Session 12
Capital Structure Theories

Objective

By the end of this session, students are expected to able to exhibit a critical understanding of the implications of (i) taxes on the irrelevance theorem and (ii) adverse selection and moral hazard on financing decisions.

Introduction

Last session, we saw the condition under which capital structure does not matter to the valuation of firms. Though unrealistic, we also saw that the irrelevance theorem offers two important messages to both academics and practitioners.

What are they?

One of the key assumptions underlying the irrelevance theorem is that there is no asymmetry. This assumption simply means that managers (insiders) and investors (outsiders) equally know the firm's true value. In reality, firms operate in the world of both taxes and information asymmetries. In this session, we will first explore implications of taxes, in particular the co-existence of corporate and personal taxes. We will then discuss the implications of adverse selection and moral hazard on firms' financing decisions.

Debt and Taxes

[This part of lecture is heavily drawn from Myers (2001, JEP)]

recall eq(4) : $V_L = V_U + \tau_c B$

When considering the implication of equation (4) from last session, most widely perceived is that the present value of tax shields ($\tau_c B$) must be very big – or at least, big enough to make it economically different from equation (1). In reality, perhaps we can (and should) view $\tau_c B$ only as the *upper* bound of the value of tax shields.

cannot be larger than that

$V_L = V_U$

(a) Equation (4) implicitly assumes that profitability is always positive.

tax credit is not carried forward
but EBIT is uncertain forever
↳ firm can get loss
↳ don't get tax benefit

Is profitability always positive or even 'expected' to be positive all the times? For a given period, what tax benefits do you think a firm is likely to receive (in most modern tax jurisdictions) if it turns out a net loss? While a tax loss carried forward may be used to offset the current period's tax payable, is this offsetting available without a time limit?

in $T_c B$

value of debt

(b) Do you think B will always be or can be expected to be persistently material through time?

firms expect that EBIT uncertain larger → will not borrow → B ∪ not constant
fluctuate

Basically, size and duration of debt is *neither* permanent *nor* known with certainty. When B is risky and non-permanent *ex ante*, the future value of tax shields becomes risky. So, can we still discount it at r_f? Perhaps, we need to apply a discount rate that is higher than r_f. In this case, $\tau_c B$ in the MM analysis is strictly the upper bound.

go up&down across firm life

$r_d > r_f$

(c) Corporate tax benefits can be partly offset by investors' ability to defer capital gains and pay a lower capital gain tax.

If *in aggregate* individual investors pay lower tax on capital gains, why would they want to receive interest *income* as opposed to capital gains of the same amount?

Let's say firm A's income is £50,000 and pays £17,500 in tax (i.e., 35%). If the firm is debt-free and pays no dividend, the total return to investors will come through as a capital gain – which is £32,500. Suppose the capital-gain tax rate for individual investors is 10%. The capital gain tax payable by investors will be £3,250—yet, this amount can be *deferred*. What happens if firm A borrows £500,000 on 10%? The firm will therefore have to pay £50,000 in interest, and will end up with zero net income. So, it will *save* £17,500 in corporate taxes. However, investors (in aggregate) will receive £50,000 more in interest income and £32,500 less in capital gains. Let's say the average marginal income tax rate for individuals is about 30%. So, their taxes will rise from a deferrable £3,250 to an immediate £15,000 – income tax is usually not deferrable. That is, their taxes are to increase by £11,750.

Nevertheless, the discussions in (a) through (c) should not interpreted as saying that the marginal tax-shield benefit of debt financing is economically trivial. In reality, the benefit may be less significant than what equation (4), i.e., the 1958 setting, implies. Equation (4) implies that if there were no offsetting costs, we should observe firms borrowing as much as possible in an attempt to shield their taxable income. Indeed, many academics try to point out that equation (4) predicts that firms should be financed with 100% debt. Of course, this prediction is not at all the intended message of equation (4) – the intention is to show the value impact of corporate tax assuming that the capital market is otherwise frictionless. Nevertheless, we do not observe firms with pure debt financing, which suggests existence of frictions in the real-world capital market.

