

Faculty of Economics and Business

**CAPITAL STRUCTURE PUZZLE: EVIDENCE FROM SINGAPORE  
LISTED FIRMS**

**Chieng Kwong Lung**

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Final Year Project Report

Masters

PhD

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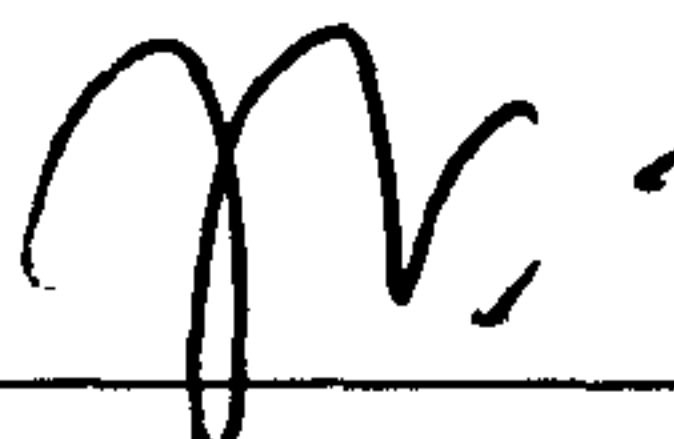
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**CAPITAL STRUCTURE PUZZLE: EVIDENCE FROM SINGAPORE LISTED  
FIRMS**

**CHIENG KWONG LUNG**

**This project is submitted in partial fulfillment of  
the requirements for the degree of Bachelor of Finance (Honours)**


**Faculty of Economics and Business  
UNIVERSITI MALAYSIA SARAWAK  
2012**

## Statement of Originality

The work described in this Final Year Project, entitled **“Capital Structure Puzzle:  
Evidence from Singapore listed firms”**

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(Student’s signature)  
Chieng Kwong Lung  
23297

## **ABSTRAK**

### **STRUCTURE MODAL PUZZLE: KETERANGAN DARIPADA SYARIKAT-SYARIKAT YANG DISENARAIKAN DI SINGAPORE**

Oleh

**Chieng Kwong Lung**

Kajian kerja ini menyumbang kepada kesusasteraan struktur modal dengan menyiasat penentuan-penentuan struktur modal bagi firma-firma yang beroperasi di negara Singapore yang disenaraikan di Singapore Exchange (SGX) bermula dari tahun 2006 sehingga 2010 dengan data yang lengkap. Sampel kajian ini mengandungi 380 buah firma-firma bukan kewangan. Objektif utama kajian ini ialah untuk mengesan kecenderungan firma-firma memilih dana luaran atau dana dalaman dalam membuat keputusan kewangan. Objective khusus terdiri daripada menyiasat hubungan antara Financial Deficit Fund (DEF) dengan hutang dan pembiayaan ekuiti dan juga hubungan antara pembiayaan hutang kukuh dengan Conventional leverage factor. Hasil kajian utama menunjukkan firma-firma Singapore cenderung menggunakan pembiayaan ekuiti berbanding pembiayaan hutang apabila dana luaran diperlukan. Kajian ini juga mendapati bahawa kedua-dua pecking order theory dan trade off theory boleh menerangkan struktur modal firma-firma Singapore dari tahun 2006 sehingga 2010.

## **ABSTRACT**

### **CAPITAL STRUCTURE PUZZLE: EVIDENCE FROM SINGAPORE LISTED FIRMS**

By

**Chieng Kwong Lung**

The paper contributes to the capital structure literature by investigating the determinants of capital structure of firms operating in Singapore country which is listed in Singapore Exchange (SGX) from the period of 2006 until 2010 with no missing data. The sample consists of 380 non-financial Singapore listed firms. The main objective in this study is to track the preference of the firms to choosing equity or debt financing in making financial decision. The specific objective which consists of investigating the relationship between financial deficit fund (DEF) with debt and equity financing and also the relationship between firm debt financing with conventional leverage factor. The main findings of this study suggest that Singapore firms prefer using equity financing rather than debt financing when external fund is needed. The study also found that both pecking order theory and trade off theory can explain the capital structure of Singapore listed firms from year 2006 until 2010.

