

# Chapter 1

## Introduction

### 1.1 Motivation

A central issue in corporate finance is the optimal balance between debt and equity, thus maximizing the value of the company or minimizing the cost of capital. Because capital structure affects return of stocks and stock prices, the choice of capital structure and understanding of the determinants of capital structure are critical in decision making of corporate finance. Telecommunications is one of the most important infrastructures, which is an essential component for attracting foreign investment and in enhancing national economic development. To date there is no evidence on the determinants of capital structure for the telecom industry in Taiwan. In this thesis we select the telecom industry's big three companies in Taiwan, Chunghwa Telecom, Taiwan Mobile, and FarEastone Telecom as the subject of the determinants of capital structure analysis. Focusing on one industry allows to address some issues more intensively and to gain deeper understanding of the determinants of capital structure.

### 1.2 Liberalization of Telecom Industry

With the worldwide trend of liberalization and globalization of the telecom business, Taiwan must face the challenge of the ever-changing business environment and cannot isolate itself from the international arena. Full and prompt liberalization of telecom industry is an essential prerequisite for the continuing growth of all sectors, especially in the booming age of internet during 1990s. Taiwan would run risk of falling behind in the development of telecommunications if liberalization was not done soon enough.

Being aware of global trends on the development of digital convergence, as well

as the integration of the decentralized communications and broadcasting authorities, the government in February, 1996 amended the Telecommunications Act and at the same time reorganized the Directorate General of Telecommunications (DGT) which was designed to concentrate on the telecom policy formation and market management. The DGT has begun as an independent regulatory authority leading telecom liberalization from July 1, 1996. Before the reorganization, the DGT owned the telecom monopoly--now is Chunghwa Telecom Co., Ltd. in the market. With this change, the DGT's role was no longer to be criticized as both player and referee in the market. It was a major step forward in Taiwan's telecom liberalization. Later on February 22, 2006, the government formally established the National Communications Commission (NCC) to regulate telecommunications, information and broadcasting sectors for the purpose of integrating the authorities and policies. In short, liberalization of telecommunications has directly given consumers of the benefit with more choices through lower prices and the introduction of new products.

### 1.3 A Brief Review of the Telecom Industry in Taiwan

Chunghwa Telecom was established as a company since July 1, 1996, as a result of the separation of business and regulatory functions of the DGT. The liberalization and opening of telecom market in Taiwan led Chunghwa Telecom to be privatized in August 2005, and gave the birth of Taiwan Mobile and FarEastone Telecom to start their operation in January, 1998. Common shares Of Chunghwa Telecom have been listed on the Taiwan Stock Exchange (TSE) since October 27, 2000 and ADR have been listed on the New York Stock Exchange since July 17, 2003. Taiwan Mobile's shares began trading on the Over-the-Counter (OTC) Securities Exchange in September, 2000 and were listed in the TSE mainboard in August, 2002. FarEastone's Shares started trading

on the OTC in December, 2001 and were moved from the OTC to TSE in August, 2005.

The similarity of the services provided by the operators is high. As an integrated telecommunications service provider, Chunghwa's principal services include<sup>1</sup>

- fixed line services, including local, domestic long distance and international long distance telephone services;
- cellular services;
- internet and data services, including HiNet, internet service provider, FTTx services, ADSL services and leased line services;

On May 7, 2008, Chunghwa established a joint venture with Viettel Corporation to provide Internet Data Center services in Vietnam. This venture, which is expected to begin operations in the third quarter of 2008, marks Chunghwa Telecom's first investment project outside of Taiwan.

Through the merger and acquisition of Taiwan Fixed Network (台灣固網) and Taiwan Telecom(台灣電訊) in 2007, the principal services of Taiwan Mobile expanded from cellular services such as voice, short messages (SMS) and mobile Internet to include fixed line and cable TV services. 88% of the total revenue in 2007 came from the cellular services<sup>2</sup>. In the near future, cellular services will still be the core business of Taiwan Mobile, due to the “last mile” of fixed line to be continually under the control of Chunghwa Telecom.

FarEastone Telecom has been mainly providing mobile services to the Taiwan market such as voice, short messages (SMS) and mobile Internet. In July, 2007, FarEastone Telecom received the WiMAX license for the southern district of Taiwan. It

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<sup>1</sup> Annual report, Chunghwa Telecom, 2007

<sup>2</sup> Annual report, Taiwan Mobile, 2007

is the only telecommunication service provider among the “domestic telecom industry’s big three” to have received the license. FarEastone Telecom may benefit from broadening the market niche by WiMAX.

#### 1.4 The Capital Structure of the Big Three

Operators' investment in the fixed line and mobile network construction, and hardware are usually enormous. Therefore, low cost sources of funds to support capital expenditures are critical for all operators. By the end of the 1<sup>st</sup> quarter of 2008, the fixed assets account for 69.92%, 59.61%, and 32.53% of the total assets for Chunghwa Telecom, Taiwan Mobile and FarEastone Telecom, respectively. Chunghwa Telecom had been the only fixed line services operator before liberalization of the telecom market. It is therefore has the highest fixed to total assets ratio due to earlier hardware investments in fixed line network.

In this study the capital structure is represented by the debt ratio, defined as total debts divided by total book assets. Table 1.1 shows the debt ratios of the three companies from 2001 to the 1<sup>st</sup> quarter of 2008. The first impression is the relatively high debt ratio 62% of Taiwan Mobile in 2007. The reason behind is the external funding for short and long term bank loans required for the merger and acquisition of Taiwan Fixed Network and Taiwan Telecom that year.

