

Part 9. The Basics of Corporate Finance

The essence of business is to raise money from investors to fund projects that will return more money to the investors. To do this, there are three financial questions the company must answer: how much money should they raise, how best to raise the money and then how to return the profits to the investors. We already know the rule for determining how much money to raise. The company should try to raise enough money to fund every project with positive NPV. This section covers the other two questions.

The financing options available to a company can differ depending on the size of the company. A small business is going to have fewer choices about how to raise funds than General Motors. Although General Motors has its own problems, it can't raise \$100 million from family and friends. In this section we will look at options for large corporations, who are assumed to have good access to financial markets. The next section will look at some of the special problems that face small businesses and start-up companies.

Large corporations: What are their financing options and what do they cost?

There are two basic ways for a company to raise capital: equity and debt. Equity investors get ownership in the company but do not have a guaranteed return. Issuing stock is the most obvious way to raise funds using equity. Retained earnings (when the company uses its own earnings to finance projects) are also an equity investment. With retained earnings, the company takes money that could have been returned to shareholders and uses it to fund capital projects. Effectively, it is using the shareholders' money to fund these projects, increasing the value of their equity holdings. Because of this, we should think of both retained earnings and newly-issued shares as examples of equity financing.

Debt financing is borrowing; investors get a promise of fixed future payments, but do not have any ownership. Borrowing can be done through a financial intermediary, such as a bank, or directly by issuing bonds.

There is a third category of assets, sometimes called hybrid securities, that is between equity and debt. Examples include warrants, convertible bonds and preferred stock. They all have some features that seem like equity and other features that seem like debt. Firms are finding it increasingly attractive to use these hybrid instruments; however, they are an advanced topic and we will not discuss them here.

What are the costs of the options?

The mix of debt and equity that a company uses is called its **capital structure**. For example, if a corporation has assets of \$100,000 that were financed as follows,

Debt	80,000
Equity	20,000
Total Capital	100,000

we would say that its capital structure consists of 80% debt and 20% equity.

Later on, we will look at how managers decide on the capital structure that is best for their company; for the moment, we will take it as given. The capital structure that a firm wants to have is called their **target structure**. Ideally, firms would like to keep their capital structure close to their target structure when they raise funds. One way to do this would be to raise funds from each source according to their target weight, so if our hypothetical company needed to raise \$10 million it could raise \$8 million from debt and \$2 million from equity. However, there can be fixed costs associated with each type of capital used and so, in practice, companies will often raise funds from only one source at a time, but will tend to mix types of funding over time to keep close to the desired capital structure on average.

Each source of capital has its own cost. The cost of debt is basically the interest rate that the company has to pay on that debt. In order to issue equity, investors must expect to get a sufficient return on their investment, given the risk of the company. The required return on the investment is the cost of equity.

The cost of capital for a company that uses several different sources of capital is the average of the individual costs. Since there may be different amounts of each type of capital, we calculate it as a weighted average, with the weights being the share of that type of capital in the targeted capital structure.

The Weighted Average Cost of Capital Formula

To determine the weighted average cost of capital you follow 4 steps:

1. Determine the target amount of each type of capital
2. Determine the weights
3. Determine the cost of each type of capital
4. Calculate the weighted average

For the moment, we do not know how to do steps 1 and 3; however, given that information, we can do steps 2 and 4. The table below gives the amount of each type of capital for the company (Step 1). We can then determine the shares or weights of each type of capital (Step 2). The third column gives us the information about costs (Step 3). We then calculate the weighted average cost by multiplying the cost of each kind of capital by its weight and then adding the costs together.

	Value (given)	Weight	Cost (given)	Weight×Cost
Debt	80,000	0.8	8%	6.4%
Equity	20,000	0.2	12%	2.4%
Total Capital	100,000	1		8.8%

The weighted average cost of capital for this company is 8.8%.

So far, we have assumed that the cost of capital isn't affected by the amount of capital the firm is trying to raise. Sometimes this may not be true. If a firm was issuing a lot of debt, it might increase the probability that the firm could not repay all the debt. This would increase the risk of the firm's debt, and so increase the cost. In these situations, we would want to look at the

marginal cost of capital, that is, the cost actually faced by the firm given the amount of additional capital that it wants to raise.

