RHS of BS

Session 10 capital structure, leverage, financial mix
Financing Choices

Objective

By the end of this session, students are expected to be familiar with the common financing choices adopted by firms and their varying attributes.

Introduction

asset
↱ to finance factory (LHS of BS)

debt = debt contract
equity = equity financing contract

diff D/E mix , capital securities → source of funds

A large variety of financing alternatives is observed across a section of firms. Knowing that different financing choices have different attributes, it is 'conceivable' (or, 'likely'?) that different financing alternatives benefit different firms differently.

A certain group of firms tend to employ more debt than others. Among levered firms, some have a lot of long-term (or, short-term) debt than others. Some firms rely on hybrid financing while some others do not. Interestingly, there are quite a handful of firms that do not carry debt financing (except trade creditors) on their balance sheet at all. Empirical studies reveal that the way in which firms make financing decisions also varies across countries.

In this session, we will discuss the common financing alternatives for firms.

Equity Financing

There are different ways in which different firms can raise equity money to fund their financing needs.

not commonly raising debt by issueing bond

Naturally, firms that are *listed* on the stock exchange have more alternatives that *unlisted* firms do in raising equity financing. As will be seen below, this relation is also the case for debt financing.

their own saving
publicly tradable

In general, unlisted firms are restricted to their owners' equity capital which is not readily tradable like *common stock* of a listed firm. One immediate implication of such non-tradability is that the value of equity is notably lower in unlisted firms than in listed firms. As a result, it is difficult for unlisted businesses to raise equity to finance their new growth opportunities. However, there is another potential source of equity financing for 'some' private firms. This is known as *venture capital*. Raising equity money from *venture capitalists* is usually very expensive. Generally speaking, the firm would have to issue a lot of shares in exchange of equity money, i.e., there is a deep discount.

→ this is why private firms to go public → easier to raise equity fund

e.g. start-up (new business idea → get fund from VC

fixed claim holder (e.g. bank & collateral) don't interested in this

require lot % shdr for low fund
deep discount

equal footing
give for free

On the other hand, listed firms have several choices of equity financing, i.e., several ways to bring in equity money. Some firms raise equity money by issuing common stocks, e.g., selling new ordinary shares that rank *parri pasu* or a seasoned equity offering (SEO). On the other hand, there are firms that bring in new equity only through selling warrants to the existing shareholders, i.e., rights offerings. This pattern tells us that, even among listed firms, choices of equity financing do vary from firm to firm. As a matter of fact, an SEO is not a practical choice for every listed firm.

→ then can do placement (make public)

↳ feasible only for large firm
private sell of equity to specific group of investor

1) Risk aversion
2) Volatility → estimated by SD.
left & right tail of distribution

▸ mkt is inefficient? → not do this → need to be specific on which aspect of mkt
↳ no one capable than another one
▸ Manager <insider> try to inform investors that volatility (e.g. of factory) is not invalid?
↳ based on mkt expectation > based on manager's information set

Value of call ↑ as volatility ↑

Of course, listed firms do sometimes sell warrants (and also, common stock when the warrants are exercised) to the general public, not just the existing shareholders.

What are warrants anyway? They are options to buy the firm's shares in the future (calls on new shares).

call on
risk of equity is overestimate as well

Given the nature of warrants (i.e., value of calls), firms may prefer to sell warrants more than to sell straight common stock when the market appears to *overestimate* their risk.

by mkt
↑ LHS of BS
volatility of asset of firm
asset generate large EBIT
↳ higher value

Why might firms prefer to sell warrants when their risk is overestimated? A related and interesting issue is whether or not there is any particular type of firms that warrants might be suitable for. One can think of firm types along the growth dimension, i.e., growth vs. mature firms. The characteristics of growth firms vis-à-vis those of mature firms imply that it is the growth firms that are likely to find selling warrants optimal (i.e., a rational choice over selling straight common stock). Because growth firms are more volatile/risky than mature firms, they are likely to make more money from selling warrants. But, why would growth firms be more volatile than mature firms? Is it the equity of growth firms, or their assets, that is volatile?

value of firm = plan
factory still going even good/bad time
hold plan in & out is more volatiled

