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Employee Stock Ownership Plans and Their Effect on Productivity: The Case of Huawei

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ABSTRACT: *Employee Stock Ownership Plans (ESOPs) are utilized by many successful companies across the world. This case study describes Huawei, a Chinese telecommunications equipment company, which heavily utilizes ESOP ownership, and applies Huawei's results to describe ESOPs as a powerful tool for achieving corporate efficiency and growth. Using and analysis of Huawei's annual reports, we argue that ESOPs play a positive role in enhancing employee productivity.*

KEYWORDS: *Employee ownership, Employee productivity, Huawei*

I. INTRODUCTION

The many successes of ESOP companies may largely be attributed to enhancement of employee productivity. These productivity effects are becoming increasingly noticed across the world. Research on the relation between ESOPs and productivity has attracted considerable attention.

Many studies have found that ESOPs or similar plans were associated with higher levels of productivity in US companies (Kumbhakar and Dunbar, 1993; Hallock et al., 2004; Robinson and Wilson, 2006; Sesil et al., 2007; Kramer, 2008; Kim and Ouimet, 2009). Jones and Kato (1995) used panel data to estimate production functions and reported the introduction of employee ownership on average led to a 4-5% increase in productivity in Japanese firms. Kruse et al. (2011) analyzed the effects of employee ownership, profit and gain sharing, and broad-based stock options (shared capitalism) on employee attitudes, turnover, and performance among applicants to the "100 Best Companies to Work For in America" competition, and found shared capitalism has favorable effects on employee intent to stay and raises firm performance.

Other studies showed no direct increase in productivity from ESOPs (Dunbar and Kumbhakar, 1991; Pugh et al., 2000; Bakan et al., 2004; Bryson and Freeman, 2004) and two studies found that employee ownership's effect on productivity is conditional. Ohkusa and Ohtake (1997) found that ESOPs that do not take into account employee performance, and ESOPs given as part of a pension plan do not incentivize productivity to the same extent as profit sharing ESOPs that reward productivity directly in the short term; Bryson and Freeman (2004) found a similar link between employee ownership and labor productivity only when a profit-sharing scheme was in place, and further found that this effect is proportional to the percentage of employees covered by the profit sharing scheme.

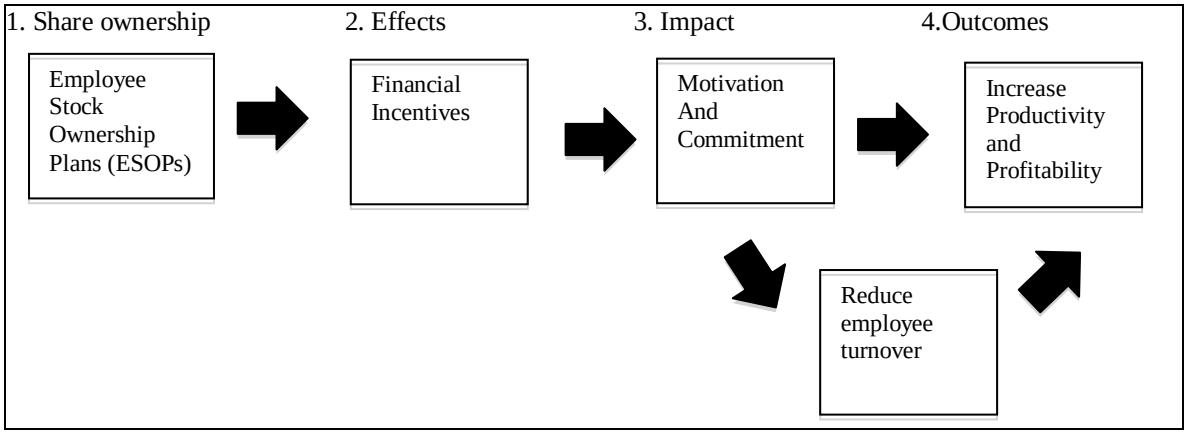
The above studies on ESOPs and productivity have mainly been conducted in developed countries. In the US and many other developed countries, ESOPs serve as alternative pension plans and involve complex governance issues and sometimes tax deductions, but China's ESOPs were introduced solely as employee incentive schemes. China's ESOPs are not tax deductible and employee shareholders in China play no role in corporate restructuring decisions and corporate governance. Due to China's institutional structure, the benefits of China's ESOPs are not mixed with or altered by the effects of tax legislation or ESOP pension programs, so these results may be considered isolated, pure results of the ESOPs themselves. This case study focuses on the most famous ESOP in China, Huawei Investment & Holding Co., Ltd, to analyze ESOP's effects on productivity. This paper seeks to contribute to the literature on the effects of ESOPs on productivity in a developing country.