How to determine the target value and costs

In a later section we will look at how companies decide on the best mix of debt and equity. However, if we assume that the company is currently around its target capital structure, we can simply look at how much capital it has of each type.

Book vs. Market Values

Book values of debt and equity are usually based on historical values. However, for capital budgeting decisions, we need to determine the cost of raising money now, not the historical cost, so it is better to look at the current values of the sources of capital. To do this, we look at what the capital sells for in the market.

Example: When the firm was first created four years ago it issued 100,000 shares at \$20 per share. The book value of equity is \$2,000,000. The shares currently sell for \$40 per share. The *market* value of the equity is the value of the shares at current prices, in other words \$4,000,000. The firm also borrowed \$10,000,000 at 10%. The 10-year bonds had a face value of \$1,000 and paid coupons semi-annually. It is now four years later and interest rates on this kind of bond have gone down to 8%. We can find the bond price using ($n = 12$, $pmt = 50$, $fv = 1,000$, $i = 4$) so the $p_v = 1,094$. Since there are 10,000 bonds outstanding and each bond sells for \$1,094, the total *market* value of debt is \$10,940,000.

The Cost of Debt

The cost of debt is the return the issuer has to offer investors to get them to hold the debt. This is the yield to maturity of the debt. If the firm has debt outstanding, it can find its cost of debt by looking at the yield to maturity of its bonds in the market. If the firm does not have debt outstanding, it should look at the yield to maturity of bonds issued by similar kinds of companies (with the idea that similar companies will have similar risk, and so the bonds will have the same risk premium).

We need to modify this cost to take into account two other factors. Floatation costs (the costs of issuing the debt) will increase the cost of debt. Usually these costs are not too large and so we will ignore them here. The second factor is that interest is tax deductible, and so the use of debt shields some of the company's earnings from taxation. This is a benefit of using debt, and so should reduce its cost. If the corporate tax rate is 30%, and a firm has \$100,000 in interest expenses, the cost to us of financing through debt is \$100,000 less the \$30,000 value of the tax shield. The formula for the cost of debt is given by

$$\text{Cost of Debt} = k_d(1-T)$$

where k_d is the return to debt and T is the tax rate.

Example: A firm's bonds currently sell at a yield to maturity of 8%. The relevant corporate tax rate for this company is 35%. The cost of debt is $0.08 \times (1 - 0.35) = 0.052$ or 5.2%.

The Cost of Equity

To determine the cost of equity we need to ask 'what rate of return will investors require to invest in our company?' One way to do this is to recognize that investors need to earn the base interest rate plus some extra amount for the risk of the investment. Since equity investments imply more risk than debt investments, we know that equity investors need a greater return than bond investors. This gives us a formula:

$$\text{Cost of Equity} = \text{Bond Yield} + \text{Additional Risk Premium}$$

Notice that you use the bond yield, not the bond yield adjusted for the tax shield (new tax laws have changed how dividends are treated at the individual level, but we will ignore the effect of individual taxes for a moment)

How do you measure the risk premium? The firm needs to look at financial markets and see what return investors expect when they make investments of equal risk. Similarly, we could look at the relationship between expected returns and risk in equity markets and use this to calculate the necessary expected return for stock in our company. We will leave this task for a future course.

Cost of Retained Earnings

Retained earnings are the cash that company has. While this seems like "free" financing because it doesn't have to be raised in the market, it does have an opportunity cost. If the firm did not use this money for financing it could return it to the shareholders. In other words, using retained earnings is a form of equity finance because it takes money from shareholders. Since it equity finance, it should be priced at the cost of equity.

Firms seem to have a preference for retained earnings to fund investments, for a variety of reasons. Retained earnings are actually a little bit cheaper than new equity financing since the firm does not have to pay the cost of issuing shares. In addition, outside investors may not have good information about the prospects of the firm, which would make them hesitant to invest in newly-issued equity

The downside of using retained earnings is that it allows the firm to invest shareholder's money without having to convince investors that it is a good idea. If the returns to the project do not exceed the cost of capital, it will be hard to sell shares or bonds to skeptical investors. However, if firms can use cash they have on hand, they escape the discipline imposed by the market.

