

# MONTHLY

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## THE MULTIPLIER EFFECT ON EQUITIES

### Introduction

Assumptions that investors make about earnings growth and risk can move significantly over time. It is often the case that as growth expectations rise, perceptions about risk fall. The reverse may also be true - rising concerns about risk are often accompanied by expectations of slower earnings growth. This *Monthly* will examine how changes in investors' assumptions about growth and risk may affect the pricing of equities.

### Background

Higher risk equity markets, which typically have higher growth, exhibit larger price moves - that is why they are riskier. For example, using MSCI data on daily returns (in US dollars) for 2005, we calculate that emerging equity markets had 42 out of 260 trading days in which the returns were greater than 1% - in either direction (Figure 1). This distribution reveals 22 days with a positive return of more than 1% and 20 days with a loss in excess of 1%.

As a contrast, using the Russell 3000 index, the US equity market return was greater than 1%, in either direction, on 36 out of 253 trading days. This consisted of 18 days of positive returns greater than 1% and 18 days of losses exceeding 1%.

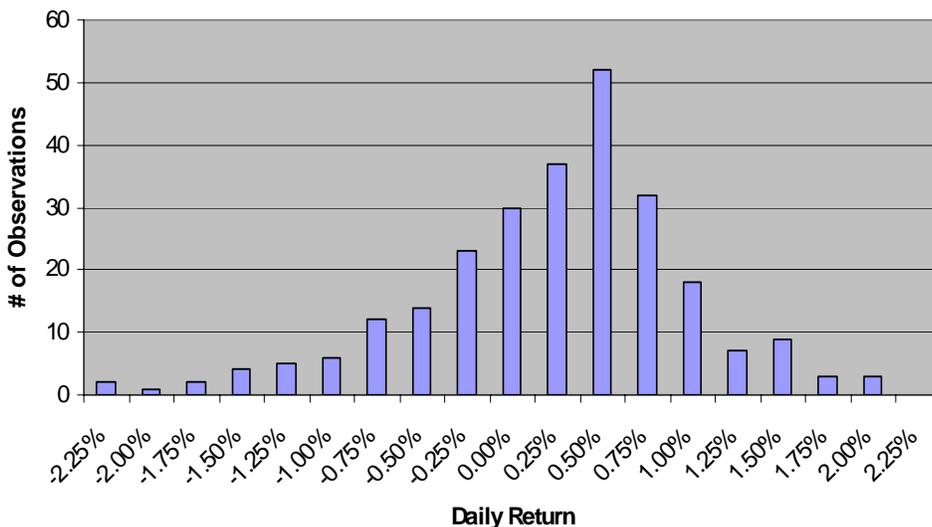
Even in a year when emerging equities had an outstanding return (+34.0%), the number of large daily moves in total and on the downside was greater than it was in the US equity market

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### CURRENT STRATEGY

- *Emerging Markets, both equity and debt, had strong returns in January. We continue to view their return prospects as insufficient relative to the risks. We remain underweight both asset classes.*
- *US Equities, Municipal Bonds and short-term Treasuries remain fairly valued.*
- *Non-US developed equity markets remain at a small underweight due to their recent run-up in price.*

Figure 1: Distribution of Daily Emerging Equity Returns



Source: MSCI and Stairway Partners, LLC

“Emerging equity markets had 42 out of 260 trading days in which the returns were greater than 1% - in either direction”

# THE MULTIPLIER EFFECT ON EQUITIES - CONT'D

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with its mediocre return (6.1%). Why might this be the case?

### A Simple Pricing Model

A simple model of asset pricing can offer some insight into the sensitivity of equity markets to changing assumptions on risk and growth. Although many cash-flow discounting models used in equity valuation are far more complex, the simple model is sufficient to illustrate our point.

This model, called the Gordon growth model, shows what asset price ( $P$ ) is consistent with assumptions about the growth rate and the discount rate:

$$P = \frac{CF}{k - g}$$

In this equation,  $CF$  is the cash flow that will be received by investors in the first year,  $k$  is the discount rate based on the riskiness of the asset, and  $g$  is the growth rate

of the cash flow stream over time. There are a number of assumptions that underlie this model, but one in particular is important: the growth and discount rates are constant over time. This assumption allows the reduction of the infinite stream of discounted cash flows to this simple equation.