Pecking Order Theory

[This part of lecture is also drawn from Harris and Raviv (1991, JF) and Myers (1984, JF).]

This theory is based on the idea that there exists *information asymmetry* between managers (insiders) and investors (outsiders): specifically, adverse selection facing outsiders. That is, while managers know the true value of the firms' assets in place, investors do not—investors are less informed.

In a nutshell, Myers and Majluf (1984), (see also Myers, 1984), argue that the informational disadvantage of investors *can* cause mispricing of a firm's equity. With such mispricing, the firm's equity is likely to be *severely underpriced* (undervalued) when it needs to raise new equity money (i.e., equity money from new investors) to finance a new project.

In their argument, Myers and Majluf (1984) make the following main assumptions (see also Myers, 1984):

	No debt	Debt of 500,000
Corporate income	50,000	50,000
Int exp @ 10%	0	50,000
Net profit after int exp	50,000	0
corporate tax (35%)	17,500	0 → no tax saving
Net profit after tax	32,500	0

	shdr	debt holder
Individual investors	↓	↓
Dividend	None	None → bcs we interest in tax benefit of debt financing
Capital gain	32,500	
Income (int inc)		50,000
Personal tax on capital gain (10%) (deferrable)	3,250	
" on income (30%) (immediate)		15,000
Total tax	3,250	15000
Tax difference	11,750	

(tax increase with debt financing)

The firm's 10/share will drop to 7/share if they accept NPV project (lose 4 gain 1)

(a) Except for information asymmetry about the expected value of the assets in place, capital markets are *perfect*;
(b) There is no moral hazard facing shareholders, i.e., no agency conflicts;
(c) Investment projects in the firm's opportunity set all have positive NPV; and
(d) The NPV of the firm's new investment projects is public knowledge.

Other assumptions include: (i) firms pure-equity firms; and (ii) existing shareholders do not rebalance their portfolio when their firm sells more equity. We can think of these assumptions are ceteris paribus type assumptions. As discussed below, the setup of theory can accommodate debt financing. That is, theory still holds when firms are not pure-equity firms.

> Assumptions (a) and (b) are obvious. In the real world, it is important that practitioners can rationalize assumptions (c) and (d) – do these two assumptions make sense?

In the framework defined by the four main assumptions above, how could information asymmetry lead to underpricing of firms' equity? Before proceeding to the mechanics of the model, recall that because of adverse selection, firms are priced in a pooling equilibrium.

Suppose there are two firms: one with high (H) value and another with low (L) value, where $H > L$ (see also Harris and Raviv, 1991). Both firms are faced with the same investment project that costs C and has positive NPV of r, where C and r are common knowledge. If this new project is accepted, it must be financed with equity.

> What could be an intuition for assuming that the new project's NPV is public knowledge?

Firm L accepts the project and thus sells equity worth C to finance it. Given that firm L is *fairly priced* by the market, its *existing* shareholders will give up a fraction α to its *new* shareholders where $\alpha = C / (L + r + C)$: a fraction of the firm's equity value with the new project. For the *existing* shareholders, their payoff from accepting the project and selling equity is therefore $(1 - \alpha)(L + r + C) = L + r$. Thus, the existing shareholders will capture the project's NPV, which is positive. Accordingly, firm L would not pass up the project because the payoff from doing so to its existing shareholders would be only L. For firm H, the payoff from passing up the new project would be H. But, if firm H *imitates* firm L by selling equity, the market will price firm H as if it was firm L — i.e., firm H will be *undervalued*. The payoff for firm H's *existing* shareholders will be $(1 - \alpha)(H + r + C)$. Depending on how severe the undervaluation is, *existing* shareholders of firm H may be worse off by accepting the project. That is, they will be worse off if their payoff from taking on the project and selling equity is less than H, or $(H - L)\alpha > r$. Given this inequality (i.e., for it to hold), in equilibrium only firm L will accept the new project. The term $(H - L)\alpha$ is the amount of wealth transferred to *new* shareholders who buy equity of firm H at the selling market price of L instead of H (true value). This inequality implies that *firm H will pass up the project if the amount of wealth transfer exceeds the project's NPV.*

What are the **empirical implications** of the inequality $(H - L)\alpha > r$?

