Replies to memo questions, 11/04/03

Dear Students,

Thanks for the great questions! As for my questions (what is the difference between market segmentation and market liquidity?) the answer is that *market segmentation* refers to the difference in the required rates of returns to similar assets (similar expected return and similar risk) due to differences in the information sets of the investors in the local and the international market (which differences on their turn result from institutional differences & government regulations across different markets), while *market liquidity* refers to the impact of raising more capital in a given equity market on the price (cost) at which one can do so.

Here are the answers to your questions.

I didn't quite get the difference between the Black's CAPM and the Sharpe's CAPM

Okey, there are two versions of the CAPM we know. Both of them provide you with the same intuition, but differ only slightly in the form of the risk-return relation. The Black's version (named after Fisher Black, who got the Nobel Price for discovering the option pricing formula, known today as "Black-Scholes") says that

$$Expected\ R_t = \alpha + \beta R_{mt},$$

where $\mathbf{R_{mt}}$ is the return on the market portfolio at time t, $\mathbf{R_t}$ is the return on the stock, and beta is the systematic risk measure for that particular stock.
Now, the Sharpe's version (the one that is more popular) is the same as above, but using excess returns (that is, returns over and above a risk-less benchmark). So,

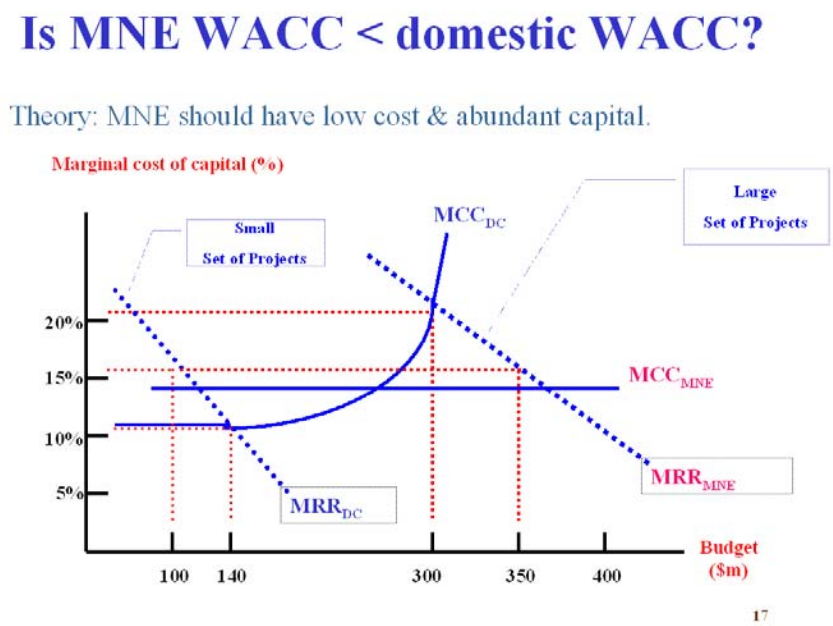
$$Expected\ \ R_t - R_f = \alpha + \beta\left[R_{mt} - R_f\right],$$

where $\mathbf{R_f}$ is the return on the risk-free asset in that country (if there exists such an asset), $\mathbf{R_{mt}}$ is the return on the market portfolio at time t, $\mathbf{R_t}$ is the return on the stock, and beta is the systematic risk measure for that particular stock. Now, by now, you must be asking yourselves, why are there two versions?? Well, you see, it is a big debate in finance, whether truly risk-less asset exists, to start with. Back in 2000, I remember that there were concerns that, due to the high budget surpluses at the time, all US government debt would disappear, and so there will be no more risk-less asset to use as benchmark. The concern about presence of risk-less security is even stronger in other markets, and particularly so in emerging markets, where "risk-less" security does not exist.

Since MNE's can get lower cost of capital is this then the single most important reason for going global?

Well, actually, the lower cost of capital of the MNE due to tapping into world (and so less segmented) equity market, is only one side of the story (the benefits). However, this diversification comes at cost: higher political risk, forex risk, more asymmetric

information. In a nutshell, it might not always be the case that MNE has lower cost of capital. For example, at low levels of capital budgets, the cost of capital to MNE is higher, as compared to the pure domestic play firm (as shown in the slide in class, that I enclose below).