The Cost of Hybrid Securities

We can use the same techniques for any security. To determine the current capital structure, look at the market value of the outstanding securities. To determine the cost of a particular type of capital, ask 'What return does this security have to offer in order to get investors to hold it?'

Detailed Example of Calculating the Cost of Capital

The Pacific Company has raised funds from both equity and debt. Initially, it issued 1m shares at \$11/share. It also issued 5,000 bonds 10-year bonds at a 7% coupon rate (paid semi-annually) with a face value of \$1,000. At a 7% market rate, the price of the bonds was \$1,000.

Total equity financing is \$11 million, while total debt financing is \$5 million, for \$16 million of total capital. Since the book entry was made at the initial market values they are the same. Capital structure is 69% equity and 31% debt.

Five years later, both the prices of the shares of stock and interest rates have changed so the market structure may differ from the book structure. We look at the market and find that shares are currently selling for \$13, which means that the market value of equity is \$13 million. Bonds are now selling at 7.6%, so that the price is \$975 and total debt is \$4.9 million. The capital of the firm at market prices is \$17.9 million; 73% from equity and 27% from debt.

The company’s long-run financial plan is to target a capital structure of 70% equity and 30% debt. The current structure is close enough to the target structure that it doesn’t need to make adjustments to its financing.

We will calculate the cost of capital assuming the 70/30 mix. To find the cost of capital we need to know the interest rate on our bonds, the corporate tax rate, and the risk premium for our stock. From the market, we see that our bonds are offering a yield of 7.6%. We will assume that the corporate tax rate is 30% and that our stock has an expected yield of the “bond rate” + 5%.

We add together the debt and equity components of our WACC:

$$\begin{aligned} \text{Debt Component} &= (\text{debt cost})(\text{debt share}) = 7.6\%(1-.3)(.3) = 1.60 \\ \text{Equity Component} &= (\text{equity cost})(\text{equity share}) = (7.6\%+5\%)(.7) = 8.82, \end{aligned}$$

giving us a cost of capital of 10.42.

When evaluating the project the company would use a cost of capital of 10.42 to see if the NPV of the project is positive. When they actually fund the project, it is unlikely that they will raise money with 70% equity and 30% debt. They might use retained earnings first (the next section will explain why) and then shift to debt to make up the remainder. The expectation would be that other projects might be financed differently (maybe all from issued equity) but that on average they would get the 70/30 split. If not, the company may then want to restructure its financing.

Capital Structure and Leverage: Determining the Best Capital Structure

Up to this point, we have been treating a firm’s capital structure as fixed. However, a firm can choose different capital structures. Should a firm use more equity or more debt? We’ll take up that question now.

Let’s start with a hypothetical investment decision. Say that you can buy an apartment building for \$800,000. You expect that earnings from the apartment building will be \$80,000 per year after expenses. It also turns out that we happen to have \$800,000 that we can use to buy the apartment building (lucky us). However, we could also borrow the money from the bank at 6% interest. Should we use our own money, or borrow the money from the bank?

The answer depends on what return we can get elsewhere. Let's run some numbers (for the moment, we will ignore uncertainty and taxes, although they will reappear shortly). If we fund this completely by ourselves then we get a return of 10% ($80,000/800,000$) for a total income of \$80,000. If we fund the purchase of the apartment building completely from the bank we get \$32,000 plus whatever return we can get on our investment (the \$32,000 is calculated as the \$80,000 of earnings less the \$48,000 interest cost for a loan that we continually roll over)

(Case 1) If the alternate investment is to put our money in the bank at 5%, then we would get \$32,000 + \$40,000: the \$32,000 from the apartment building and the \$40,000 from earning 5% at the bank. The total is \$72,000, which is less than what we would earn if we bought the apartment building with our own money.