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# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

Capital structure refers to the firm's financial framework which consists of the debt and equity used to finance the firm. Capital structure is one of the popular topics among the scholars in finance field. The capital structure can be defined as the way that a how firm finances its assets through some combination of financing sources (Saad, 2010). The theory of capital structure started by Modigliani and Miller (1958) in their influential seminal work on the effects of capital structure potentially influences the value of a company. Firm value is an increasing function of leverage due to the tax deductibility of interest payments at the corporate level. They demonstrate and finally conclude that the “capital structure is irrelevance” in a perfect financial market which mean that the capital structure that a firm chooses does not affect its value, considering no-tax case in the “pie model”, which literally means that firm’s value, is independent of it financing or financial structure.

Capital structure is essential to show on how a firm finances its overall operations and growth by using different sources of funds. Based on the practical contradiction of the Modigliani-Miller theorem, two traditional theories of capital structure, the trade-off theory and the pecking order theory, are developed. The trade-off



theory considers that firms have a target capital structure that is determined by the marginal benefits of debt, for example, tax advantage of debt, and costs associated with debt, such as bankruptcy costs and agency costs. (Jensen and Meckling, 1976; Myers, 1977). In other words, trade-off theory implies that firms adjust their capital structure in response to the temporary shocks that cause their leverage to deviate from the target. The pecking order theory is based on asymmetric information (Myers and Majluf, 1984; Myers, 1984), when a manager makes financial decisions by external funds, investors would see this behavior as the firm is overvalued. Therefore, investors tend to sell their stocks and the value of the firm will fall. For this reason, firms follow a financing hierarchy; descends from internal funds, to debt and finally to external equity.

The financial leverage refers to the use of borrowed money to increase production volume, and thus sales and earnings. Financial leverage is the use of debt instruments to increase the anticipated level return on the company's equity (Smith, 2008). It can be measured by getting the total value of debt to total assets. The greater the amount of debt, the greater the financial leverage. It is more risky for a company to have a high ration of financial leverage. The leverage factor captures the return difference between stocks with high and low financial leverage. It is measured using three descriptors, namely liabilities to book value, liabilities to market capitalization, and liabilities to total assets.

Thus, financial leverage is used in various circumstances as a means of altering the cash flow and financial position of a company. There are four positions which show

a relationship with the level of financial leverage. First, is the relation of equity and debt, for instance, the rate of capitalstructure. Another is the influences on business production and cycle of financial leverage. Then the company is industry and branch whole financial leverage level. And also the correlation between the current financial leverage ratio of the company and the middle leverage level. Lastly, the conformity of companyis mission and philosophy with the situation connected to the relation of financial leverage.

Leverage factor is the amount by which a reference rate is multiplied to determine the floating interest rate payable by an inverse floater. Some debt instruments leverage the particular effects of interest rate changes, most commonly in inverse floaters. Rajan and Zingales (1995) indicated that total debt could overstate the level of leverage because total debt do includes accounts payable that may be used for transaction purpose rather than for financing.

The financing deficit is constructed from an aggregation of dividends, investment, change in working capital and internal cash flows. If the pecking order theory is correct, then the construction of the financing deficit variable is a justified aggregation. Each component of financing deficit should have the predicted dollar-for-dollar impact on corporate debt under the pecking order theory (Shyam-Sunder and Myers, 1999).The pecking order theory imply that the financing deficit have to remove from the effects of other variables. If the financing deficit is simply one factor among many that firms tradeoff, then what is left is a generalized version of the tradeoff theory.