Growth vs. Mature firm
→ think about volatility

volatility of EBIT stream determine the volatility of asset, E[CFs] (PV of firm or price is volatiled)
E[CFs] revised high
↳ price ↑↑↑
value of equity volatiled follow the volatility of asset
<LHS BS & RHS BS move together>
meaning of residual claim
PV of net profit
↳ value of shdr (equity)
↳ volatile as asset
volatile (EBIT stream)
holding interest expense stream constant
"pro-forma statement"

Debt Financing remaining, pure equity firm
↳ bond valuation ~80% of all firms in the world would have bank debt on BS
most popular for debt financing

Regardless of whether the market is a bank-based or market-based economy, the most popular choice of debt financing is *bank debt*. Indeed, bank debt by far dominates the world's debt financing. not all firms can issue bond
- not see this often
private placement of bond: small group of investors invest a lot in a bond

Usually, the only choice of debt financing for unlisted or privately held companies is bank debt. On the other hand, listed firms also have the alternative of selling bonds. Bank debt is naturally *privately placed* debt. For bonds, there are both *publicly placed* issues and privately placed issues. As a matter of fact, it is only *large* listed firms that practically have the luxury of selling bonds. Nevertheless, most listed firms, regardless of their size, do carry bank debt.

What could be the factor(s) that makes the choice of selling bonds available only to large listed firms? To answer this question, it is useful to first think about what could be the economically meaningful differences between bank debt and bonds.

Bank Debt	Bonds
Both short- and long-term	Long-term only
Small amounts	Economies of scale
Privacy of trade secrets	Subject to mandatory disclosure and rating
Line of credit	No line of credit
Relatively restrictive	Better financing terms
No sweeteners	Room for special features

bond maturity started to decline
much larger
confidential
but your competitors can buy your bond share if you're listed

not good no collateral
to borrow
growth firm: prefer short maturity than long maturity
U(short) > U(long)
suboptimal for growth firm
↳ end outstanding debt quick → ST maturity
Lender not willing to lend LT but ST
don't want to stuck with this
↳ e.g. selling bonds with warrant attached for free
<firm don't have to pay debt>
investors get lower coupon rate
no free lunch
transaction will occur if there're demand & supply

must have demand & supply

Obviously, bank debt and bonds have different attributes. The differences in attribute between these two choices of debt financing certainly have important strategic implications for firms. For example, short maturity may be the preferred choice for firms that derive a big chunk of their value from growth options. Put differently, growth firms prefer short maturity and find long maturity suboptimal. Indeed, lenders may also prefer lending on short term to high-growth borrowers. Accordingly, it can be argued that, for growth firms, bank debt dominates bonds in equilibrium.

> Why might bank debt be preferred by both the lender and borrower when the borrower is a high growth firm? What could be so special about bank debt?

The newspaper article below provides some anecdotal evidence that even firms in a small non-U.S. market that issue bonds have specific characteristics, e.g., in terms of not only size, but also underlying business or industry.

Corporate bonds poised to set record

Bangkok Post
October22, 2014

Firms scramble to lock in low interest rates

DARANA CHUDASRI

New corporate bond issues are expected to hit a record high of 570-580 billion baht this year as companies jump on the bandwagon to lock in low interest rates before the trend potentially reverses in 2015, says the Thai Bond Market Association (TBMA).

Thai firms are mobilising fresh funds by issuing debt instruments. As of last Wednesday they had raised funds from the primary bond market totalling 486 billion baht for the year, said TBMA president Tada Phutthitada.

An additional 25 billion baht is expected to be launched during the rest of October.

Tada: Relatively few companies use bonds

The forecast of new corporate bond issues does not take into account banks' Basel III-compliant Tier 2 hybrid debt.

Several local banks have issued Tier 2 subordinated hybrid notes this year, including Tisco Bank, which sold 2.4 billion baht worth; Thanachart Bank, which earmarked 13 billion baht; Krungthai Bank, which sold US$700 million in 10.5-year bonds at 5.25% in May; and CIMB Thai Bank, which issued 400 million ringgit (4 billion baht) worth.

