) and another 100 largest companies in the Shenzhen Stock Exchange (SZSE100) were employed to be a target group for this study. This study analyzed secondary data collected from the Bloomberg Terminal. Four hundred ninety-four samples were employed for the study to represent financial figures from these companies for the period 2013 to 2017. Descriptive analysis, Pearson's correlation and regression model were employed to find out the relationship among variables. The result mentioned that day payables of selected blue-chip companies in China found to have a negative correlation with return on assets. This means that if average accounts payable decreases then company profitability tends to increase. Moreover, debt to assets ratio has a moderate negative correlation with return on assets and positive relationship to revenue of the company. This study adds to existing literature to confirm the negative relationship of days payable and the company's profitability.

**Keywords:** Working capital management, Profitability, Shanghai stock exchange, Shenzhen stock exchange, Blue chip companies

### 1. Introduction

Working capital management presents one of the critical success factors for modern companies. Managing short-term capital efficiently and effectively is the goal of working capital management. This issue mainly focuses on managing short term cash inflow and cash outflow for company daily operations. However, the numbers of related indicators could be in different patterns for each country and industry. To achieve that particular goal, Shin and Soenen (1998) mentioned that a company needs to manage its current liabilities and current assets effectively and efficiently. As a consequence, achieving good working capital management could enhance the company's liquidity toward the growth of shareholder value maximization (Chiou, Cheng, & Wu, 2006). This study intends to examine the nature of working capital management and profitability of selected blue-chip companies in China and Thailand stock exchanges.

Looking at China as one of the most powerful economic giants in Asia, Goldman Sachs (2018) described that projected GDP was expected to be around 6.0% - 6.5% in 2019 compared with stronger growth from the past decades. National fiscal policy aims to ensure sustainable growth apart from cyclical economic stimulus from the past. The country has two main stock exchange markets; the Shanghai Stock Exchange ("SSE") and the Shenzhen Stock Exchange ("SZSE"). SSE is considered as the fourth largest stock market in the world by market capitalization. However, this market is under control by the government and doesn't entirely open to foreign investors to trade freely.

As mentioned earlier, the slowdown economic pattern of the country presents the importance of examining working capital management and profitability trend of private sectors. This study focuses on the working capital management and firm's profitability of large companies listed on the two mentioned market; SSE and SZSE.



Blue-chip companies usually describes as well-established, nationally recognized and good financial record companies. These companies often provide nationwide services and products and are able to operate across the diverse economic environment and slowdown period (Investopedia, 2017).

SSE50 (Appendix B) and SZSE100 (Appendix C) are the stock index of each market that represent the largest companies and considered as blue-chip companies in each market. Criteria of being part of these indexes are capitalization and trading history and can be adjusted periodically.

## 2. Objectives

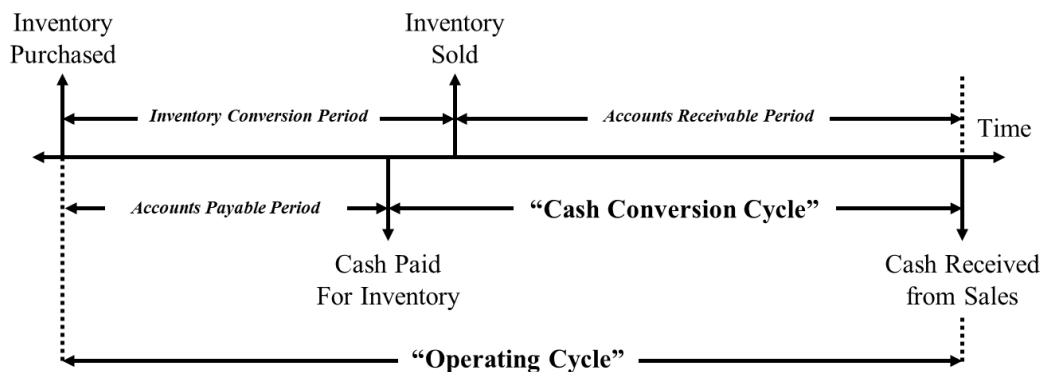
The primary objective of this study is to understand the nature of working capital management of selected blue-chip companies in China stock exchanges. Target companies are the companies being listed in SSE50 and SZSE100 as of February 2019. How these working capital components impact the company's profitability.

## 3. Materials and Methods

Working capital refers to the difference between current assets (such as raw materials, work in process, finished goods, accounts receivable and cash) and company's current liabilities (such as accounts payable). It is one of the company's short-term indicators for operational efficiency and liquidity. Good company manages an appropriate working capital level to ensure all the payment has made on time. Poor management on working capital could lead to liquidity issues, creditability, and bankruptcy.