The most important prediction of the pecking order theory is that the market value of the issuing firm's existing shares will *fall* on the *announcement* of the issuance. Let p denote the probability that the market perceives the firm as firm H and $(1 - p)$ as firm L. Before the announcement [and, given the *asymmetry*], the market value of a firm is $pH + (1 - p)(L + r)$ — recall that firm H passes up the project, but firm L does not. As a firm *announces* its equity issue (arrival of new information), the market realizes that it is firm L, and values it at $L + r$. Given the inequality $(H - L)\alpha > r$, it follows that $pH + (1 - p)(L + r) > L + r$. [Recall that (i) $H > L$; and (ii) when the inequality $(H - L)\alpha > r$ is satisfied, only firm L accepts the project.] Intuitively speaking, the announcement of an equity issue leads to a drop in the price of *existing* shares.

As a result, managers *may* decide to pass up the new project even though it has positive NPV. Basically, the underpricing *may* well be larger than the project's NPV, in which case *new* investors will capture more than the project's NPV and existing shareholders will suffer a net wealth loss (i.e., wealth *dilution* — part of existing shareholders' wealth *transferred* to new shareholders). In a layman's term, it is not worth it to get money from new investors. Specifically, *underinvestment* (i.e., rejecting a positive-NPV project) will occur when the wealth dilution exceeds the project's NPV. Thus, the significant deviation of the pecking order theory from the irrelevance theorem is the asymmetry between insiders and outsiders. It is this asymmetry that gives rise to a *pooling* equilibrium in which firms' can sell only underpriced/discounted equity, which in turn causes an underinvestment problem as mentioned above.

Firms can avoid this underinvestment problem by financing their investment projects using securities that are not subject to information asymmetry and the resulting underpricing. Accordingly, pure-equity firms will prefer internal funds or slack to issuing new equity as a means of financing their new investment projects.

It is notable that the pure-equity assumption can be relaxed, and yet, the Myers and Majluf (1984) model still holds. That is, the model can accommodate debt or any type of securities. This is simply because the model is driven by adverse selection. As long as debt or any other securities have less exposure to adverse selection, it will be preferred to equity. If one assumes slack, not-too-risky debt, and common equity being available to the firm, the model will predict that the firm will finance its growth opportunities in the following fashion:

- *first*, by *internal funds* (e.g., retained earnings);
- *then*, by external *borrowing* (again, as long as debt is not too risky); and
- *finally*, by external [risky] *equity financing* as their last resort.

Myers (1984) calls this pattern a pecking order theory of financing. This order suggests that *internal* equity is "cheaper" than *external* equity even when used to finance the *same* project.

> What factor(s) would make the internal equity be cheaper than external equity? If hybrid securities, such as convertible debt or preferred stock, are available to the firm as a financing choice, how would these securities fit into the above ordering?

As discussed above, it is the adverse selection that causes underpricing of equity. In this setting, firms characterized by greater asymmetry (e.g., firms that derive their value more from *in*tangible assets than from tangible assets) should suffer larger underpricing when selling equity. In turn, underinvestment should be more severe for high-asymmetry firms. Accordingly, the model further predicts that high-asymmetry firms accumulate more debt over time than low-asymmetry firms, and possibly more of bank debt than bonds (assuming bank debt has less adverse selection than bonds).

Since it is the asymmetry that causes underinvestment, another potential implication of the pecking order theory is that firms are likely to sell equity following an information release such as an annual report and earnings announcement. Further, issues made at such timing should be associated with a less negative stock price drop. Evidence of this pattern will provide support for the theory.