New corporate bond issuance in Thailand peaked at 509 billion baht in 2012.

Mr Tada said the new corporate bonds issued this year had been fairly balanced between long- and short-ended notes, with 14 issuers raising funds from short-term paper and 16 from longer maturities.

Moreover, some corporate bonds were floated by new issuers.

"Corporate bonds have high growth potential, as only 18% of total listed companies have used this instrument in fundraising," Mr Tada said.

Up to now, 66 companies of the SET100 and just one of the 104 MAI-listed firms have raised funds from corporate bond issuance.

"Eight of the 26 SET-listed sectors have never issued bonds, and more than half of listed property developers have never tapped funding from the bond market, even though the sector has raised the highest amount from bond issuance," Mr Tada said.

He said the low-rate environment should hold sway through the first quarter next year, prodding more companies to issue debt instruments.

The Bank of Thailand's benchmark interest rate has been left at 2% for four straight meetings.

The rate-setting panel considers the current rate accommodative to economic growth and fears further easing would worsen already-high household debt.

As of Sept 30, total bonds outstanding stood at 9.19 trillion baht, up 2.2% from the end of last year.

It is also interesting to note from the news article that the new issues have been "fairly balanced between long- and short-ended notes, with 14 issuers .. .". This quote appears to give an impression of randomness. But, do, and how do, issuers of short-term and long-term maturities systematically vary in characteristics? Do you think this theory-oriented question is important for practitioners?

For firms that issue bonds, a variety of the terms and conditions are also widely observed. Some firms sell straight bonds where the bonds cannot be called (redeemed) before the predetermined maturity. There are also firms that sell bonds that are callable

*coupon rate is pricing valuation of bond
(denominator

call options are held by issuer
they can call back or redeem bond before maturity

issuer not sure whether rating will improve
having ability to end the bond maturity
call the bond back on contingent basis

(callable bonds). Among callable bonds, very often there is a clause that specifies the period of time from the point of issuance during which the bonds cannot be called (call protection period). all most all corporate bonds have this, in general
issuer cannot call the bond back (e.g. 18 months or first 36 months)

Why would some firms want to have the option of calling back their bonds? Is the ability to shorten their bond maturity on a contingent basis important to firms? If so, why would it be important?
→ firm can refinance at lower rate in the mkt
→ rate changes in mkt → to save on coupon → call back bond and issue bond again to get better rate
Expected decline on mkt rate
Creditworthiness better → lower coupon

Both are sources of finance → fund factory → LHS of BS

Equity vs. Debt Financing

The most common choices of financing are equity and debt. More importantly, what are the important differences between these two types of financing?

very important economic implication on investment decision
debt holders get their hand on firm's operating income first
EBIT
− Interest
Net profit

from net inc
cash dividend
can lead to financial distress

EQUITY	DEBT
Residual claim	Fixed claim (debt claim)
Management control (can vote)	No management control (at best $\boxed{\text{covenants}}$) (control up to this)
Lowest priority on cash flows	High priority on cash flows
Dividend not tax-deductible	Interest payments tax-deductible
Infinite life	Fixed maturity

** diff in CF authority → affect decision to fund
e.g. if some financial ratios hit threshold value
before tax → interest exp can act as tax shield

Hybrid Financing
(Combination of Debt and Equity)

Hybrid financing is the choice of financing that has the characteristics of both equity and debt financing.

There is also an interesting pattern of financing choices. As firms grow and move through various stages of their life cycle, their (1) cash flows, (2) financing needs and (3) risk exposure vary and generally follow *fairly predictable patterns*. Generally, firms go through four main stages during their life cycle: *Start-up*; *Growth*; *Maturity*; and *Decline*.

demand exceed supply at one time

? profit — poor CFs ← high risk & volatility — sales: low, expenses: high } then increase sales, growing prospect

(1) Start-up: In most cases, business success at this stage is still largely a *question mark*. Start-up firms are generally characterized by *high business risk* as their cash flows are highly uncertain. Due to their notably high business risk, start-up firms tend to carry very *little debt* in order to keep their *financial risk* to the minimum. More precisely, the operating cash flow quality of firms in this phase is low.
can it survive?
low mean, high variance
cannot really sell anything