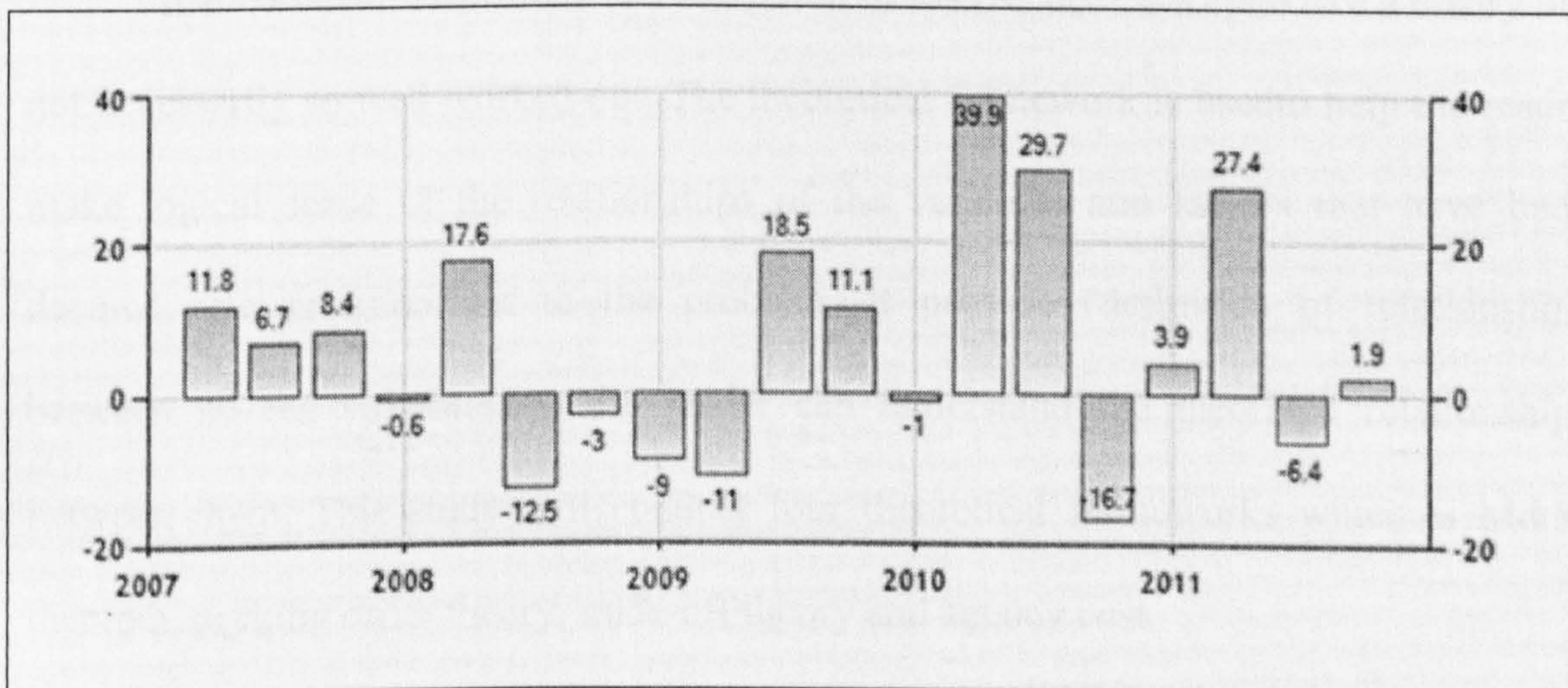
## **1.1 Background of study**

This study will choose Singapore country as the background of study. Singapore is a hi-tech, wealthy city-state in south-east Asia, also known for the conservatism of its leaders and its strict social controls. Singapore's strong economy is driven by electronics manufacturing and financial services. Singapore on Monday, 21 November 2011 predicted sharply lower economic growth of 1.0-3.0 percent in 2012 amid an export slowdown and warned the situation could worsen if Europe's debt woes trigger a global crisis. The figure is off the previous estimate of 2.5-3.5 percent and well down from the five percent predicted for 2011 as demand in the city-state's key export markets in Europe and the United States dry up. The Ministry of Trade and Industry (MTI) said this does not factor in downside risks to growth, such as a worsening debt situation or a full-blown financial crisis in the advanced economies. The 2011 gross domestic product (GDP) is forecast is a huge slowdown down from the all-time high of 14.5 percent seen in 2010 when the economy was coming off a 0.8 contraction the previous year. Singapore's trade-driven economy is regarded as a bellwether for Asia's exporters, which depend heavily on electronics and other manufactured shipments to North America and Europe for growth.

The background of study will include Singapore exchange (SGX) which is an investment holding company located in Singapore and providing different services related to securities and derivatives trading and others. In January 2010, SGX has 640 mainboard listings and 134 catalist listings. Companies are only listed on the Singapore

Exchange if they do well. If their average daily market capitalization is less than \$40 million over the last 120 market days, then it is placed on a watch-list, and if it does not improve within two years it is delisted from the Singapore Exchange. The companies listed on SGX divided into two groups which is listed on the SGX Mainboard and listed on SGX SESDAQ. In order to be listed on the mainboard, a company has to fulfill some condition set forth by SGX, while a listing a SESDAQ is not tied to the fulfillment of any additional conditions.

Figure 1: Singapore GDP Growth Rate from year 2007-2011



Source from: <http://www.tradingeconomics.com>

The figure 1 shows the graph of the Gross Domestic Product (GDP) in Singapore from 2007 until 2011 based from the current resource. The graph show the expanded 1.9 percent in the third quarter of 2011 over the previous quarter. Based on the historical data from 2007 until 2011, Singapore's average quarterly GDP Growth was 6.36 percent reaching an historical high of 39.90 percent in March of 2010 and a record

low of -16.70 percent in September of 2010. Singapore is a highly developed and successful free-market economy, the contribution on per capita GDP higher than that of most developed countries. The economy depends a lot on exports, mostly in consumer electronics, information technology products, pharmaceuticals, and on a growing service sector.