Because internal funds and risk-free debt are not subject to information asymmetry, the pecking order theory implies that new projects tend to be financed with internal funds and *low-risk* debt. When firms' slack exceeds their reinvestment needs, the theory therefore predicts that the *surplus* will be used to *reduce* their *leverage* rather than repurchasing or retiring equity. At low or moderate leverage, the cash flow deficit, if any, will then be covered entirely by *borrowing*. What is the rationale for covering the deficit by borrowing?

Recall one key feature of the pecking order theory: the asymmetry is attached to *assets in place*, i.e., the new project's NPV is public knowledge. Hence, firms with large growth options will always issue equity, regardless of their true type (whether they are H-type or L-type firms). This is because the inequality $(H - L)\alpha > r$ will not be satisfied for high-growth firms. For high-growth firms, the new project's NPV will always be larger than the size of the wealth transfer (i.e., the dilution effect on *existing* shareholders). As a result, the announcement of equity issues by high-growth firms will always lead to a rise in share price, and the market cannot identify the true type of high-growth firms. In other words, for the population of high-growth firms, there will not be a separating equilibrium in the Myers and Majluf (1984) setting.

From the above discussion, it is also interesting to note that the pecking order theory is silent on the amount of debt a firm should use. The theory only makes predictions about financing behavior, and can be viewed to imply that the adverse selection cost is much more important than, or always dominates, the tax-shield benefit of debt financing.

Trade-off Theory

[This part of lecture is heavily drawn from Myers (2003)]

Recall that in the world of MM (1958) with corporate taxes, firm value is given by:

$$V_L = V_U + \tau_c B.$$

As pointed out by Frank and Goyal (2005), the debate over the validity of the irrelevance theorem gave rise to the trade-off theory under which an interior solution is obtained such that marginal costs and marginal benefits are balanced. Indeed, the above equation clearly says that a tax shield is an important benefit of debt financing, and that

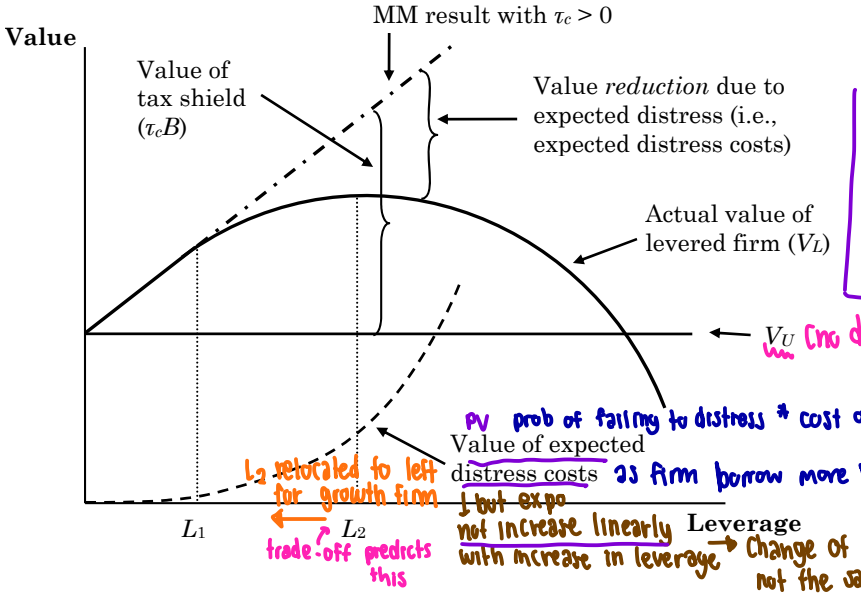
if there were no offsetting cost of debt financing, firm value would be maximized at the 100% leverage ratio.

