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CAPM and HOME BIAS

by
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“The capital asset pricing model (CAPM) of William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). Before their breakthrough, there were no asset pricing models built from first principles about the nature of tastes and investment opportunities and with clear testable predictions about risk and return. Four decades later, the CAPM is still widely used in applications, such as estimating the cost of equity capital for firms and evaluating the performance of managed portfolios. And it is the centerpiece, indeed often the only asset pricing model taught in MBA level investment courses.” Fama and French (2003)

In a recent *Economics Commentator*, Professor Sondey and Ms. Thompson had a very insightful discussion on the home bias. In this article, I provide an alternative explanation, which may be viewed as a supplement to their argument. To me, the home bias may be a manifestation of the failure of the CAPM.

CAPM is an extension of Harry Markowitz's portfolio theory. Under a set of assumptions, Sharpe showed that the efficient portfolio on the Capital Market Line must be the market portfolio. All investors will hold the market portfolio, leveraging or de-leveraging it with positions in the risk-free asset in order to achieve a desired level of risk. With great integration of international stock markets, one of the strategic implications of the CAPM is that the ultimate equity portfolio (measured in terms of maximum return per unit of risk) is the global portfolio. In other words, equity investors should strive to own their proportional share of all the world's traded stocks. By the end of 2003, non-US stocks accounted for 54% of the world stock market.

CAPM suggests that US investors should hold 54% of
(Continued on next page)



PROSPECTIVE PLANTINGS ANALYSIS

by
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The National Agricultural Statistics Service (NASS) issued its annual Prospective Plantings report on Friday, March 31, 2006.

CORN: NASS reports that farmers in the United States expect to plant 78.0 million acres of corn (3.8 million fewer acres than a year ago), down 5% from 2005. South Dakota farmers intend to plant 4.40 million acres of corn, down 1% from last year's 4.45 million acres.

There was little question ahead of this report that farmers would likely plant fewer acres of corn this year. However, this report surprised everyone by exceeding the initial expectations for fewer corn acres. Trade estimates of corn planting intentions issued prior to NASS's report averaged 80.5 million acres. However, corn producers across the country have different ideas concerning the number of acres they will plant to corn. As noted above, farmers across the country will plant 3.8 million fewer acres of corn this year compared to 2005. According to NASS, “producers intend to switch to other less input intensive crops due to high fertilizer and fuel costs. Dry conditions also contributed to lower planting intentions in the southern Great Plains.” The corn producers in the ten major corn producing states intend to lower the acres planted by 4%, with Illinois reporting the largest decrease; 11.4 million acres, down 700,000 acres from a year ago.

South Dakota corn producers followed the same trend, but not to the extent as the national numbers would indicate. South Dakota corn
(Continued on page 3)

their stock portfolio in non-US stocks. However, US investors only held 14% of their stock portfolio in non-US stocks.¹ This preference for domestic equity holdings is called the home bias. It is a robust international phenomenon (see Kang and Stulz (1997) among others).

CAPM assumes among other things that capital markets are frictionless. One may argue that international stock markets are not frictionless, i.e., there are barriers to international investment and transaction costs, information asymmetries and higher estimation uncertainty for foreign than domestic stocks. However, none of these factors have provided a quantitatively satisfactory account of the observed home bias in international financial markets (see Ahearne, Grivier and Warnock (2004) among others).

One may argue that the home bias may be due to investor irrationality. However, before we draw this conclusion, we have to be sure that the CAPM is a good description of stock returns. Unfortunately, recent empirical studies do not seem to support this notion. Two well-known CAPM anomalies are the size effect and the value premium: small companies and value companies have persistently higher returns than the CAPM could explain. Fama and French (1995) argue that the size and value premium are compensation for risk missed by the CAPM, and including the size and the book-to-market factors provides a better description of stock returns. Fama and French (1998) further provide international evidence against the CAPM and suggest that a multifactor model is a better description of stock returns in international stock markets.²

If the CAPM is not true, its strategic implication that investors should hold the global market portfolio also may not be true. Therefore, the home bias may simply be a manifestation of the failure of the CAPM, and not really reflect that investors are irrational. Put in other words, if the true model is not the CAPM, investors need not hold the global market portfolio. Under the Fama-French multifactor model, investors

must now decide how much of each of the factors they are willing to hold when they construct their portfolios. They must manage the tradeoffs between the three factors to suite their own preferences for the various risks. In particular, the CAPM suggests that high-risk investors should buy the global stock market portfolio on margin, while the Fama-French model recommends adding some small/value stocks to the portfolio. Therefore, US investors may hold less foreign stocks than the CAPM suggests as a result of the rational choice (given their risk preferences and various risks in the international stock market).

Along this line, a recent study by Campbell and Kraussl (2005) relaxes the normality assumption of the CAPM and considers a downside risk model, in which the investor maximizes his expected return given a downside risk constraint. They find that given the empirical distributions of international stock returns, investors may think globally but act locally due to greater downside risk. Their results are also consistent with the empirical findings of increasing correlation in bear markets and decreasing benefits from international diversification (see Campbell, Koedjik and Kofman (2002)).