The paper is organized as follows: Section 2 outlines a framework arguing that ESOPs incentivize productivity. Section 3 describes Huawei, its ESOP model and provides ZTE's related information. Section 4 presents data describing Huawei and rival firm ZTE by using information from their annual reports. Section 5 analyzes the causes of different productivity changes between Huawei and ZTE. Section 6 concludes this paper's findings and argument.

II. FRAMEWORK

As Gordon Brown said when he was Chancellor of the Exchequer: "Share ownership offers employees a real stake in their company… I want, through targeted reform, to reward long-term commitment by employees. I want to encourage the new enterprise culture of teamwork in which everyone contributes and everyone benefits from success". The introduction of ESOPs to American companies has on balance had positive effects on individual behavior, collective behavior and ultimately organizational performance (Ben-Ner and Jones, 1995). ESOPs' incentives for productivity are extremely intuitive.First, Pierce et al. (1991, 2001) proposed that ESOPs have a psychological effect on employee attitudes. Through experiencing partial ownership, employees gain a sense of pride in their company and allow it to become a part of their identity, thus allowing employees to become emotionally invested in their company.Second, ESOPs create a financial incentive for employees to be productive. Employees are given the opportunity to earn more money, long term, through their ownership and high productivity. Stock-owning employees' interests are aligned with the interests of the company because firm profits usually determine the value of an employee's stock. Stock-owning employees will thus gain a greater benefit if they are productive and contribute to the growth of the company. This increase in general employee interest in the enterprise leads to more active participation and involvement in productivity enhancing activities such as quality-control (QC) circles as well as smoother and less costly collective bargaining (Jones and Kato, 1995).Third, in order to fully benefit from ESOPs, employees usually must stay with their company for a number of years. This allows employees to develop a further loyalty to their companies, discourages employee turnover and promotes the formation of more firm-specific human capital. Company success is dependent on the innovation, skill and tacit knowledge accumulated by employees, thus low employee turnover reduces investment in training employees and increases productivity and profitability.Literature seeking to isolate and specify each of the effects and incentives caused by ESOPs is described in the schematic that follows (Michie and Oughton, 2001).

Figure 1: Linkages from ESOPs, impacts on employees and company outcomes.



III. DESCRIPTIONS OF HUAWEI AND ZTE

3.1 Huawei and its ESOP

Huawei Investment & Holding Co., Ltd (Huawei) was established in 1988 in Shenzhen City, Guangdong Province, China. It primarily produces and sells telecommunication equipment, and it operates all over the world. Huawei is now the world's second-largest telecommunications equipment manufacturer. Its financial data during the period 2006 to 2010 is as follows:

Table 1: Huawei's financial data from 2006 to 2010 (unit: million RMB).

Year	Total assets	Sales	Operating profit	Operating margin	Net profit
2006	58,501	66,356	4,846	7.3%	3,999
2007	81,059	93,792	9,115	9.7%	7,558
2008	118,240	125,217	16,197	12.9%	7,848
2009	139,653	149,059	21,052	14.1%	18,274
2010	160,841	185,176	29,271	15.8%	23,757

Huawei is a private high technology company that is owned entirely by employees. The number of participating employees is 65,596 as of 2011. Huawei initially implemented an ESOP program through its

employee union, and it is widely considered the most successful non-listed company to adopt an ESOP program in China. We divide Huawei's history of employee ownership into three periods.