In my opinion, the most important reasons for MNE to go overseas, are 1) on the supply side, the presence of "bargains", like cheaper input resources, cheaper labor, & of course cheaper capital; 2) on the demand side: the access to new markets, where a mature technology in the local market can reap addition high profits.

What is the difference between <u>daibatsu</u> and <u>keiratsu</u>? Both are conglomerates. (Is it that daibatsu are more intertwined with the government, while keiratsu are more family run?)

Yes, that's right. Both are highly diversified pyramidal structures. Oftentimes the top of the pyramid company is hold by a family while companies at the bottom of the pyramid are usually held by numerous small investors (*<u>dispersed ownership</u>*). The keiratsu in particular has on top of the pyramid a bank. Why? This arrangement can facilitate the transfers of profits from lower level companies are handled through overpriced financing given by the bank to the lower level of the pyramid companies.

Is there much empirical evidence for the segmented/integrated CAPM and the Goldman Sachs – integrated CAPM?

Well, it is for sure that the segmented-integrated CAPM & the Goldman-integrated CAPM are working better than the world CAPM, and that they are successful at overcoming the problem w/ CAPM (remember the low beta). But apart from that, I don't know of any other evidence.

Sorry, I couldn't understand why a market that's highly segmented might have a lower cost of capital? What exactly is market segmentation? Can you give a specific example?

A segmented capital market is a market where due to government constraints, institutional practices, and investor specific knowledge of the market, the returns on securities of a given expected return & risk deviate from those in other markets. For example, suppose that in a given market only domestic investors are trading (e.g. because of a restriction on ownership of shares by foreign investors, or simply because the cost of trading to foreigners in higher). That would be a segmented market. Or, if only local stocks are traded by only local investors, that would also be a segmented market.

So, for example, most of the emerging markets countries have stock markets that are segmented & illiquid, e.g. the market for the Chinese A-shares, i.e. shares that only domestic investors can trade. However, segmented market does not imply an illiquid market – oftentimes a segmented market can be a liquid market. For example, the Brazilian stock market is segmented but liquid, and so is the Taiwanese market. Notice that in both cases the segmentation comes around because of governmental restrictions.

I found market segmentation confusing and I am unsure why a segmented market will have a lower cost of capital? What is the difference between market liquidity and market segmentation?

A security (e.g. equity) in a segmented market might have a higher/ lower cost of capital than the integrated world market because of differences between the information of investors for that stock in a segmented vs. an integrated market. So, why, for example, a segmented market might have a lower cost of capital for a particular MNE? This might be the case because again due to regulatory constraints, the firm in the segmented market might be able to tap debt & equity claims that are cheaper, e.g. the government might impose restriction on the interest rate charged on debt claims, or might subsidize it in one way or other.

For market segmentation, if claims have different rates of return from expected return, isn't that saying the underlying asset is riskier?

Well, when we discussed market segmentation, I meant that assets with similar expected returns and risk in a segmented and in an integrated capital market would have different required rates of return by investors. Why? Because investors have different information sets and the arbitrage cannot be sustained since there are regulatory restrictions (e.g. ceilings on foreign ownership in the segmented market) or institutional differences.

What is the URL for that risk calculator? (i.e. the Duke website)
The paper that comes w/ the explanations and the specific URL for the risk calculator is located at

http://faculty.fuqua.duke.edu/~charvey/Research/Working_Papers/W35_The_international_cost.pdf