In a nutshell, a leverage solution is reached under the trade-off theory by weighing the benefits of debt financing against the offsetting costs. In relation to the MM equation above, the basic form of the trade-off theory can be succinctly expressed as:

$$V_L = V_U + \tau_c B - PV(\text{Financial distress costs}) \quad (1)$$

It is the third right-hand-side term that makes equation (1) deviate from the irrelevance theorem. With this rhs. term, equation (1) implies the optimum, which requires that firms keep borrowing up to—i.e., V_L is maximized at—the point where $\tau_c B$ and PV (financial distress costs) are equal at the margin. Under the trade-off theory, firms therefore choose the leverage ratio by trading off the *expected* tax benefits of debt against the *expected* costs of bankruptcy and financial distress. Accordingly, the trade-off theory explains moderate and cautious borrowing.

Graphically, point L_2 in the figure below represents the optimal leverage ratio where the marginal benefits and costs of debt financing are balanced. At this point, the slope of the line representing the MM 1958 result is equal to that of the distress cost curve. In other words, the marginal increase in the tax-shield benefit is equal to the marginal increase in the expected distress cost.



Why does the value of the expected distress cost increase exponentially in leverage? In reality, why is it not a linear function of leverage? Consider the same leverage increase at two different levels of leverage: one from 5% leverage to 15%; another from 70% to 80%. At which of these two levels will the 10% increase lead to a larger increase in the default probability (i.e., probability of falling into financial distress)? As a result, holding constant the actual cost of financial distress (i.e., cost incurred when the firm actually falls into distress), the increase in the expected distress cost for a given increase in leverage is larger at a higher level of leverage.

What type of firms would tend to make moderate and cautious borrowing? Perhaps, firms with high expected distress costs? These firms would include: firms facing above-average business risk and firms with unusually valuable growth opportunities and intangible assets. Not surprisingly, the trade-off theory would predict that firms or industries with high expected distress costs should be cautious and operate at low target leverage.

Do we empirically observe this predicted pattern?

Having talked about the idea behind this theory, what could be examples of the expected "distress costs"? Where do these costs come from?

In order for us to claim that the trade-off theory is a reasonable description of financing choices, we also need to be able to determine the economic significance of the expected distress costs. Here, we could start by categorizing the costs into the *direct* and *indirect* components.

The **direct costs** of financial distress are incurred in the bankruptcy and reorganization process. Naturally, these direct costs mainly include: (i) legal and administrative costs; and (ii) shutdown and disposal costs that would not be incurred but for the actual distress. The direct costs also include prolonged operating losses due to the creditor-shareholder disputes.

How large do you think the direct distress costs may be?

Interestingly, the literature has documented that the direct costs are not large enough to make the theory work, and are notably small in relation to the *indirect* costs. A big chunk of the total expected distress costs occur even before the bankruptcy is announced (see also Andrade and Kaplan, 1998, JF, 1443-1493).

The **indirect costs** of financial distress are mainly attributable to agency costs arising from *debtholder-shareholder* conflicts of interest, i.e., moral hazard in the debt contract where debtholders are less informed than shareholders. The existence of these agency costs of debt basically boils down to the call-option characteristic of common equity as originally recognized by Black and Scholes (1973, JPE) and debtholders holding fixed claims with claim priority in the firm.

What does it mean by the call-option characteristic of common equity?

The first source of the indirect cost of financial distress is **risk-shifting**. When there is a material amount of debt on the firm's balance sheet (i.e., when the default risk is material), shareholders are likely to shift to riskier operations, or simply invest in riskier assets. Specifically, once the debt contract is signed and shareholders receive the borrowing proceeds, they have incentives to invest debtholders' money in assets that riskier than what was expected or agreed in the signed debt contract.