Figure 1 shows that cash conversion cycle and operating cycle in a typical manufacturing company. Typical events include buying (1) raw material or inventory purchased, (2) selling the product or provide service to the customers, (3) paying cash to suppliers and (4) collecting cash from sales.

There are three essential periods among these transactions: inventory conversion period, accounts payable period and accounts receivable period. Inventory conversion period is the duration to acquire inventory, transforms to products and sell to the customer. Accounts payable period is the duration between stock purchased and cash paid for inventory. Finally, accounts receivable period is the duration sales made and collection of cash. For inventory conversion period and accounts receivable period, shorter is better while longer accounts payable period is better.



**Figure 1** Cash conversion cycle and operating cycle (Adapted from Ross, Westerfield & Jordan, 2019)

This section reviews related literature regarding working capital management and the company's profitability.

In India, Sharman and Kaur (2016) conducted a company-specific research on working capital management on profitability in an Indian global telecommunications services company, Bharti Airtel Limited. The study employs data of that target company from 2007 to 2015. The result shows that liquidity has a negative impact on profitability. In the same year, Patel (2015) conducted a similar study in an Indian Oil Corporation Limited by using the data from 2009 to 2014. His analysis showed that working capital has



a negative correlation with a net profit. Furthermore, liquidity also has a negative relationship with profitability.

In Pakistan, Gul et al. (2013) studied a similar topic in small to medium enterprises (SMEs) by employing secondary data from 2006 to 2012. The result recommended that account payable period, company growth and firm size have a positive correlation with profitability. Oppositely accounts receivable period, inventory conversion period and debt ratio were found to have negative relationships with the company's profitability.

In Nigeria, Oladipupo and Okafor (2013) analyze the impact of working capital on dividend payout ratio and the company's profitability in 12 selected public listed manufacturing companies in Nigeria. The secondary data for the analysis has employed from 2002 to 2006. Debt ratio and shorter cash conversion cycle have a positive correlation with profitability while leverage has a negative impact on profitability.

In Kenya, Gakure, Cheluget, Onyango and Keraro (2012) examine the correlation between working capital and the company's performance in 15 selected public listed manufacturing companies from 2006 to 2010. The result showed negative relationships between inventory conversion period, accounts payable period and accounts receivable period and profitability.

In Vietnam, Dong and Su (2010) studied the relationship between working capital and profitability of listed Vietnamese firms during 2006 and 2008. Inventory conversion period and accounts payable period have negative relationship toward gross operating profit. This means an increase in inventory conversion period and accounts payable period could affect profitability negatively.

#### 4. Results

Table 1 and Table 2 presents listed companies in SSE50 and SZSE100 respectively. Four hundred ninety-four samples were selected from SSE50 and SZE100 from the year 2015 until 2017. Descriptive statistics demonstrate the standard deviation, mean, maximum and minimum of the selected variables in this research. The selected variables for this study include Returns on Assets (ROA), Days Inventory (INV\_Day), Days Receivable (AR\_Day), Days payable (AP\_Day), Cash Conversion Cycle (CCC), Debt to Assets, Revenue Growth (Rev\_Growth), and Revenue (Ln\_Revenue). Table 3 figures out the summary of selected variables from selected blue-chip companies in the Shanghai Stock Exchange and the Shenzhen Stock Exchange.

The mean value of days inventory is 218.09 days with a S.D. of 386.05 days. Days inventory had a broad range of information from 0.27 days (from medicine e-transaction and e-commerce businesses) to 2,832.91 days (from home appliances manufacturers). The mean value of days receivable is 91.24 days with a S.D. of 92.29 days. Days receivable had a large range of information from 0.16 days (from mining and smelting of gold and silver ores) to 1,028.51 days (from construction and agricultural machinery manufacturer). The mean value of days payable is 80.60 days with a S.D. of 61.66 days. Days payable has the smallest range among these three primary variables from 2.89 days (from medicine e-transaction and e-commerce businesses) to 394.26 days (from potassium chloride manufacturer). As the consequence of these three primary variables, the mean value of the cash conversion cycle is 228.93 days with a S.D. of 376.14 days.