(Case 2) If the alternate investment for us is to buy another apartment building, then we would get \$32,000 (from the first apartment building) plus \$80,000 from the second building. The total is \$112,000; so in this case, it is better to borrow the money from the bank.

This illustrates the basic principle about when to use leverage (leverage just refers to how much debt - relative to equity - you are using). If the return we can get on investments is greater than the cost of borrowed money, using debt increases our expected return. If the return we can get on our investments is less than the cost of borrowed money, using debt decreases our expected return.

Now, we add some complications. Even if it is better to use *all* debt, we probably wouldn't want to, and the bank probably wouldn't let us. With debt, we are on the hook to make interest payments every month, and we may want a little leeway if some of the units do not rent right away and we find ourselves temporarily short of cash. If there is uncertainty about our having enough cash to make the interest payments, we may want some equity financing to provide a cushion. (The bank will also want to see some equity financing to make sure that we can always make the interest payment, and to give us a greater stake in the success of the investment.)

This example illustrates the two primary issues associated with the choice between equity and debt. Using debt can increase a company's expected return but it will also increase the risk associated with that return. We can see this more directly if we look at the effect of debt on a company's return on equity. Say that a company needs to raise \$1 million for a one-time project, and it can either use all equity or a mix of 1/2 equity and 1/2 debt. The interest rate on debt is 10%, and again we exclude taxes. There is some uncertainty about earnings: they could be low (\$0) with a 50% probability or high (\$0.4 million) with a 50% probability.

The table below shows the outcomes under the two financing assumptions and for high and low earnings.

	No debt		1/2 debt	
	Low	High	Low	High
Earnings	0	0.4	0	0.4
Interest Cost	0	0	0.05	0.05
Net Earnings	0	0.4	-0.05	0.35
Equity Used		1.0		0.5
ROE	0	0.4	-0.1	0.7
Expected ROE		0.2		0.3
Standard Deviation of ROE		0.2		0.4

While the '½ debt' strategy reduces net earnings because of the interest cost, it *increases* the average return on equity since it only uses half as much equity as the 'no debt' strategy. The problem is that changes in earnings now have a bigger effect: When things go well, ROE is higher, but when things go poorly, ROE is lower. This shows up as the higher standard deviation of ROE under the '½ debt' strategy.

Modigliani-Miller

Using leverage allows the firm to have a higher ROE, but only at the cost of more risk. Is the higher return worth the extra risk? In other words, how does the mix of equity and debt affect the owners? Surprisingly, at some level it shouldn't matter. This was the insight of Franco Modigliani and Merton Miller in a famous argument that became known as the MM proposition. What matters for a business is the cash flow it can generate. Capital structure is just about how the cash flow is divided up: The owners of the debt get the interest payments, while the owners of the equity get whatever is left over. The value of the firm is given by the total amount of the cash generated by the firms. MM argues that, under certain conditions, how the cash flow is divided up doesn't change the total amount of cash, and so it doesn't matter what the mix of the debt and equity is.

We know from our discussion of leverage that an increase in debt increases the risk and expected return of the equity. We will skip the details of the proof of the MM proposition, but basically it shows that as the use of debt increases, equity investments in the firm become riskier, and the cost of equity financing increases, but the share of equity financing falls just enough so that the average cost of capital is unchanged. Since the cost of capital is unchanged, there is no effect on the firm.

While MM says that it doesn't matter whether a firm uses equity or debt, the proposition also depends on some strict assumptions. If the assumptions do not hold, the amount of debt a firm has can affect the cost of capital.

The tax benefits of debt

The point of MM is that it doesn't matter how the cash flow is divided as long as the division doesn't change the total amount of cash. However, if we introduce taxes, how the cash is split up *may* affect the total amount. In the US, tax distortions show up in two different areas. On the corporate side, interest is deductible from earnings when calculating corporate income taxes. Debt shields income from taxes, reducing the amount that goes to the government, and increasing the amount left over for investors. On the household side, dividends and certain capital gains are currently taxed at a different rate than ordinary income (although the law on this changes from time to time) which makes this kind of income more attractive.