How can the term 'cash flow quality' be defined? Perhaps, we can resort to the mean-variance framework. For a given period *t* on the cash flow timeline, a high-quality expected cash flow is one with a high mean and low variance. The opposite holds for a low-quality expected cash flow.

high mean, low variance } better quality = low risk, high return } best risk-return combination give high utility
from LHS of BS
* MV criterion

internal CF < reinvestment needs
(big cash requirement

high mean, high variance

* As sales↑, from lose to breakeven
‖
high growth

* expand capacity to sell more but don't have enough cash
↓ if don't do now, competitors will do → lose opportunity
decision: expand now

* firm value comes from potential of existing branches
+ income from new branches
(but new branch is not estimated yet, only plan)

Growth: Once firms have *initially* succeeded in attracting customers and establishing presence in their product market, they generally find large growth opportunities in front of them. Due to the large growth, their internally generated cash flows typically lag behind their *reinvestment* needs. Also, their value mostly derives from uncertain growth options. Naturally, their business risk still remains relatively high. Growth firms therefore tend to be careful in keeping their financial risk under control. Is the quality of growth firms' expected cash flow likely to be typically high or low?

mean of EBIT low bcs of low revenue

Moreover, their low or negative earnings (typically hovering around the break-even level) also mean that the tax benefits of debt financing are likely to be non-existent. Given their poor earnings, why are such firms labelled as 'growth' firms?

good quality
↑ EBIT
High mean,
low variance

uncertainty ↓ → reinvestment need become small → already have a lot of CF
can borrow too at better rate
bcs good quality EBIT

understand demand more as we have more info
expect growth (slower) at GDP level (economy)
expected growth of economy

Maturity: As growth starts to slow down, two common patterns emerge. First, *earnings* and *cash flows* will increase rapidly, reflecting past investments. Secondly, as growth levels off, the *reinvestment* needs will decline (slower growth, not negative growth.) As free cash flows start to become in surplus, the *business risk* also correspondingly declines. Because of the relatively large earnings and low business risk, firms can now afford to exploit the tax benefits of borrowing. In other words, mature firms can bear greater financial risk. Is the quality of mature firms' expected cash flow likely to be typically high or low?

- e.g. Nokia

not just -Δ(growth), but growth < 0

Decline: During this phase, *growth opportunities* start to decline (negative growth, not just leveling off). The presence of mature firms starts to be overshadowed by their competitors'. In all probability, their internally generated *cash flows exceed* their *reinvestment needs*. Naturally, new financing is unlikely for mature firms. Here, one implication of shareholder wealth maximization is that firms in decline should be paying back their capital providers, i.e., retiring debt and buying back stock. Unless they refocus or diversify their product lines or undertake a restructuring program, firms going through this phase are effectively winding up their operations.

internal CF > reinvestment needs
⇓
new financing unlikely

- being subsidiary or part of big firm → may survive better than IPO and operate alone

What do you think would be the pattern of a mix of debt-equity employed by firms as they go through their life cycle?

Hybrid Financing

issuer is writer of call option
→ can be converted at option of bondholders

The most common form of hybrid financing is possibly convertible bonds.

call option
convert into # of shares

A convertible bond is a bond that can be converted, at the choice of the bondholders, into a fixed (pre-determined) number of shares of common stock. Thus, there are two components: the straight bond component and the *conversion option*. The conversion option is the option (call), held by the bondholders, to convert their bonds (fixed claims) into a number of shares of common stock (residual claims) at a pre-determined price/ratio.

conversion ratio

- Convertible options make the bonds convertible
- A callable, convertible issue with protection period
- Convertible issue is callable and will have call protection period = 100% — feature

- Some firms might not sell convertible bond or not sell all the time

Not all firms that issue bonds sell convertible bonds to raise debt financing. Of course, convertible issuers do not sell convertible bonds repeatedly in the sense that straight bond issuers usually sell new bonds of similar terms and conditions as their outstanding issues mature, i.e., renewing their debt.

but miss debt obligation payment will make firm's bond default → firm bankrupt

So, why do firms sell convertible bonds instead of straight bonds to raise debt financing? Why do firms not sell stock in the first place if they expect the convertible bondholders to convert their bonds into common equity?

