Proposal on “Investor Foresight Across Countries: Evidence from Demographics”
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Introduction
Market inefficiencies open the way to arbitrage and hedging opportunities. To the extent that the market does not appropriately incorporate all relevant information, an arbitrageur can take advantage of the mis-pricing. One such hedging opportunity is created when investors are short-sighted. If investors consider information only up to, say, five years into the future, predictable earnings shifts that are beyond the foresight horizon are not yet incorporated in the asset price. Such shifters could include the cost of global warming regulation, the projected long-term increase in the cost of an input, or a patent expiration for a best-selling drug. Short-sighted investors over-value a company in these three cases.

In previous research (DellaVigna and Pollet, 2007) we have documented that US investors appear to be indeed short-sighted, with a horizon of about 5 years. The basic idea of DellaVigna and Pollet (2007) is to examine the response of investors to a variable that affects future cash-flows (a) at different horizons and (b) in a predictable manner: demographic shifts. A simple example illustrates the idea of this test: Assume that an abnormally large cohort is born in 2004 in the US. This large cohort will increase the demand for school buses as of 2010. If the school bus industry is not perfectly competitive, the companies in the industry will enjoy an increase in abnormal profits in 2010. The question is at what point in time (how close to 2010) stock returns for school-bus producing firms will be abnormally high in anticipation of greater future profitability. The answer depends on the horizon of investors. According to the standard analysis with perfect foresight, the investors foresee the positive demand shift induced by demographic changes and purchases school bus stocks in 2004. The price of school bus shares increases in 2004 until the opportunity to receive abnormal returns in the future dissipates. In this case, forecastable changes in profitability do not predict abnormal stock returns after 2004.

Alternatively, investors may be inattentive to information about future profitability that is further than a foresight horizon, resulting in pricing inefficiency. If, for example, the horizon is five years, stock returns in the school bus industry will not respond in 2004, but will be abnormally high in 2005, when investors start paying attention to the future shift. If, instead, the horizon is three years, stock returns will respond to the shifts in 2007. In both cases---but not under the standard model---demographic information available in 2004 predicts industry abnormal returns between 2005 and 2010, and the timing of the predictability provides information about the investor horizon. DellaVigna and Pollet (2007) show that, in the US, demand shifts that are fully forecastable but occur beyond a 5-year horizon are not fully incorporated into stock prices, suggesting that US investors have approximately a 5-year foresight horizon.

This finding opens the way for trading opportunities. As we document in DellaVigna and Pollet (2007), a zero-investment portfolio that goes long in industries with high forecasted growth 5-10 years ahead and short in industries with low forecasted growth 5-10 years ahead outperforms various factor models by approximately 6 percentage points per year.
In this project, we propose to estimate the investor horizon across different OECD countries using a similar methodology, and then use these estimates to test the return of trading strategies exploiting the differences in horizon. Indeed, the estimates of investor horizon will allow for more effective hedging opportunities. As a first example, suppose that Japanese investors have a longer foresight horizon than US investors, say, of 10 years. Assume also that both countries are going to be affected by a predictable increase in production costs 5-10 years in the future due to a carbon tax. The two countries are also affected by shocks to current productivity, due for example to oil prices. A portfolio strategy is to go long in the Japanese market, where the 'bad news' has already been incorporated, and to go short in the US market, which is yet to incorporate it. This strategy takes advantage of the difference in foresight horizons, while hedging against common shocks occurring in the two countries. The differences in investor horizons between Japan and the US also affect the variance-covariance matrix of a portfolio of Japanese and US equity. To the extent that the two different markets incorporate information over different time horizons, the correlations between assets will not be stable over time. Hence, investor horizon has to be taken into account when estimating portfolio covariances, another portfolio implication that we intend to study.

As a second example, consider the implications of a short investor horizon for equity market over-valuation in a fast-growing economy. Consider a country that is projected to grow at a fast pace over the next 5-10 years, but that ultimately is likely to slow down once it reaches a higher income level. This was a likely scenario for a country like Japan in the 1980s. After experiencing high growth rates for most of the post-war period, in the 1980s Japan had reached the per-capita GDP level of the most advanced nations. Long-term future growth, however, was unlikely to resemble the past averages, unless Japan could gain access to substantially better technology and infrastructure than a country like the US. Simply put, the convergence predicted by most growth models would require a slow-down in growth. Investors with a short foresight horizon, instead, would extrapolate the recent growth rate into the farther future, leading to an equity market bubble. Short-sightedness, therefore, can (admittedly ex-post) provide a simple explanation for the Japanese stock-market bubble of the 1980s. A similar phenomenon may apply to countries such as Korea that are currently in a similar situation to the one experienced by Japan in the 1980s. A portfolio strategy that goes short in the stock market of a country like Korea and long on a country that has currently low growth but good fundamentals is likely to earn abnormal returns in the presence of short-sighted investors. We intend to investigate this and other implications of investor horizons for equity valuations and the optimal diversification of funds across countries.

Previous research on investor horizons in different countries is very limited. It has been suggested, for example, that Japanese investors have a longer foresight horizon than American ones. The evidence for this contention, however, is very indirect, being based on the faster turn-around of shares in the US market than in the Japanese market. However, the holding horizon is not the same as the investor horizon.

In this proposal (based on joint work with Joshua Pollet, UIUC), we suggest a methodology to empirically investigate the investor horizon, and propose to implement the test for a dozen of OECD countries. We plan to apply the methodology of DellaVigna and Pollet (2007) to other major OECD countries, including Germany, Japan, and the
UK, using country-specific data on demographics and on industry-level stock returns. In order to do this, we have already collected demographic data for eight countries. We plan to combine the demographic forecasts with estimates of age-specific patterns of consumption for different industries (estimated with US data) to generate the demand forecasts. The main data set that we still need to collect is the information on industry groupings (for example, toy companies versus golf companies) for each of the countries, which we need to compute industry-level stock returns. We expect to be able to have preliminary results on the investor horizon during academic year 2008-09. The resulting estimates of the return predictability by country will present some evidence of investor horizon for the different country stock markets. We can then compare measures of investor horizon with other proxies of horizon, such as the above-discussed turn-over of shares in the national stock markets. Assuming these estimates do show significant variation in investor horizons across countries, we will turn in 2009-10 to the portfolio implications, such as the ones discussed above, of horizon short-sightedness.

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1 Two caveats about the estimation procedure are in order. First, products produced in a country are often sold abroad, which implies that foreign demographics, rather than local demographics, matter. We address this issue using industry-level data on imports and exports to derive the appropriately weighted impact of demographics across countries. Second, the precision of the estimates obtained using demographics is going to limited, given the limited role of cohort size in determining demand. While this is a limitation of the analysis, even the noisy evidence derived from demographics is in our mind still a major step forward in addressing a question for which no empirical evidence exists.