To see the effect of a tax distortion, we can compare earnings under three different schemes: All equity, ½ debt when debt is not tax deductible, and ½ debt when it is deductible. For this example, initial capital is \$1,000,000, the interest rate is 10%, the corporate tax rate is 35%, all individual income is taxed at the same rate, and earnings are generated each year.

	All Equity	½ debt, ½ equity not deductible	½ debt, ½ equity deductible
Operating Income	200,000	200,000	200,000
Interest Deduction	-	-	-50,000
Tax	70,000	70,000	52,500
Interest Cost	-	50,000	50,000
Equity Income	130,000	80,000	97,500
Total Income	130,000	130,000	147,500

Total income is the amount paid to debt and equity investors. Shifting towards debt (the second column) does not change the total amount of income, it just means that debt holders get a larger share. However, when debt is deductible, it shields some income from taxation and so increases the total amount of income.

The value of the extra debt is given by $(\text{corporate tax rate}) \times (\text{interest rate}) \times (\text{debt})$ which in this case equals \$17,500, the increase in total income.

Lowering the tax rate on dividends works in the other direction, making debt less attractive. On net, given the current tax rates, the tax advantages of debt outweigh the tax disadvantages, although the difference is not large. However, even with this tax advantage, firms might not want to use all the debt they can. One concern is that debt obligates a firm to make regular interest payments. If a company uses a lot of debt, a temporary shortfall in earnings could lead to the company not being able to make its interest payments, forcing the company to take drastic action or go bankrupt.

Bankruptcy costs associated with debt

The reason that companies raise funds is usually to buy assets, such as buildings or machinery, in order to produce and sell goods. Often these assets are very illiquid and cannot be easily sold, or can only be sold at a reduction in value. For example, Burger World could sell its restaurants to Pizza Delight, but the value of the restaurants to Burger World is more than the price Pizza Delight would be willing to pay. The restaurants reflect an investment by Burger World in kitchen appliances better suited for burgers than pizza, and all the structures are designed with the corporate style in mind. The assets are specific to Burger World and have less value with other companies. This is true for lots of corporate assets, and not just the tangible ones. Employees will have spent time learning the hamburger industry and how things are done at Burger World, and some of these skills will not be useful or valued elsewhere. The employees also have information and relationships with customers and suppliers that might not be easily rebuilt if lost.

The existence of these specific assets means that if the company goes bankrupt it will lose value. Having debt increases the risk of a company going bankrupt as it forces the company to make regular payments or default on the debt.

To show how this works, let's walk through a simple numerical example. A company has \$2 billion of assets specific to that company and generates earnings of \$100 million per year. The assets were financed with \$1,500 million debt at 10% per year and \$500 million of equity. To

keep things simple, we will assume that there is no other use for the assets. The cost of capital is assumed to be 11% per year and we will ignore the effect of taxes.

As it is, this company would go bankrupt because it cannot make interest payments. If the company was financed with all equity it would not go bankrupt, although the value of the company is the same in both cases: the discounted value of the cash flow.

Assume that the company goes bankrupt and it is sold to pay the debtors. The new investors use the same capital structure (75% debt and 25% equity) and have the same cost of capital. We can value the company according to the discounted cash flow. A perpetuity paying \$100 million per year at a cost of capital of 11% is worth \$909 million ($100/0.11$). When the new investors buy the company, the debt holders get \$909 million and the equity holders get nothing. The new investors continue to run the company, and it continues to generate \$100 million per year. It is now a profitable company, for the new owners, as the same income stream is now funded by a much smaller investment (and the \$100 million now covers the interest cost of \$68 million)

Of course, both the equity and debt holders have lost money on their investment, but this is *not* what we mean by bankruptcy cost. The original investors really lost their money when the company turned out not to be a productive venture. In this example, there really is no bankruptcy cost (outside of any legal and administrative fees paid during the bankruptcy). The cash generated by the business is the same both before and after the bankruptcy: 100 million per year.