**Table 1** List of listed companies in SSE50 (As of February 2019)

Constituent Code	Constituent Name
600000	Shanghai Pudong Development Bank Co Ltd
600016	China Minsheng Banking Corp Ltd
600019	Baoshan Iron & Steel Co Ltd
600028	China Petroleum & Chemical Corporation
600029	China Southern Airlines Co Ltd
600030	CITIC Securities Co Ltd



Constituent Code	Constituent Name
600036	China Merchants Bank Co Ltd
600048	Poly Developments and Holdings Group Co., Ltd.
600050	China United Network Communications Co Ltd
600104	SAIC Motor Co Ltd
600196	Shanghai Fosun Pharmaceutical (Group) Co Ltd
600276	Jiangsu Hengrui Medicine Co Ltd
600309	Wanhua Chemical Group Co., Ltd.
600340	China Fortune Land Development Co., Ltd.
600519	Kweichow Moutai Co Ltd
600547	Shandong Gold-Mining Co Ltd
600585	Anhui Conch Cement Co Ltd
600606	Greenland Holdings Corporation Limited
600690	Qingdao Haier Co Ltd
600703	Sanan Optoelectronics Co.,Ltd
600887	Inner Mongolia Yili Industrial Group Co Ltd
601006	Daqin Railway Co Ltd
601088	China Shenhua Energy Co Ltd
601138	Foxconn Industrial Internet Co., Ltd.
601166	Industrial Bank
601169	Bank of Beijing Co Ltd
601186	China Railway Construction Co Ltd
601211	Guotai Junan Securities Co., Ltd.
601229	Bank of Shanghai Co., Ltd.
601288	Agricultural Bank of China Co Ltd
601318	Ping An Insurance (Group) Company of China Ltd
601328	Bank of Communications Co LTD
601336	New China Life Insurance Co Ltd
601360	360 Security Technology Inc.
601390	China Railway Group Limited
601398	Industrial and Commercial Bank of China Ltd
601601	China Pacific Insurance (Group) Co Ltd
601628	China Life Insurance Company Limited
601668	China State Construction Engineering Co Ltd
601688	Huatai Securities Co Ltd
601766	CRRC Corporation Limited
601800	China Communications Construction Company Limited
601818	China Everbright Bank Co Ltd
601857	PetroChina Co Ltd
601888	China International Travel Service Co Ltd
601939	China Construction Bank
601988	Bank of China Ltd
601989	China Shipbuilding Industry Co Ltd
603259	WuXi AppTec Co., Ltd.
603993	China Molybdenum Co., Ltd.

**Table 2** List of listed companies in SZSE 100 (As of February 2019)

Constituents Local Code	Constituent Name	Constituents Local Code	Constituent Name
000001	PAB	002008	Han's Laser
000002	Vanke-A	002024	Suning Commerce
000009	CBG	002027	Focus Media
000046	Oceanwide Holdings	002065	DHC Software
000060	Nonfemet	002081	Gold Mantis
000063	ZTE	002092	Zhongtai Chemical
000069	OCT Holding	002129	Zhonghuan Semiconductor
000100	TCL	002142	Bank of Ningbo
000157	Zoomlion Co.LTD.	002183	Eternal Asia
000166	Shenwan Hongyuan	002202	Goldwind Science and Technology
000333	Midea Group	002230	Anhui USTC Iflytek
000338	Weichai Power	002236	Dahua Technology
000402	Financial Street	002241	Goertek
000413	Dongxu Optoelectronic	002252	Shanghai RAAS
000415	Bohai Financial	002292	Alpha Group
000423	DEEJ	002304	Yanghe Brewery
000425	XCMG	002310	Orient Landscape
000503	Searainbow	002340	GEM
000538	Yunnan Baiyao	002352	SF Holding
000540	Zhongtian Financial	002385	Dabeinong
000559	WXQC	002405	Navinfo
000568	Luzhou Lao Jiao	002407	Do-fluoride
000617	CNPCCCL	002415	Hikvision
000623	JLAD	002450	KDX
000625	Changan Automobile	002456	O-film
000630	TLNM	002460	Ganfeng Lithium
000651	Gree	002465	Haige Communications
000686	Northeast Securities	002466	Tianqi Lithium
000709	Hesteel	002475	Luxshare
000725	BOE	002500	Shanxi Securities
000728	Guoyuan Securities	002558	Giant Network
000738	AECC AEC	002594	BYD
000750	Sealand Securities	002673	Western Securities
000768	AVIC Aircraft	002709	Tinci Materials
000776	GF Securities	002736	Guosen Securities
000783	CJZQ	002739	Wanda Film
000792	QHSLI	002797	First Capital
000793	CMG	300017	Wangsu Science and Technology
000826	TUS-SOUND	300024	Robot
000839	CITIC Guoan Info.	300027	Huayi Brothers
000858	Wuliangye	300059	East Money
000876	New Hope	300070	Originwater
000895	Shuanghui	300072	SJEP