As a matter of fact, investors do not even hold the market portfolio of their own domestic markets. Coval and Moskowitz (1999) find that U.S. investment managers exhibit a strong preference for locally headquartered firms. Huberman (2001) analyzes the geographic distribution of shareholders of U.S. Regional Bell Operating Companies and shows that investors are much more likely to hold shares in their local providers. Grinblatt and Keloharju (2001) find that investors in Finland are more likely to hold stocks of companies that are located close to them geographically. Therefore, the home bias is not an isolated issue. It might be part of a larger phenomenon, indicative that the CAPM may not provide a good description of stock returns.

In sum, whether the home bias is due to investor irrationality is still open to question. It is possible that the home bias may be due to the “bad” model we use, not investor irrationality. Therefore,

¹ See Thomas, Warnock and Wongswan (2004).

² The Fama-French multifactor model can explain all CAPM anomalies except stock momentum (see Fama and French (1996)). However, a recent study by Du and Denning (2005) shows that a modified Fama-French multifactor model can even explain the stock momentum.

investors may need to be cautious when investing in foreign stocks.

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(Prospective Plantings Analysis ... cont'd from p.1)

growers will plant 4.40 million acres of corn, a modest 1% drop from 2005. It would appear that corn growers in this state may have more optimism about the profitability of corn thanks to the growth of the ethanol industry. With numerous plants in the eastern half of the state, corn growers here may have an advantage over other parts of the corn belt for contracting corn at profitable prices with ethanol plants and local elevators because of growing local demand.

If planting intentions hold true and one assumes trend line yields for 2006, total corn production in the U.S. will be less than that projected in mid-February by the U.S. Department of Agriculture (USDA). USDA initially projected a corn crop of 10.8 billion bushels in 2006. This new data for planted acreage could lower that number to 10.4 to 10.5 billion bushels. This would in turn lower the ending stocks position for the 2006-07 marketing year from USDA's initial projections of 1.73 billion bushels to 1.4 to 1.5 billion bushels. With the growth in domestic demand for corn and the potential for strengthening corn exports, this would create additional support for corn prices into the rest of this year and into the first quarter of 2007. At a minimum, one could expect that there should be opportunities for locally pricing new crop corn in excess of \$2.00 per bushel. Growing conditions and expectations for total corn production after the final June acreage report will give a better picture of price direction and levels the rest of the marketing year.

SOYBEANS: The planting intentions report was considered bearish for soybeans. U.S. farmers reported they intend to plant 76.9 million acres of soybeans (4.8 million acres more than a year ago), a 7% increase over 2005. South Dakota producers indicate they will plant 4.0 million acres of soybeans, a 3% increase from a year ago.

The planting intentions report contained a surprise for the soybean trade. Soybean growers reported they will plant far more acres than initially anticipated. Trade estimates of soybean planting intentions issued prior to NASS's report averaged 74.22 million acres. This would have been 2.7 million acres more than 2005. However, farmers across the country intend to plant 4.8 million more acres of soybeans this year compared to 2005. According to NASS, this will be the largest planted area on record. NASS credits this shift to soybeans to higher input costs; particularly for corn. Growers in 20 of the 31 producing states intend to plant more acres this year; 10 states intend to plant fewer acres. The biggest single state growth in acres is reported in North Dakota. NASS reports that the planted acreage to soybeans in North Dakota will grow by 41% to a record of 4.15 million acres for that state.

If the acreage numbers in this report hold true and the average national yield per acre estimated by USDA in mid-February remain at 40.7 bu./acre, carryout stocks will likely grow from current projections. Carryout stocks for the 2006-07 marketing year could grow from the current projection of 560 million bushels to approximately 680 million bushels. This is assuming demand remains steady. This scenario, combined with what has become an annual expectation of growing soybean production in South America, will likely pressure prices lower. Even with expectations of stronger export volume in 2006-07, carryover supplies will be considered burdensome well into 2007, providing pressure to soybean prices. Again, if these acreage and production estimates hold true, there will be a couple of factors in maintaining profitability in soybeans. The first is to keep input costs as low as efficiently possible. The second factor is to capture a profitable price prior to harvest with a forward pricing strategy. If U.S. production does come close to, or exceed 3 billion bushels in 2006, prices will likely be lower at harvest than at the current time.

WHEAT: The planting intentions report was viewed as slightly bullish for wheat. All wheat acres planted is expected to total 57.10 million acres compared to 57.23 million acres in 2005, a very modest 130,000 acre decline. Winter wheat acres in the U.S. are set at 41.5 million acres, a 2% increase over a year ago. Acres expected to be planted to spring wheat is reported at 13.90 million acres, a 1% drop from 2005. South Dakota wheat growers reported planting 1.35

million acres of winter wheat, a 13% decline from a year ago. Spring wheat acres are reported at 1.70 million acres, a 3% decline from 2005.

With few surprises in the planting intentions report, the prospects for U.S. wheat supply and the corresponding impact on price appear to be neutral to slightly bullish for both the short and long term. The same may be said for world production, demand and carryover supplies. World carryover wheat supplies dropped considerably since 2001. This has been a major factor for the strength in wheat prices over the last two to three years. In addition, U.S. wheat supplies have remained very stable over the last three years at approximately 540 million bushels and it appears likely this will be the carryover supply for the 2006-07 marketing year. Domestic demand appears to be stable but does not show any real propensity for significant growth. Export demand may be the greatest challenge since U.S. wheat prices are higher than four to five years ago, making U.S. wheat more expensive compared to our export competitors. However, even with these demand challenges, prices prospects for wheat remain a bit brighter than just three to four years ago.

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