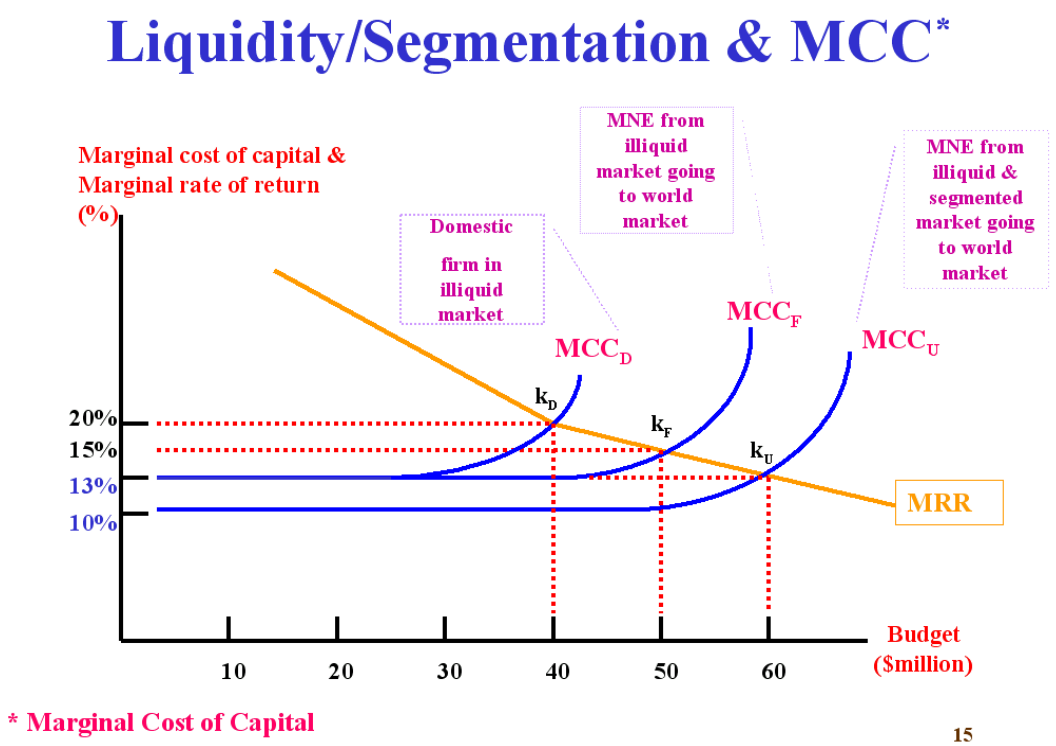
Doesn't it make more sense to add the default spread of the country to the US equity premium and than multiply by beta?

Yes, it does. There are many variants of the basic approach (the Goldman-Sachs one) that we discussed in class.

How does CAPM work for negative equity premium? If it does not work, how do we calculate cost of equity?

For negative equity premiums, CAPM is basically saying that the expected returns are going to be negative or near negative. So, CAPM works, even though there are negative returns.

Didn't really understand the MCC graph. I thought MCC would be higher in illiquid market, why does it go up later than MCC in liquid market (i.e. why do they have more leeway)? Can you explain a little more regarding the MRR line?



Here is the MCC (marginal cost of capital) graph. As you can see, actually the cost of capital for companies that raise capital only in illiquid domestic markets is increasing at a faster rate as compared to the cost of capital for companies from illiquid markets that

attempt to raise capital from international equity markets. Why is that? Because if a company is willing to raise additional capital in an *illiquid* market, even for small increase in the capital budget levels, the impact on the price (cost) at which the extra capital will be acquired will be very significant (there are only limited amount of funds/ investors willing to purchase the new shares, so the price of these shares will be lower as compared to highly liquid markets).

Here is a little more on the MRR (marginal rate of return) curve. In a nutshell, it represents a menu of the projects available to the company, ordered in terms of their marginal profitability (or marginal rate of return). We call it marginal rate of return, because it refers to the rate of return only on the last $ we spend in investments. So, basically the MRR curve is downward sloping. Why? Because, there is only a limited managerial talent available to govern the

Can you explain further about the difference between cost of capital of MNE in illiquid market and cost of capital of MNE from illiquid and segmented market?

Now, if a company is coming both from a segmented and illiquid market, then the cost of capital would increase even slower as compared to the cost of capital of a company coming from an illiquid market. Why? Because removing the segmentation lowers further the risk premium required to raise capital, so the cost of capital increases slowly for even larger levels of capital budgets.