Inspecting the equation, we can see that the asset's price is related to its cash flow by a "multiplier" of:

$$\frac{1}{k - g}$$

What's important here is that the smaller the gap between the discount rate and the growth rate, the larger is this multiplier. So, if the growth rate is marked up and/or the discount rate is reduced, the asset's price will be higher (relative to a given level of cash flows).

Conversely, when the discount rate is much larger than the growth rate, the multiplier will be smaller and the asset's price will be lower.

### The Multiplier Effect

We can think about the effect of changing assumptions on the price of an equity market. Looking at the bottom row of Figure 2, a discount rate of 6.0%, when the long-term growth rate is assumed to be 3.0%, creates a gap of 3.0%. This produces a market price of 33 times ( $1 \div 3\%$ ) the level of the cash flow.

If the required compensation for risk (the discount rate) is reduced by 100 basis points (1.0 percentage point), the gap is reduced from 3.0% to 2.0% (see row 3). This causes the multiplier to rise from 33 to 50, which translates into an asset price that is 51.5% higher than before.

Reducing the discount rate by another 100 basis points results in a gap that is also reduced by 100 basis points (see row 2). In this move, the multiplier is no longer 51% higher but *double* the prior multiplier - 100 versus 50 - with an equivalent doubling of price.

As a last example, we only need to reduce the discount

rate at this stage by 50 basis points to get another doubling in the multiplier and the market price (see row 1).

The main point of this exercise is to demonstrate the sensitivity of market pricing to changes in the assumptions. It should be noted that we could just as easily have raised the growth rate, rather than reducing the discount rate, to achieve the reduction in the gap. Either way, *when the gap becomes "small", altering either the growth rate or discount rate has a magnified effect on pricing.*

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We can use this framework to look at the historical behavior of the S&P 500 Index. In the late 1980s, the S&P index traded at about 30 times its cash flow level

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"The smaller the gap between the discount rate and the growth rate, the larger is this multiplier"

Row	Discount Rate (k)	Growth Rate (g)	"Gap" (k-g)	Multiplier (1 ÷ Gap)
1	3.5%	3.0%	0.5%	200
2	4.0%	3.0%	1.0%	100
3	5.0%	3.0%	2.0%	50
4	5.5%	3.0%	2.5%	40
5	6.0%	3.0%	3.0%	33

## About Stairway Partners, LLC

Stairway Partners was formed to provide our clients (starting with ourselves) with an effective and comprehensive solution for managing their wealth. Our disciplined and rigorous approach comes from our collective knowledge in serving large institutional clients over many years.

Our core investment belief is that asset allocation is the single most important determinant of success in any investment plan. The dominant amount of risk and return comes not from your choice of individual investments but from your asset class mix. Stairway Partners focuses our resources on risk management and asset allocation. This includes building your custom blueprint (investment policy and benchmark) and aligning your portfolio with our investment strategy utilizing the global capital markets.

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### WE FURTHER REDUCED EXPOSURE TO EQUITIES IN THE BEGINNING OF JANUARY: PORTFOLIOS ARE CURRENTLY NEUTRAL US EQUITIES, UNDERWEIGHT NON-US DEVELOPED EQUITIES AND HAVE MINIMUM EXPOSURE TO EMERGING EQUITIES

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(where we've simply taken the cash flows to be the level of dividends paid rather than earnings or some other series). This implies that the gap between the discount rate and the growth rate was about  $3\frac{1}{3}\%$  ( $=1/30$ ). So, if we assume the market was anticipating real growth of 2%, the real discount rate investors were using would have been around  $5\frac{1}{3}\%$ .

As the equity market ran up in the late '90s, the S&P index traded at roughly 90 times cash flows – *triple* the level of the late '80s.

This tripling of the multiple means that the gap had fallen to only  $\frac{1}{3}$  of its earlier level – 1.1% instead of  $3\frac{1}{3}\%$ .