Why would shareholders want to shift risk? How would risk-shifting make shareholders better off and debtholders worse off? Consider two assets with the

same cost price and expected payoff, but difference asset-specific variances. With random probability, Asset A yields THB 9k and THB 11k, and Asset B yields THB 2k and THB 18k. Discernibly, A and B have the same systematic risk (how so?). Suppose the amount of limited-liability debt in the financing of A and B is THB 7k. In this setting, the expected payoff for the debtholder is 7k from A, but 4.5k from B. For the shareholder, the pattern reverses. After paying off debt, the shareholder's expected payoff from A is 3. With limited liabilities, however, the shareholder's expected payoff from B is 5.5. Obviously, the shareholder has an incentive to produce A to the debtholder as collateral in the debt contract, but actually invest in B once the debt contract is signed and loan money given to the shareholder. As the shareholder shifts from A to B, she gains 2.5 which comes from the debtholder's loss worth 2.5. How would the shareholder's risk-shifting incentive (i.e., probability of risk shifting) change if the amount of debt becomes THB 5k and THB 2.5k? What if A and B are financed with pure equity – how much of the shareholder's risk-shifting incentive still remains?

prob of underinvestment↓ → value of firm↓

In response to shareholders' incentives to shift risk (i.e., expected risk-shifting), debtholders may: (i) charge a higher interest rate; and/or (ii) impose more restrictive debt covenants, which takes away the firm's financial flexibility in investing risky assets; or (iii) refuse to lend altogether if the risk-shifting incentive is very severe.

as compensation

hold asset constant ; mean & variance constant
larger debt (RHS) → greater leverage → greater incentive to deviate from contract

How do these consequences of risk-shifting translate into the expected distress cost in the trade-off graph above? Recall that the expected distress cost can be defined as the product of the distress/default probability and the actual distress cost.

exponentially increasing expected distress cost
prob of underinvestment ↑

same EBIT → conflict of interest

large enough
bcs of debt in balance sheet

Another important source of the indirect distress cost is the debt overhang problem. With material debt in the firm's capital structure, shareholders may forego a new equity-financed positive-NPV capital investment project. That is, shareholders lose incentives to invest even in a profitable project. Because debtholders are better protected, such an investment (once made) creates value for them.

reject

⊕ NPV project

add good quality project
↓
improve quality of EBIT
↓
debt holder benefit from this

mean
high return, low risk

debtholder annoy shdr → get hand on EBIT first

How could such an investment create value for debtholders more than for shareholders? What is the mechanism?

remaining goes to shdr

bad stage of nature
⊖ EBIT < interest expense
: firm default

leverage is big

debt ins
add good NPV project
shdr wealth ↑

large debt
↳ shdr lose good project to debtholder

unlevered CF in valuation

entire NPV of project transfer from shdr to debt holder
↓
benefit from this

Gains to debtholders effectively act like a *tax* to shareholders. Debtholders stand in front of shareholders in terms of claim priority. This particular problem is known as the 'underinvestment' or 'debt overhang' problem (Myers, 1977).

under investment problem

larger
larger leverage ↑

is conflict of interest

How does underinvestment in risky projects translate into the expected distress costs?

↑ firm cannot afford this ⇒ in press conference, MD&A

cost to shdr can be huge

The real-world existence of moral hazard in the debt contract tells us that even a *small* threat or probability of default can create economically significant agency costs of debt. Together with the direct costs, agency costs of debt serve as an integral part of the trade-off theory. These costs provide a theoretically credible counterweight to $\tau_c B$. By structure, once again, the agency costs of debt are likely to be much more economically significant than the direct costs of distress, i.e., bankruptcy costs.

key

The agency costs of debt also give us a clue why *growth* firms tend to use more equity than debt, i.e., low leverage is optimal for growth firms.

> Why should shareholders in a growth firm prefer low debt? Why would underinvestment be a problem for growth firms, but not a serious problem for mature firms? For lenders, would growth options give them high-quality or low-quality collateral? How feasible is it for lenders to force shareholders to exercise the firm's growth options? As a lender, would you lend money to a growth firm based on its management promise to "invest in all positive-NPV projects"?