The major cost of bankruptcy is when the business of the company gets disrupted by the bankruptcy process, and so reduces the cash flow generated by the business. It could be because the company lost key customers or employees during the bankruptcy, or maybe because assets had to be sold off to other companies where they were worth less. In our numerical example it would mean that the company would now generate less cash, say \$70 million per year. That company would be worth \$636 million. The original investors would now get a smaller amount than if the company could be transferred to the new owners with no loss of business.

This potential bankruptcy cost is a cost of debt. The more debt a company has, the higher the risk of bankruptcy, and so the higher the expected cost.

Signaling Cost of Equity

Another way the assumptions of the MM proposition may be violated is if investors form expectations about your company based on the way you raise money. Imagine that you are the CEO of a company. You see that stock in your company is currently selling for \$55 per share; however, you have inside information about your company that tells you that it is worth much less, perhaps \$40 per share. Now would be a good time to do additional equity financing, since you can get a higher price for selling new shares now than in the future, when the information gets out. Unfortunately for you, investors also know that whenever a firm's stock is overpriced it will be tempted to issue new shares. When they see a firm issuing new shares they might conclude that the stock is overpriced and be hesitant to buy it, causing the price to fall.

Now imagine that you are the CEO of a company that thinks its stock is correctly priced and wants to issue new shares to fund an expansion. A concern would be that when you issued the new stock, investors might surmise that your stock is overpriced (even though it isn't) and push down the price. This could lead you to not want to issue new shares.

The problem is that issuing new equity signals to the market that the company believes its stock is overpriced (whether it actually is or not). Giving this signal is bad for the company and might lead it to not offer new equity. One way around this is to use retained earnings as a source of equity rather than newly issued stock. Retained earnings do not have this signaling problem (you do not gain anything from the stock being overpriced) and have the additional benefit of no flotation costs.

Tradeoff Theory of Capital Structure

The MM proposition is a good place to start thinking about corporate finance since it isolates the specific costs of debt and equity that affect the financing decision. However, we need to move beyond MM to incorporate these costs into the firm's decision.

The “tradeoff” theory of capital structure says that companies are not indifferent between using debt and equity, rather there are costs and benefits of using debt. Debt provides the benefit of a tax shield but also has bankruptcy costs. Bankruptcy costs are small for small amounts of debt, but get larger as the amount of debt increases.

A firm should decide on its use of debt by comparing the costs and benefits. The higher the level of corporate taxes, the greater the value of the tax shield, so the more debt you should use. For low levels of debt, the probability of bankruptcy is also low, so debt has little bankruptcy costs. In other words, at low levels of debt, debt is relatively cheaper than equity (adjusting for risk) and so should be used. At higher levels of debt, there is an increased risk of bankruptcy, and so the cost of debt increases. At some point, the increased possible bankruptcy costs outweigh the benefit of the additional tax shield and so the firm should not use additional debt.

Companies with greater expected bankruptcy costs should use less debt. The greater bankruptcy cost could be due to more uncertainty about earnings, which increases the probability of bankruptcy. Or it could be that the company's assets have little salvage value and therefore would be worth less if the company goes bankrupt.

Capital Structure Folk Wisdom

We can summarize long-term financing policy by a few guidelines that describe how firms behave. First, a little debt is a good thing (because of the tax shield) but you do not want too much (the risk of bankruptcy). The bankruptcy cost, and so the use of debt, should depend on how risky earnings are: Companies with stable earnings should use more debt, while companies with uncertain earnings should use more equity. Companies with a high cost of financial distress, particularly with assets specific to the firm, should avoid debt.

Firms often follow a “hierarchy” of financing: First, they look to retained earnings for financing. Retained earnings offer the benefit of no flotation costs and avoid the signaling problems of equity issuance. After retained earnings are exhausted, firms shift to debt financing. Once they reach their desired limit on debt, they shift to equity issuance.

Returning Money to Shareholders

If a firm is successful it will find itself with a positive net cash flow; it's making a profit! What should the firm do with the cash? One option is to use the cash to finance additional projects for the firm. As long as the NPV of the project is positive, and the firm wants to use equity financing, this is the best use for the cash. Investing in positive NPV projects will increase the value of the company and increase shareholder wealth by increasing the price of their shares. On the other hand, if the NPV for all new projects at the firm are negative, the firm should return the cash to the owners.