Ⅰ. Huawei implements an ESOP in 1990

Huawei implemented its ESOP program in 1990, three years after the founding of the company. Huawei needed a great amount of money to fund marketing and expansion, but as a private enterprise it was difficult to find financing externally. Instead, Huawei implemented an ESOP to resolve this problem by turning to employees for financing. Huawei made available 15% of its stocks to employees, employees were not given the right to elect leaders or to manage and organize the company's ESOP program. The price of each share was 10 RMB. Huawei reserved the right to repurchase stocks at the price of 10 RMB per share from employees who left the company, and employee shareholders were not given bargaining power.

Ⅱ. Huawei modifies ESOP in 1997

Huawei restructured their ESOP model by shifting its focus from financing the company to incentivizing employee productivity in 1997. During this period, Huawei lowered employee stock prices from 10 RMB to 1RMB. Employees could share dividends based on the proportion of individual holdings. Also, Huawei allowed employees to take out loans to purchase stock and encouraged a greater number of employees to purchase ESOP shares. This was all done to maximize the strength of the ESOP's incentive mechanisms.

Ⅲ. Huawei adopts virtual stock options in 2001

To meet the requirements of Shenzhen Internal Employee Stock Ownership regulations, Huawei introduced virtual stock options and began to phase out their old ESOP model. In 2002, Huawei did not offer long-term stock ownership to new employees at a fixed price (1 RMB per stock) and old employees were allowed to exchange their stock (1 RMB per share) for virtual stock options. The employee return no longer came in the form of fixed dividends. Instead, dividends were linked to changes in net assets of the company. By the end of 2001, the stock price had risen to 2.64 RMB. This one step -- linking the net assets of Huawei and its employees' equity price -- further intertwined the interests of the company and its employees and allowed Huawei to be seen as a more significantly employee-owned firm.

According to "Huawei Basic Law", the intent of Huawei's ESOP is to allow the most able and sensible employees to assume important responsibilities. Huawei's self-imposed ESOP regulations are as follows:

(1) During April and May of each year, department heads determine the amount of shares, if any, each employee can purchase for that year. An employee's position, work experience and performance evaluation results from the previous year may factor into the ESOP shares they are offered.
(2) The company will set a maximum amount of stock that any one employee may be offered per year, and a maximum amount of stock any one employee may hold in total.
(3) Employees must be eligible to purchase stock, and employees voluntarily choose to purchase or not to purchase employee stock.
(4) The percentage increase in stock price is directly proportional to the percentage increase in net assets over the previous year.
(5) The company decides upon the dividend amount at shareholders' meetings based on the profitability of the firm in the just-ended fiscal year. The company allows employees to apply for withdrawal and to sell their shares to the company. The company also has the right to withdraw stocks from poorly performing employees at a price based on the net asset values at the time of the withdrawal.

Huawei's employees have benefited from holding the shares of the company. We use a relative indicator—adjusted equity growth (owner's equity per employee) to measure equity growth over the period from 2006 to 2010.

Table 2: Returns of holding Huawei shares.

Year	Owner's equity	Net assets per share	Dividend per share	Number of shares	Total dividends	Total Employees	Adjusted equity growth
2006	20,846	3.94	1.75	3,663	6,410	62,235	1
2007	30,032	4.04	1.70	5,749	9,773	83,609	1.07
2008	37,886	4.08	1.40	6,913	9,678	87,501	1.29
2009	52,741	5.42	1.60	7,513	12,021	95,106	1.66
2010	69,400	5.44	2.98	8,242	24,561	111,290	1.86

Notes: 1) Owner's equity, number of shares and total dividends' unit is millions. 2) Adjusted equity growth is derived by comparing, for example, 2007's ratio of owner's equity / employee vs. 2006's ratio of owner's equity / employee.