The indirect costs of distress also include, i.e., expected distress also leads to, a loss of business or trades. A recent example is the impact of Enron's financial distress on its energy-trading business. Enron's trading volume fell sharply as its debt rating fell below investment grade. [Would you enter into a contract if the default risk of the other party was high?] A potential loss of specialized human capital is another indirect cost of distress. [Would you be willing to work for a firm facing a threat of default?] This consideration could be most important for high-tech growth firms.

Now, it is useful to look at the main stylized facts about (i.e., **known empirical evidence** on) the trade-off theory. There seems to be an agreement in the literature on a few general factors that appear to explain leverage across firms. Large safe firms with tangible assets tend to borrow more than small risky firms with mostly intangible assets. Firms with high profitability and valuable growth options tend to borrow less. These empirical observations are consistent with the trade-off story.

However, there are also enough wrinkles in the empirical literature to cause some concern. Many *profitable* firms with *good credit ratings* are observed to operate at *low* leverage. Given the theoretical $\tau_c B$, the theory dictates that shareholders should exploit it. In this case, what we should observe is profitable firms borrowing more.

In addition to the above, the trade-off theory also implies that firms on average should or try to operate at their target or optimal leverage ratio. Absent the frictions in capital markets, we should therefore observe all firms operating at their target leverage ratio (why?). If, due to frictions, immediate adjustment to the target leverage is costly, however, the theory implies some target-adjustment specification.

Agency Theoretic Explanation of Capital Structure

In the above analyses of implications of adverse selection and moral hazard in the debt contract, it is implicitly assumed that there is no moral hazard in employment contracts (i.e., managers act in the best interests of shareholders). However, there is no theoretical reason why this assumption should systematically hold in reality.

An example of agency theoretic explanations is Jensen's (1986) Free Cash Flow problem. In a nutshell, managers have incentives to spend shareholders' cash in pursuit of their personal interests. Alternatively, they are simply not careful when making investments (i.e., wasting corporate cash). Given such unobservable/unverifiable actions, debt can serve as an effective device for disciplining bad managers.

How can debt discipline managers' decisions? Importantly, how can this disciplinary role of debt be integrated into the more encompassing trade-off theory?

It is important to note that the Free Cash Flow theory does not predict at what level of leverage which kind of firms should operate. Instead, it attempts to describe the outcomes of leverage.

The shareholder-manager agency problem can also lead to a financing policy under which it is optimal for firms to maintain free cash flow. As Stulz (1990) shows, some slack can be beneficial to shareholders even if it is one form of free cash flow. Assuming that their perquisites increase with investment, managers always have incentives make investment even if it has negative NPV. With shareholders rationally anticipating moral hazard, managers therefore cannot credibly convince shareholders that the firm's cash flow is *truly* low and insufficient to finance all of the positive-NPV projects. However, shareholders want to ensure that all positive-NPV projects are exploited. To avoid underinvestment, it is therefore optimal for shareholders to leave slack in the firm when there are good investment opportunities facing the firm. Despite moral hazard, this prediction is in line with the Myers and Majluf (1984) model.

How do shareholders know that the firm has good growth opportunities? If the firm's has poor investment opportunities, on the other hand, shareholders will want the firm to issue debt. Debt reduces the amount of resources under managers' discretion, and hence, the slack available for making investment. As a result, increasing debt will reduce overinvestment by managers. With moral hazard in employment contracts, as shown in Stulz (1990), financing policies therefore can reduce the costs of under- and overinvestment by influencing resources under managers' discretion. For individual investors, one important question is what managers tend to do when having a large amount of corporate resources under their discretion. The news scoop below [Oil conglomerate sets its sights on US acquisitions : Bangkok Post : December 4, 2014] gives interesting food for thought.