Constituents Local Code	Constituent Name	Constituents Local Code	Constituent Name
000917	TV and Broadcast Intermediary	300104	Leshi Internet
000938	UNIS	300124	Inovance Technology
000961	Zhongnan Construction	300136	Sunway Communication
000963	HD Medicine	300168	Wonders Information
000983	XSCE	300315	Ourpalm
001979	China Merchants Shekou	300408	Three-Circle (Group)
002007	Hualan Biological Engineering	300498	Wen's Foodstuff

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Focus on the profitability side of these companies: average return on assets for these companies is 7.49% with a S.D. of 6.37%. The average debt-to-assets ratio and revenue growth are 23.20% and 1.05% respectively. Finally, the mean value of firm size (measured by the natural logarithm of its annual revenue) is 21.54.

**Table 3** Descriptive statistics of selected variables

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	494	-15.52	43.38	7.49	6.37
INV_Day	494	0.27	2,832.91	218.09	386.05
AR_Day	494	0.16	1,028.51	91.24	92.29
AP_Day	494	2.89	394.26	80.60	61.66
CCC	494	-133.67	2,830.81	288.93	376.14
Debt to Assets	494	0.00	75.17	23.20	15.85
Rev_Growth	494	-0.50	321.09	1.05	14.72
Ln_Rev	494	17.11	26.27	21.54	1.63

Descriptive analysis of each market depicts in Table 4.

**Table 4** Descriptive statistics from SSE50 and SZSE100 (Fiscal year 2015 – 2017)

Variables	Market	N	Mean	Std. Deviation	Std. Error Mean
ROA	SSE	107	7.42	5.96	0.58
	SZSE	387	7.51	6.48	0.33
INV_Day	SSE	107	329.55	585.77	56.63
	SZSE	387	87.28	302.87	15.40
AR_Day	SSE	107	59.46	47.18	4.56
	SZSE	387	00.03	99.54	5.06
AP_Day	SSE	107	79.71	65.37	6.32
	SZSE	387	80.85	60.68	3.08
CCC	SSE	107	310.20	572.77	55.37
	SZSE	387	06.46	297.11	15.10
D_to_A	SSE	107	20.89	13.60	1.32
	SZSE	387	23.85	16.38	0.83



Variables	Market	N	Mean	Std. Deviation	Std. Error Mean
Rev_Growth	SSE	107	3.15	31.03	3.00
	SZSE	387	0.48	3.29	0.17
Ln_Rev	SSE	107	22.93	1.56	0.15
	SZSE	387	21.15	1.42	0.07

Table 5 demonstrates the Pearson correlation for the selected variables for this study. The analysis is applied to explore the relationship between variables with a return on assets. Days payable are found to have a negative correlation with return on assets. This means that if average accounts payable decreases, company profitability tends to increase. However, days inventory and days receivables were found to have no significant relationship with return on assets. Apart from the profitability aspect, debt to assets ratio has a moderate negative correlation with return on assets and positive relationship to revenue of the company.

**Table 5** Pearson Bivariate correlation analysis

		ROA	INV_Day	AR_Day	AP_Day	D_to_A	Rev_Growth	Ln_Rev
ROA	Pearson	1	-0.032	-0.054	-.243**	-.550**	-0.039	-.125**
	Correlation Sig. (2-tailed)		0.475	0.227	0	0	0.386	0.006
INV_Day	Pearson	-0.032	1	-.136**	.124--	0.043	-0.03	.109*
	Correlation Sig. (2-tailed)	0.475		0.002	0.006	0.339	0.511	0.015
AR_Day	Pearson	-0.054	-.136	1	.386**	-0.022	-0.048	-.255**
	Correlation Sig. (2-tailed)	0.227	0.002		0	0.627	0.291	0
AP_Day	Pearson	-	.124**	.386**	1	.185**	-0.057	.099*
	Correlation Sig. (2-tailed)	0	0.006	0		0	0.207	0.028
D_to_A	Pearson	-	0.043	-0.022	.185**	1	0.063	.212**
	Correlation Sig. (2-tailed)	0	0.339	-0.048	-0.057	0.063	1	0.081
Rev_Growth	Pearson	-0.039	-0.03	-0.048	-0.057	0.063	1	0.081
	Correlation Sig. (2-tailed)	0.386	0.511	0.291	0.207	0.162		0.073
Ln_Rev	Pearson	-	.109*	-.255**	.099*	.212**	0.081	1
	Correlation Sig. (2-tailed)	.125**	0.006	0.015	0	0.028	0	0.073