As is shown in the table, the number of owners' equity increased from 20,846 million RMB in 2006 to 69,400 million RMB in 2010. And the adjusted equity growth saw an increase of 86% from 2006 to 2010. Also, net assets per share changed from 3.94 RMB in 2006 to 5.44 RMB in 2010. Each year, Huawei's employees could share a large number of dividends of the company through holding shares.

3.2 Description of ZTE

ZTE (Zhongxing Telecom Equipment), which was founded in 1985, is the largest listed telecommunications equipment company in China. It did not adopt broad-based employee ownership. It's A-shares were listed on the Shenzhen Stock Exchange in 1997 and its H-shares were listed on the Hong Kong Stock Exchange in 2004. Only senior managers can hold ZTE shares, while common employees could not hold ZTE shares. Its financial data during the period 2006 to 2010 is as follows:

Table 3: ZTE's financial data from 2006 to 2010 (unit: million RMB).

Year	Total assets	Sales	Operating profit	Operating margin	Net profit
2006	2,592	23,031	398	17.1%	767
2007	3,038	34,777	1,001	28.7%	1,252
2008	4,103	44,293	1,245	28.1%	1,660
2009	4,715	60,272	2,064	34.2%	2,458
2010	6,523	70,263	2,590	36.8%	3,250

IV. CHANGES IN PRODUCTIVITY IN HUAWEI AND ZTE

Data is compiled from Huawei's annual reports and ZTE's annual reports from 2006 to 2010. All past sales are adjusted to account for inflation. Below is a clarification of the more complex measures used.

We compare Huawei's productivity with ZTE's productivity. We make specific comparisons to ZTE for the following reasons: Huawei is the largest telecom company in China and ZTE is the second largest; they both have implemented international strategies and they are each others' main competitor. ZTE is the biggest listed company in the telecoms industry in China. ZTE's common employees cannot hold company shares, only the senior managers are allowed this privelege. This makes comparing Huawei to ZTE a direct comparison of an ESOP to a non-ESOP company.

We first use an absolute indicator--total asset turnover (Tato) to measure productivity. Total asset turnover (Tato) is defined as sales divided by the total book assets. This ratio measures the firm's ability to use the total assets productively (Borstadt and Zwirlein, 1995; Dhiman, 2009; Kala and Poornima, 2012).

Table 4: Huawei and ZTE's productivity (unit: million RMB).

Huawei (ESOP)	Sales	Total assets	Total asset turnover	ZTE (non-ESOP)	Sales	Total assets	Total asset turnover
2006	65,636	58,501	1.12	2006	23,031	25,916	0.89
2007	93,792	81,059	1.16	2007	34,777	39,173	0.89
2008	125,217	118,240	1.06	2008	44,293	50,865	0.87,
2009	149,059	139,653	1.07	2009	60,272	68,342	0.88
2010	185,176	160,841	1.15	2010	70,263	84,152	0.83
Average	123,769	111,659	1.11	Average	46,527	53,690	0.87

Huawei's average Tato measure stayed fairly constant around 1.11, while ZTE's Tato measure stayed fairly constant around 0.87, and the average productivity of listed companies in the telecom industry in China was about 0.68. These numbers show that Huawei has consistently maintained higher employee productivity than ZTE, and much higher employee productivity than the average telecommunications equipment company in China. Second, we use a relative indicator--sales per employee (sales / employees) to measure productivity

growth (Lisa and Thomas, 1995).

Table 5: Huawei and ZTE's productivity growth (unit: million RMB).

