

## Dividend Stripping and Information Revelation

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### **Aims and Background:**

The stock market offers high expected returns and yet is very volatile. During the peak of the stock market at the end of 1990s, there was much debate in US about whether or not to invest part of the Social Security Fund in the stock market in order to cover the upcoming retirement of baby-boomers. The discussions mainly involved deciding whether or not the stock market is too volatile to make it worthwhile investing the funds. Brennan (1998) first proposed a new financial instrument, a dividend strip, to try to get around the problem.

A dividend strip is a similar instrument to the Treasury strip of the Treasury Bills. It gives investors an annual dividend payment from large stock indices such as the SP500. Brennan showed that dividend payoff is much more stable than stock prices historically. Such an instrument enhances risk sharing because those who really want the high return from the volatile price change can buy the price strip, while those who are conservative can buy the dividend strips. Furthermore, Brennan argued that a dividend strip can also enhance information revealing because the dividend and price strip can indicate investors' expectation about near future dividend payoff and far future resale value of the stock. His proposal actually generated much interest from large investment banks in US. Yet the talk ended when the stock market suffered a minor crash in the early 2000s.

This project revives the study of this instrument. Besides the obvious savings in transaction costs and risk sharing role, a dividend strip actually provides an ideal way of disentangling the information embedded in stock prices. While different models have been created to try to connect high stock returns (risk premium) with fundamentals, recent studies have revealed that information aggregation effect in the stock prices can be substantial (Bachheta and Wincoop (2005), Allen, Morris and Shin (2005)). When each investor has different private information about future stock returns, the equilibrium stock price is a function of not only fundamentals, but also investors' expectations. Furthermore, it also includes investors' expectations about other investors' expectations (higher order expectations). In other words, there are much more than just fundamental risk embedded in the stock prices. The magnitude of the higher order expectation effect can be quite large.

This project builds on recent research about the information role in stock prices. We will study two related issues:

1. What information is embedded in stock prices?

So far the models studied in the literature assumes that investors optimize their expected utility at the end of several years. Yet in reality investors have to consider their investment returns year-by-year. This arises from the consumption requirements of individual investors, or the performance valuation of fund managers. With the intermediate payoff as a concern, the equilibrium stock price is much more complicated. Critically, the stock return is more volatile than just higher order expectations because the realization of each intermediate dividend provides investors another signal to update their previous beliefs. In other words, even if dividends are uncorrelated over time, that investors have to form beliefs on future dividend today makes the beliefs about future dividend correlated. Each realization of the new dividend gives the investors a chance to revise their beliefs about the future unrealized dividend. The result is that stock price will adjust for the realization of each dividend simply from this updating.

2. The role of dividend stripping:

Introducing dividend stripping will disentangle the information embedded in the stock price. Each strip will be a function of investors' beliefs about the dividend only. As a result, the price and returns will be much less volatile than the gross return of stock. However, the dividend strip will not eliminate ALL the information uncertainty because for that dividend only, higher order expectations still exist. How large this benefit of reducing volatility in stock returns and how large the remaining uncertainty is after introducing the dividend strip remains an empirical question. And this is part of our research goals.

### **Significance and Innovation**

It has long been recognized both in the academic field and in industry that stock price provide information. However, prior studies assume either all the investors have the same information or some portion of investors have inside "true" information about the future stock dividend payoff. When investors have different information, the situation becomes much more complicated. Research progress has been slow in this aspect. Our first contribution is to extend the few study in the differential information and introduce intermediate consumption. This step is significant because it is more realistic and the updating from realizations of intermediate dividends has not been pointed out before.

Our second contribution is to show that the dividend strip can help resolve this new uncertainty and will provide more accurate aggregation of investors' beliefs about future stock returns. As such, it is a potentially very desirable instrument both for investors and for the market.

Our third contribution is to evaluate and quantify the size of the uncertainty in current stock prices and attempt to show that a large part of stock volatility is because of information updating.

### **Approach and Methodology**

The project will be partly theoretical and partly empirical.

The model assumes that a stock or stock index has a finite life span and pays a dividend at each time period. For simplicity we assume that the true dividends are uncorrelated over time. There is a continuum of investors with common priors about the future stock dividends. Each investor also receives private signal about future dividend. Suppose on average the market is correct in that the average across the investors' private signals gives the true dividend. There are two more public signals investors receive: stock prices and the realization of the dividend at each time period. After receiving all the signals, the investors update their beliefs about future dividend and prices of the stock and choose their portfolio and current consumption. In equilibrium, the stock price (ex-dividend) is a function of all future dividends.

With the dividend strip, the equilibrium price of each strip will be a function of that dividend only because it aggregates all the investors' information of that dividend only. In an economy with both index and index stripping, the price of the index will be less volatile because the dividend strip will provide more accurate information about future dividends.

Empirically, we want to test the model using both US and Australian stock data. All information such as prices and dividends are readily available. The size of the uncertainty related to the information aggregation will be measured.

### **References**

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