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

Table 6 presents the result of regression equation which reveals the correlation of days payable is negative. Therefore, by increasing days payable will significantly affect the profitability of the companies. As a result of this analysis ( $R^2 = 0.324$ ), the regression equation is:

$$\text{Return on Assets} = 13.444 - 0.015 \text{ AP\_Day} - 0.006 \text{ Rev\_Growth} - 0.21 \text{ D\_to\_A} + 0.007 \text{ Ln\_Rev}$$

**Table 6** Linear regression: Effect of days payable on profitability

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	13.444	3.17		4.241	0
AP_Day	-0.015	0.004	-0.148	-3.881	0
Rev_Growth	-0.006	0.016	-0.015	-0.394	0.694
D_to_A	-0.21	0.016	-0.522	-13.502	0
Ln_Rev	0.007	0.15	0.002	0.046	0.963





a. Dependent Variable: ROA

The independent sample t-test was conducted to compare ROA and AP\_Day for the SSE50 and SZSE100. The means of ROA and AP\_Day are not significantly different between SSE50 and SZSE100.

## 5. Discussion

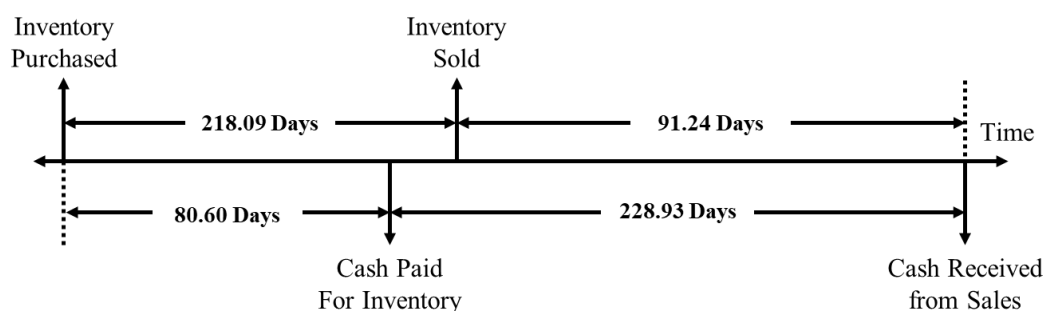
Several scholars have conducted the studies in several contexts in particular country and industry including Shin and Soenen (1998), Chiou, Cheng and Wu (2006), Dong and Su (2010), Gakure, Cheluget, Onyango and Keraro (2012), Gul et al., (2013), Oladipupo and Okafor (2013), Patel (2015) and Sharman and Kaur (2016). This research attempts to fill the gap by investigating the nature and the impact of managing working capital in selected largest companies in China context based on SSE50 and SZSE100.

According to the descriptive analysis, the average cash conversion cycle is 288.93 days and an average return on assets in 7.49%. These numbers can be used to compare the nature of the China market and other markets in general. The result from the Pearson correlation analysis revealed that days payable found to have a negative correlation with return on assets. If the average accounts payable decreases, company profitability tends to increase. Smallest day payables belong to medicine e-transaction and e-commerce businesses while most massive day payables belongs to the potassium chloride manufacturer. The player in each industry should compare their performance with appropriate comparable in the industry. In increase profit margin, the company should pay attention carefully on short-term liability management by focusing on account payables management including the trade credit policies and payment practices for their inventory purchases and payment on accrued expenses and other short-term operation payments. The results from the analysis further add that debts-to-assets ratio has a moderate negative correlation with return on assets and positive relationship to revenue of the company. Finally, the independent sample t-test was conducted to compare ROA and AP\_Day for the SSE50 and SZSE100. Both indicators are not significantly different between the two markets.

## 6. Conclusion

According to descriptive analysis for selected SSE50 and SZSE100, days Inventory, days receivable and days payable are 218.09 days, 91.24 days and 80.60 days respectively as depicts in figure 2. This provides a benchmark as a general guideline for other companies in SSE and SZSE. Days payable was found to have a negative relationship with a return on assets. This means that if the average accounts payable decreases, company profitability tends to increase. However, days inventory and days receivables were found to have no significant relationship with return on assets. This presents some limitations of this study as each industry have a difference in working capital landscape. This study adds to existing literature to confirm the negative relationship of days payable and the company's profitability.

Future research should investigate more in detail in each industry and may be covered specific working capital components, cash conversion cycle, and operating cycle.



**Figure 2** Cash flow time line (average) for selected blue-chip companies in the Shanghai Stock Exchange and the Shenzhen Stock Exchange





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