It is entirely reasonable to think that growth expectations were being marked up at the same time that the demands for risk compensation were being reduced. Recall

the "Dow 36,000" book that advocated the view that stocks are riskless in the long run, implying that the risk premium should be zero.

If investors raised their expected growth rate at that time from 2.0% to 3.0%, the discount rate would still need to fall by about  $1\frac{1}{4}\%$  ( $5\frac{1}{3}\%$  to 4.1%) to achieve this 1.1 gap and the 90 times cash flow multiple.

Of course, we have since witnessed US equity market pricing become much more reasonable than it had been in the late '90s.

#### Investment Implications

Turning back to the question posed at the start of this piece: How might we think about the volatility and daily price changes experienced in emerging markets as compared to that seen in US equities?

Over the last 3 years, and especially in the last 12

months, investor perceptions of emerging markets have turned increasingly optimistic. This has shown itself both in expectations regarding improved growth prospects (China, South Korea, Brazil, etc.) and in statements about how the level of risk has diminished considerably (emerging market countries are running current account surpluses, have large foreign currency reserves, etc.). Using the Gordon growth model and the notion of the multiplier, it is easy to infer from the increased optimism that the gap between the discount rate and the growth rate has narrowed substantially over the last few years – and the resulting multiplier has risen (witness the 43% annualized return for the 3 years ending 1/31/2006).

Recall that as the gap narrows, relatively small changes in assumptions will

produce large changes to the multiplier and to market pricing. So, as investors have become more optimistic on growth and risk, the gap has narrowed, and pricing has become much more sensitive to variations in investor expectations.

#### Conclusion

The changing assumptions about risk and growth have powerful effects on pricing. As expectations for growth move higher and are accompanied by falling risk premiums, the effect on market pricing is magnified. Small changes in expectations can have a dramatic impact on market pricing when "the gap" is compressed.

When investors are overly optimistic about growth or risk, the potential for a large repricing may be significant. It is at this time that downside risk, contrary to investor expectations, is likely to be at a high level.

## Strategy

Asset Class	Expected Return	Hurdle Return	Strategy	Comment
<b>Equities</b>				
small under				
US	4.8%	8.1%	neutral	Exposure equal to normal portfolio weighting
Non-US Developed			small under	Remains unattractive relative to US market
Eurozone	1.5%	6.8%		
Japan	-10.7%	4.3%		
UK	5.3%	8.2%		
Emerging	-0.2%	11.6%	under	Asset class inadequately pricing risk
<b>Fixed Income</b>				
US Treasury Bonds			under	Shorter maturities offer best relative value
2-Year	4.5%	4.5%		
5-Year	4.3%	4.7%		
10-Year	3.8%	4.9%		
25-Year	3.0%	5.1%		
US Municipal Bonds			neutral	Sector is fairly priced
2-Year	3.3%	3.2%		
5-Year	3.5%	3.5%		
10-Year	4.0%	3.8%		
25-Year	6.2%	4.3%		
US High Yield	4.6%	6.5%	under	Spreads over US Treasuries remain too tight
Non-US Government Bonds			under	Yields generally insufficient compensation for risk
Euro 10-Year	1.6%	4.2%		
Japan 10-Year	0.1%	2.0%		
UK 10-Year	2.6%	4.8%		
Emerging Markets Debt	3.5%	6.8%	under	Spreads over US Treasuries remain too tight
Cash	4.4%	---	over	Allocation comes from overpriced asset classes
10-Year				
Equity Bond Return				
with with				
Currency Currency				
<b>Currencies</b>				
Euro	-1.6%	-0.1%	0.1%	Close to fair value
Japanese yen	4.9%	-5.8%	5.0%	Yen is slightly attractive
UK pound	-3.0%	2.3%	-0.4%	Close to fair value

**Notes:**
**As of: 1/31/2006**

The expected return is our estimate of the annualized return likely to be generated over a 3-year horizon.

The expected returns are expressed in local currencies (e.g., Japanese equity return is stated in yen terms).

The hurdle rate represents the annualized return that an asset needs to generate in order to cover its risk.

Equity Return with Currency (in Currencies section) is the annual return we would expect a US dollar investor to earn from holding foreign equity markets.

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