A traditional view in the theory of capital structure argues that firms try to maintain an optimal capital structure. When this optimum is deviated, firms respond by rebalancing their leverage back to the optimal level. Fama and French (2002) note that firms appear to adjust their debt ratio slowly toward their targets. Leary and Roberts (2006) finds that the evidence in support of dynamic rebalancing is quite strong, that is, firms tend to make capital structure adjustments relatively infrequently, on average once

【Table 1.1 : Debt Ratios】

Year	Chunghwa	Taiwan Mobile	FarEastone
2008*	12.83%	48.65%	16.18%
2007	15.08%	62.08%	14.01%
2006	13.23%	23.17%	17.66%
2005	11.33%	25.88%	21.29%
2004	23.12%	33.22%	21.56%
2003	23.04%	46.91%	39.76%
2002	24.96%	55.07%	35.28%
2001	24.31%	43.59%	38.87%

\* These are the figures at the end of the 1<sup>st</sup> quarter, 2008.

a year. With limited data available over the period from 2000 to the 1<sup>st</sup> quarter of 2008, debt ratios of the three companies seem to be rebalancing year by year and have stabilized in the past three years for Chunghwa Telecom and FarEastone Telecom. Debt ratio of Taiwan Mobile seems to be quite volatile.

The telecom market in Taiwan is approaching mature and services provided to consumers are pretty much the same. All three companies conducted capital reduction in 2007 and 2008, resulting in the return of cash to shareholders. These observations reveal that top managements of the three companies may envision less and less investment opportunities in the near future. These arguments suggest that debt ratios for the three companies would remain flat and may not dramatically go up in the next few years.

Tables 1.2, 1.3 and 1.4 show some selected data of the operational results of the three companies from 2001 to the 1<sup>st</sup> quarter of 2008. We can see immediately

1. Chunghwa Telecom is the market leader in terms of net revenue.
2. The telecom market in Taiwan tends to be mature as the net revenue remains pretty

much the same for all three companies in the past three years.

3. The three companies have a huge amount of cash in hand.
4. The three companies have been very profitable in terms of the EPS. The payout ratio is high.

**【Table 1.2 : Operation Results of Chunghwa Telecom】**

Year	Net Revenue	EBIT	Net Income	Cash	EPS	Payout Ratio
2008/03	46,726	14,092	10,716	71,230	1.12	--
2007	186,329	61,097	48,249	289,313	4.66	91.42%
2006	184,387	57,647	44,891	218,081	4.62	77.49%
2005	183,382	59,605	47,653	143,607	4.94	87.04%
2004	182,563	60,757	49,863	110,639	5.18	90.73%
2003	179,149	58,922	48,501	40,616	5.03	89.46%
2002	176,089	55,916	43,227	38,737	4.48	89.29%
2001	182,155	47,300	37,271	67,946	3.86	90.67%

\* All figures are in millions of NT dollars except EPS which is in NT dollars per share.

**【Table 1.3 : Operation Results of Taiwan Mobile】**

Year	Net Revenue	EBIT	Net Income	Cash	EPS	Payout Ratio
2008/03	13,098	5,513	4,192	2,834	1.00	--
2007	51,285	8,447	6,613	21,352	1.32	151.52%**
2006	47,891	17,895	16,171	40,711	3.28	78.89%
2005	47,409	18,906	16,237	21,179	3.32	78.82%
2004	44,786	20,515	16,658	10,401	3.60	68.70%
2003	44,996	16,051	13,344	11,275	2.96	80.26%
2002	45,352	16,466	14,937	23,955	3.70	54.05%
2001	48,812	19,098	16,750	28,771	4.56	41.67%

\* All figures are in millions of NT dollars except EPS which is in NT dollars per share.

\*\* An additional NT\$2.4 per share in cash was returned to shareholders by conducting capital reduction in December 2007.

【Table 1.4 : Operation Results of FarEastone Telecom】

Year	Net Revenue	EBIT	Net Income	Cash	EPS	Payout Ratio
2008/03	12,511	3,047	2,428	967	0.72	--
2007	46,172	13,718	11,619	16,635	3.00	103.33%**
2006	43,208	14,679	13,156	12,129	3.41	90.91%
2005	43,150	16,420	14,717	19,248	3.81	81.36%
2004	40,229	14,890	14,043	11,124	3.95	75.95%
2003	37,067	8,405	8,188	18,239	3.15	44.44%
2002	34,478	7,978	7,808	9,369	3.75	34.67%
2001	34,544	6,629	6,659	6,374	3.75	26.67%

\* All figures are in millions of NT dollars except EPS which is in NT dollars per share.

\*\* An additional NT\$1.92 per share in cash was returned to shareholders by conducting capital reduction in March 2008.

### 1.5 Purpose of the Study

There are several ways that firms raise investment funds except from internal earnings. Bank loans are common ways because interest payments are tax deductible. Or firms can issue various kinds of convertible corporate bonds, preferred stock, ADR and common equity. The mix of different sources of capital is referred to as the capital structure of a firm. When firms explore investment opportunities to expand its market footprint as one of their growth-contributing strategy, they have to seek for low cost of capital and a balance between debt and equity. A balance that management decides in the firm's best interest is fundamental to the financial safety of a firm.

We will use the theory of capital structure and from the empirical viewpoint to explore and analyze what determines the capital structure of the telecom industry in Taiwan. The major purpose of this study is to estimate relations between debt ratio and those factors that have effect on the capital structure.

The remainder of this thesis proceeds as follows. Chapter 2 provides a review of

relevant theory, and literatures which include empirical evidence how the determinants of capital structure affect debt ratio. Chapter 3 outlines the determinants of capital structure and methodology used in this study. The results are presented in Chapter 4, followed by a brief summary and conclusion in Chapter 5.