Shouldn't this decision depend on how valuable the cash is to the shareholders? Yes, but the NPV calculation already includes that, since the cost of capital includes the cost of equity - the opportunity cost to shareholders of providing funds to the firm. In any case, if you as a shareholder happen to have an opportunity to invest in a project with a greater NPV, you can always sell your shares (which have gone up in price) and get the cash that way.

The firm has two ways of returning cash to shareholders: it can pay dividends or buy back shares in the company.

How Dividends Work

Generally companies pay dividends quarterly. The process starts with the dividend being authorized by the board of directors. The date they do this is called the declaration date. A list is kept of the owner of each share, called the owner of record. The date of record is when it is determined who the owners are, and so who should be paid. Because it takes some time for a share purchase to be recorded, only those who have purchased the stock two days before the date of record are eligible for the dividend. This is called the ex-dividend date. The payment date is when the payments are formally made (the check is mailed).

In many firms, shareholders have an option of either receiving dividends or accepting an equivalent value in new shares. This is called a dividend reinvestment plan. This makes it easy for shareholders who would prefer the additional shares over the cash to follow this policy. The shares are either purchased in the market, or the firm can issue new shares, which provides another source of financing to the firm. From the IRS's point of view, a stock reinvestment plan is just the same as the firm paying a cash dividend and then the investor using the money to purchase shares, and so it is considered taxable income.

Buying Back Shares

Another way to increase shareholders' wealth is by reducing the number of shares. Since we can think of the value of each share as the present value of the cash flow divided by the number of shares, reducing the number of shares makes each share more valuable. Instead of paying dividends, firms could use their excess cash to buy back shares. This would increase the value of shares, and investors could get the cash by then selling their shares.

An advantage of buying back shares is that long-term capital gains may be taxed at a lower rate than dividends. Investors would get more money after taxes if the company repurchased its shares than if they paid dividends (as long as the investors held the shares for a long-enough time)

Stock Splits

On the surface, stock splits look like another way for shareholders to gain. In a stock split, firms multiply the number of shares held by each investor. For example, a firm could exchange 2 new

shares for each old share (it doesn't have to be an even number; it could be 1.5 shares for every share). However, now each share isn't worth as much as it was before. In fact, the price of the share should fall to half since the value of the firm hasn't changed; there are just twice as many pieces of paper indicating ownership. This generally is what happens. So why do a stock split?

A stock split is generally done by a firm that has become more valuable and has a high stock price. Some feel that a high share price discourages small investors from buying shares, although institutional investors would have no problem buying high-priced shares. The important thing to remember is that a stock split shouldn't change the value of the investment to the shareholders, and so is not a way of returning cash to them.

Dividend Policy

So, given the various options, what should a firm do? The most important principle is to direct cash to its most highly valued use. If a firm has positive NPV projects, it should be used there. If investors have a need for the cash, or have a better investment opportunity, they can always create their own dividend (get the cash) by selling their shares.

If there are tax benefits of buying back shares due to lower long-term capital gains tax rates it would seem that firms should always buy back shares rather than use dividends. However, some firms still offer dividends. There are several reasons they might do that.

Some individuals rely on a steady stream of income from their stock investments, which they get from regular dividend payments. While they could simply sell shares every few months, this has a transactions cost, and also involves risk since the price of the shares could go up or down in the period between when the firm bought the shares and when the investor sold them. Because of this, some investors would prefer a stock that offered regular dividends (and might be willing to accept a lower return for that). To take advantage of this, a company that had a steady cash flow might follow a policy of paying dividends every quarter to attract those investors. For these companies, it is very important to not miss a dividend since doing so could signal financial weakness and reduce their attractiveness.

An additional reason that investors might like companies that pay dividends is that it ties the hands of management. There is always a risk that management with a lot of cash on hand could use it for projects that benefit management but not shareholders. They might expand the company or buy other companies, even if the expansion would have a negative NPV, because it gives them a larger and more prestigious company to run. By forcing management to pay regular dividends, shareholders make sure they receive the free cash generated by the company.