Huawei (ESOP)	Employees	Sales	Adujsted productivity growth	ZTE (Non-ESOP)	Employees	Sales	Adjusted productivity growth
2006	62,235	66,365	1	2006	39,266	26,917	1
2007	83,609	93,792	1.05	2007	48,261	34,777	1.05
2008	87,501	125,217	1.34	2008	61,350	44,293	1.05
2009	95,106	149,059	1.45	2009	70,345	60,272	1.33
2010	111,290	185,176	1.56	2010	85,232	70,263	1.24
2006-2010	+78%	+179%	+56%	2006-2010	+117%	+161%	+24%

Huawei's productivity growth saw an increase of 56% from 2006 to 2010, while ZTE's productivity growth (sales/employees) saw an increase of 24% from 2006 to 2010. Huawei's productivity grew at a faster rate than ZTE every year, except for 2009. ZTE also had zero productivity growth between 2007 and 2008 and declining productivity in 2010, while Huawei experienced growth every year.

V. ANALYSIS OF PRODUCTIVITY CHANGES AT HUAWEI AND ZTE

Many empirical studies exist regarding the drivers of productivity change in the telecommunications industry. Some factors are changes in competition, ownership and technology (Bortoltti et al., 2002; Daber et al, 2002). We analyze three aspects--general management, technology and political connections to see if they are the causes of different productivity changes between Huawei and ZTE.

First, we compare the general management at Huawei and ZTE. At Huawei and ZTE, they both implement international strategies and employ the most capable managers in the industry. Both emphasize a strong human resources department, feeling that human resources play an important role in the survival and development of their companies. We can analyse the general management from employees' education and training. Most employees of both companies have similar higher education. For example, in 2008, 40% of Huawei's employees had graduate degrees, and 42.5% had just undergraduate degrees, while ZTE's percentages were 35.5% and 44.5%. Huawei and ZTE have both established educational institutions to maximize employee education levels: Huawei University was founded in 2005 and ZTE College was founded in 2003. The differences in employee and managerial education and training between Huawei and ZTE are minimal. Also, ZTE is a listed company which means ZTE hires representative general management under the supervision and guidance of the China Securities Regulatory Commission.

Second, we analyze the mix of employees at Huawei and ZTE and their patent situations. Huawei's technical employees account for 40% of its total number. ZTE technical employees account for roughly 37% of its total number. ZTE has the largest number of technical employees of any listed company in China. According to The World Intellectual Property Organization's (WIPO) 2011 Global Patent Cooperation Treaty (PCT), ZTE had submitted 2,826 patent applications in 2011 and Huawei had submitted 1,831 patent applications. Therefore, it seems that ZTE's technical performance is not worse than Huawei using these comparisons.

Third, we analyze Huawei and ZTE's political connections. In China, businesses with connections to the government are greatly advantaged. As Huawei is a private firm, government officials cannot own stock in the company, and lack the incentive to give Huawei preferential treatment. ZTE on the other hand has found much support from the Chinese government. ZTE is one of the 300 key state-owned enterprises recognized by the State Council. Some of ZTE's capital was provided by both China Aerospace Irndustry Corporation and 691 Corporation (a military company). Chinese Former Chairman Hu Jintao visited ZTE in 2010.

Across these three factors that could be claimed to cause employee productivity--general management technology and political connections--Huawei cannot be seen to have an obvious advantage over ZTE, and is sometimes disadvantaged. Therefore, these factors were probably not responsible for Huawei's higher productivity levels compared to ZTE's.

VI. CONCLUSION

After analyzing the business attributes of Huawei and ZTE we conclude that Huawei has a significant advantage because of its ESOP. All of Huawei's shares are owned by its employees while only senior managers can hold some shares of ZTE. As Huawei's CEO, Ren Zhengfei, said "Huawei belongs to its employees. If Huawei becomes bigger and creates more profit, employees will acquire benefits more from its ESOP and they will get huge motivation to work hard to enhance productivity".

Research in the developing world that aims to generalize the effectiveness of ESOPs to a greater business context, to analyze the effectiveness of ESOP policy and to analyze the optimum ESOP strategies for each business type could provide significant economic breakthroughs.

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