& EBIT ∴ interest expense

if firm miss promised preferred dividend → firm will not go bankrupt (will go bankrupt anyway) same ending just diff time sequence

if firm cannot pay interest means that EBIT stream is not good means revenue is not enough to cover all costs including int exp (debt obligation)

Also popular is preferred stock (preference shares). When firms sell preferred stock to raise funds, unlike selling common stock, they are *fully* expected (though not legally obligated) to pay a periodic cash dividend. This feature is similar to debt financing. Buyers of preferred stock get only restricted voting rights at best, and usually get only cash flow rights. Similar to common equity, however, preferred stock does not need to have a maturity date. Also, preferred dividends are not tax-deductible.

Preferred stock is the financing choice that is available to both listed and unlisted firms. Possibly, preferred stock is more common among unlisted firms. Several young, high- (high potential) growth unlisted firms, especially in the U.S., sell *convertible preference shares* to raise financing. Specifically, when unlisted firms raise money from a venture capitalist, they commonly sell convertible preference shares. This is because venture capitalists prefer to hold convertible preference shares as securities of their investment in the firm.

can convert to common equity

doesn't expect fix income

Why might it matter to venture capitalists that they hold preferred stock instead of common stock or debt securities in a business venture?

want equity, success → get a lot
want equity that put they in front of other owners
(in times of liquidation → they get their claim first

What to Take Away?

From the above discussion, we can safely say that there are several financing choices, each with different attributes. These attributes may in turn serve the financing needs of firms facing various constraints in different ways.

As a result, it is possible that the choice of financing affects the wealth of shareholders, who are the ultimate owners of the firm. Put differently, the choice of financing that minimizes the cost of capital may well vary across firms.

Could there be any condition under which the choice of financing does not affect shareholders' wealth *ex ante*? & from where

To know whether firm should borrow more/less → need to understand reference point first → know how thing look like in general

Recommended Reading

Fama, E.F., 1985. What's different about banks? Journal of Monetary Economics 15, 29-39.

Modigliani & Miller (1958) irrelevance theory

LHS factory asset | RHS ↳ source of fund

people agree on a certain value of firm ⇒ mkt value
The mkt value of any firm is independent of its capital structure
In other words, two identical firms will still have same total mkt value

e.g. if MK borrow/change capital structure, would it change taste of soup? NO!
LHS of BS has nothing to do with source of fund (RHS)
asset value comes from CF stream

APPENDIX

Growth firms are more volatile than otherwise identical mature firms. Growth firms are firms that derive most of their value from growth options assuming exercise. That is, the value of growth firms largely comes from their future investment opportunities, i.e., future investment plans that are assumed to have been accepted. Despite their low current earnings, the market gives growth firms a high price, and hence, a high PE ratio. On the other hand, mature firms derive most of their value from assets in place, i.e., existing expected cash flow streams, or projects that have actually been accepted and have begun to generate cash flows. Naturally, mature firms have a low valuation ratio relative to growth firms.

How could the difference in the sources of cash flows between growth firms and mature firms lead to the difference in asset volatility (and hence, share price volatility) between them? Why are high-PE firms typically associated with high risk and low-PE firms with low risk?

What is it that makes a price change? A surprise? For growth firms, a positive surprise leads to an entire investment plan being added to their valuation: the demand will be high, and let's go ahead with the project. By the same token, a negative surprise leads to an entire investment plan being postponed, usually until 'further notice'. As an investment plan gets shelved, it naturally gets dropped out from the firm's valuation. Accordingly, the valuation, and hence, price of growth firms moves up and down by the magnitude of the present value of the entire project. Recall that mature firms derive their value from existing cash flow streams. Surprises imply that mature firms will be selling more or selling less of their existing goods and services. The impact of a positive (negative) surprise is to make a mature firm's cash flow stream get revised upward (downward), instead of adding an entire project or deleting it from the firm's valuation. As a result, a given surprise affects the valuation, and hence, causes price movements, of growth firms differently.