## **1.2 Theoretical Frameworks**

A theoretical framework is a collection of interrelated concepts, like a theory but not necessarily so well worked-out. The theoretical framework is used to help the reader make logical sense of the relationships of the variables and factors that have been deemed relevant/important to the problem. It provides definition of relationships between all the variables so the reader can understand the theorized relationships between them. This study will conduct four theoretical frameworks which is M&M theorem, pecking order theory, trade-off theory and agency cost.

### ***1.2.1 The Modigliani-Miller's theorem (Capital Structure Irrelevant Theory)***

The Modigliani-Miller's theorem (Modigliani and Miller, 1958) is the earliest relevant theory of capital structure which is called "capital structure is irrelevant". They assume that a perfect capital market has no transaction or bankruptcy costs, and people receive perfect information. Thus, firms and individuals can borrow at the same interest

rate with no taxes and their investment decisions would not be engaged by financing decisions. Modigliani and Miller (1963) even illustrate how firms should utilize “all” debt financing because interest is deductible for tax purpose. This “Tax Shield” allow firms to pay lower tax than they should, when using debt capital instead of using only their own capital. Based on the assumptions, Modigliani and Miller state the value of a firm is independent how that it is financed because its value is depended on the profitability of the company. Hence, the firm does not an optimal capital structure.

### ***1.2.2 The pecking order theory***

The pecking order theory is from Myers (1984) and Myers and Majluf (1984) which is one of the important theories of corporate leverage. If there have three sources of funding available to firms which is retained earnings, debt, and equity. Retained earnings have no adverse selection problem. Equity will be the subject to serious poor selection problems while debt has only a small selection problem. Based on Myers (1984), due to adverse selection, firms will more like to choose internal to external finance. This theory derives a lot of its impact from a view that it fits naturally with a number of facts about how firms use external finance.

Myers (2001) founds that the external finance only show a small proportion of capital information and that equity issues are minor, with the bulk of external finance being debt. Firms prefer debt to equity when the outside funds are needed because of lower information costs associated with debt issues. From the observation of an outside

investor, they will think that equity is severely riskier than debt. Both have an adverse selection risk premium, but that premium is large on equity. Thus, an outside investor will choose equity than on debt on rate of return. From the inside firm, they will choose retained earnings as a better source of funds than is debt and debt is a better deal than equity financing. As a result, the firm will invest all projects using retained earnings if possible. However, if there is an insufficient amount of retained earnings, then debt financing will be used. Hence, for a firm in usual operations, equity will not be chosen and the financing deficit will match the net debt issues.

### ***1.2.3 The trade-off theory***

Jensen and Meckling (1976), the trade-off theory of capital structure refers to the firm that how much they use the debt and equity financing to be use to balancing the costs and benefits. The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Myers (1977), Stulz (1990) state that based on the trade-off theory firms adjusts their capital structure over time, toward an optimal leverage resulting from balancing the costs and the benefits of debt financing. Based on the trade-off theory, firms with higher growth opportunities keep lower leverage levels to keep their financial flexibility to avoid the underinvestment problem (Myers, 1977).

Under trade-off theory, it shows the benefits of using debt because the firm can get tax shield with the usage of some proportion of debt in financing the company. The Tax shield are from the interest payment as a tax deductible item, which means that the higher the interest payment on debt employed, the lower the taxes will be paid by the firm. However, as firms plan to use more debt, it will put firms in the position of financial distress due to the possibility of the firm may be default in meeting its liabilities obligations. Financial distress will include bankruptcy and non-bankruptcy cost.

#### ***1.2.4 Agency cost***

The agency costs of debt are typically described in terms of the asset substitution or the risk shifting problem. The potential conflict between equity and debt claimants is such that shareholders expropriate wealth from bondholders by investing in new projects that are riskier than those presently held in the firm's portfolio. This phenomenon happens in any situation involving cooperative effort by two or more people even though there is no clear-cut principal-agent relationship. Alchian and Demsetz (1972) has show in their paper on the theory of the firm show that the importance to the theory of the firm bears a close relationship to the problem of shirking and monitoring of team production.

Managers are given the right by the shareholders to manage the firm, in assumption that managers will act in the interest of the firm's welfare and