From the news scoop, "He said the *strong financial position* of PTT, which . .. , left it *a good position* to take advantage of investment opportunities". Also, "The company and its units plan to *spend $30 billion* in the five years through 2018, Mr. Wirat said." Similarly, "It has pledged to spend $177 billion by 2030 to increase oil output, partly through acquisitions abroad." Recently (in April this year – i.e., 2014), PTT "agreed to pay *$1 billion in cash* for Hess Corporation's stakes in oil and gas assets, adding to its 2012 purchase of Cove Energy Plc's oil and gas assets in Mozambique *for $1.6 billion*."

Does any part of the news scoop indicate how PTT's past and recent acquisitions have affected their shareholders' wealth? Also interesting is PTT's unrelenting plan to increase its oil output in the face of declining oil prices. Does PTT have any meaningful plan to improve its oil extraction technology?

SUPUNNABUL SUWANNAKIJ

PTT Plc, Thailand's biggest energy company, is on the lookout for acquisitions in the US as slumping oil prices put pressure on drillers with limited access to new funding.

"Maybe six months down the road, if oil prices remain weak a number of operators could face difficulties, particularly in the US, where a number of small and medium-sized enterprises have been funded through speculative bonds," chief financial officer Wirat Uanarumit said on Monday.

"Funding could be more difficult to find."

Oil has collapsed into a bear market as global demand growth slows and US production rises to the highest level in more than 30 years.

In the two years after the 1997 financial crisis caused a slump in oil prices, the value of global deals surged more than seven-fold to a combined US$376 billion, Bloomberg data show.

"The lower oil price will jump-start M&A activity, because it's likely to cause some distress in the market for highly leveraged tight/shale oil producers, as they generally need an oil price of $90 a barrel to service their debt effectively," said Trenton Gaddis, a partner at Singapore's Lincoln Liquidity Pte, which advises on oil asset investments.

West Texas Intermediate crude has fallen by almost a third this year to below $68 a barrel, a decline that accelerated after the Organization of the Petroleum Exporting Countries last week maintained output in the face of a supply glut.

PTT's Mr Wirat says weak oil prices could spell trouble for smaller firms.

"The Middle East, I think, could actually withstand very low prices, but if I'm not mistaken I think shale oil and shale gas would probably need $60-70 really to break even," Mr Wirat said, declining to name any specific acquisition targets.

"If you go and look at the stock market, you'll see the share prices of some of these companies have gone down more so than others."

He said the strong financial position of PTT, which is two-thirds owned by the government, left it in a good position to take advantage of investment opportunities.

The company and its units plan to spend $30 billion in the five years through 2018, Mr Wirat said.

PTT is Thailand's biggest company by market value and combined with its five biggest publicly listed units accounts for 15% of the Stock Exchange of Thailand (SET) index.

Its stock has gained 28% this year compared with a 13% drop in the 75-member Bloomberg World Oil and Gas Index.

The company may face competition from larger Asian oil companies including Oil and Natural Gas Corporation, India's biggest producer.

It has pledged to spend $177 billion by 2030 to increase oil output, partly through acquisitions abroad.

Fitch Ratings last week said oil's plunge might be an opportunity for Asia's national oil companies to buy assets more cheaply.

Asian nations accounted for 33% of global crude oil consumption last year, followed by North America at 26%, BP Plc data show.

China, Japan, South Korea and India, Asia's biggest economies, must import most of their oil, leaving the onus on their oil companies, many of them state-owned, to secure supplies to bolster energy security.

PTT Exploration and Production Plc, PTT's exploration unit, in April agreed to pay $1 billion in cash for Hess Corporation's stakes in oil and gas assets, adding to its 2012 purchase of Cove Energy Plc's oil and gas assets in Mozambique for $1.6 billion.

It has expanded its investments to more than 40 projects worldwide.

Malaysia's Petronas has been Southeast Asia's most acquisitive national oil company, spending $24.5 billion since 1998 including $7.1 billion in North America, Bloomberg data show.

Total spending by PTT Group is about half that, with $2.3 billion spent in North America.

PTT shares closed yesterday on the SET at 368 baht, up two baht, in heavy trade worth 2.56 billion baht. BLOOMBERG

Recommended Reading

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