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## Forced Sales and House Prices

The expansion of mortgage credit earlier this decade and the recent decline in house prices have led to an unprecedented increase in foreclosures since 2006. Foreclosures transfer houses to financial institutions that must maintain and protect them until they can be sold. Foreclosed houses are likely to sell at low prices, both because they may have been physically damaged during the foreclosure process and because financial institutions have an incentive to sell them quickly. In a liquid market an asset can be sold rapidly with a minimal impact on its price, but the market for residential real estate is a classic example of an illiquid market, in which urgent sales lower prices.

Furthermore, foreclosures may lower the prices of nearby houses, either through direct physical effects on neighborhoods or by creating an imbalance of demand and supply in an illiquid neighborhood housing market. If such spillover effects on prices are significant, they might stimulate further foreclosures, because homeowners are more likely to default when their houses are worth less than the face value of their mortgages.

In **Forced Sales and House Prices** (NBER Working Paper No. 14866), authors **John Campbell**, **Stefano Giglio**, and **Parag Pathak** investigate these issues. They use a

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“Each foreclosure that takes place 0.05 miles away lowers the price of a house by about 1 percent.”

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comprehensive dataset on 1.8 million individual house transactions in Massachusetts over the period from 1987 through the first quarter of 2008. Importantly, Massachusetts experienced a significant decline in house prices and wave of foreclosures during the early 1990s. That provides a historical precedent that can be used to shed light on the current condition of the housing market.

The authors show that houses sold after foreclosure, or close in time to the death or bankruptcy of at least one seller, sell at lower prices than other houses. The discount is particularly large for foreclosures, amounting to 28 percent of a house's value on average. For death-related sales, the discount is 5 to 7 percent of value, and for bankruptcy-related sales it is 3 percent of value. The pricing pattern

for death-related sales suggests that the discount may be attributable to poor maintenance by older homeowners, because it does not depend on the timing of the sale relative to

the timing of a seller's death, it is larger for deaths of older sellers, and is larger still for houses where the structure accounts for a greater fraction of the value of the property.

The pricing pattern for foreclosures is quite different. Foreclosure discounts are larger for low-priced properties in low-priced zip codes. This suggests that foreclosing mortgage lenders face fixed costs of homeownership, probably related to vandalism, that induce them to accept absolute discounts that are proportionally larger for low-priced houses.

After aggregating to the zip code-year level and controlling for movements in the overall level of Massachusetts house prices, the authors find that changes in the prices of unforced transactions are close to unpredictable, while forced sales take place at a substantial and

time-varying discount. This discount is larger and more persistent when the share of forced sales is higher. These patterns suggest that most unforced transactions in residential real estate take place at efficient prices, at least relative to the general level of house prices in Massachusetts. Forced sales take place at lower prices. When many homeowners are selling urgently, the implied bid-ask spread widens for housing.

The authors also look for evidence that forced sales have spillover effects on the prices of local unforced sales. This question is of particular interest given the increase in the foreclosure rate in the current housing downturn. They find that foreclosures predict lower prices for houses located less than 0.25 mile, and particularly less than 0.1 mile, away. Although foreclosures and prices are jointly determined in the housing market, and both

respond to local economic conditions, the fact that foreclosures lead prices at such short distances does reinforce the concern that foreclosures have negative external effects in the housing market. The authors' preferred estimate of the spillover effect suggests that each foreclosure that takes place 0.05 miles away lowers the price of a house by about 1 percent.

—Lester Picker

## Does Simplified Disclosure Affect Individuals' Mutual Fund Choices?

Because some regulators believe that the average investor has a hard time reading the statutory prospectuses that mutual funds distribute, the SEC recently proposed and subsequently adopted a new simplified disclosure document. Mutual funds now have the option of sending investors this two-to-four-page document, dubbed the "Summary Prospectus," instead of the statutory prospectus. The Summary Prospectus contains key information about the mutual fund's investment objectives, strategies, risks, costs, and performance.

In **How Does Simplified Disclosure Affect Individuals' Mutual Fund Choices?** (NBER Working Paper No. 14859), authors **John Beshears, James Choi, David Laibson, and Brigitte Madrian** find that the Summary Prospectus reduces the amount of time spent on the investment decision, but there does not seem to be any resulting change in the portfolio choices of individual investors.

The authors' research also high-

lights the scope of investor confusion regarding sales loads. In an experimental setting, investors were presented with several different mutual fund choices with different loads. Even when participants had a one-month investment horizon,

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so it was very unlikely that a fund's expected return over this period would offset the load, they did not appear to avoid loads. Subjects in the experiment chose funds with an average load that was 200 basis points higher than the minimum cost portfolio, despite their short investment horizon; this choice could only make sense if investors' expected returns on the load funds were 27.4 percentage points higher than the returns on the no-load funds. The authors conclude that subjects either don't understand how loads work or don't take them into account in making invest-

ment decisions. It does not appear that the Summary Prospectus has increased investor understanding of these issues.

For this analysis, the authors recruited 186 non-faculty white-collar staff members at Harvard

University to participate in a portfolio allocation experiment. All of the subjects allocated two portfolios: one among four actively managed equity mutual funds, and one among four actively managed bond mutual funds. Subjects' payments depended on how their chosen portfolios actually performed subsequent to the experimental session, and averaged approximately \$100 per subject.

The subjects were randomized into one of three information conditions: in the first, subjects received only the funds' statutory prospectuses; in the second,

subjects received only the funds' Summary Prospectuses, which the authors constructed using the original SEC proposal's specifications; in the third, subjects received the

Summary Prospectuses but could also request the statutory prospectuses (a request that only a few of the subjects actually made). Subjects were assigned to be paid

randomly based on either their subsequent one-month portfolio return or their subsequent one-year portfolio return.

—Lester Picker

## The Internationalization of U.S. Doctorate Education

One of the most significant transformations in U.S. graduate education and the international market for highly-trained workers in science and engineering during the last quarter century is the representation of students from outside of the United States among the ranks of doctorate recipients from U.S. universities. In all but the life sciences, the foreign share of Ph.D. recipients now equals or exceeds the share from the United States. Students from outside the United States accounted for 51 percent of Ph.D. recipients in science and engineering in 2003, up from 27 percent in 1973. In 2003, doctorate recipients from outside the United States accounted for 50 percent of Ph.D.s awarded in the physical sciences, 67 percent in engineering, and 68 percent in economics.

In **Internationalization of U.S. Doctorate Education** (NBER Working Paper No. 14792), authors **John Bound, Sarah Turner, and Patrick Walsh** highlight the importance of changes in demand among foreign-born students in explaining the growth and distribution of doctorates awarded in science and engineering. They find in particular that foreign students' demand for U.S. doctorate programs, especially in science and engineering, has grown in countries where under-

graduate education has expanded. Many foreign students specialize in those fields as undergraduates: in 2004, China awarded 60 percent of its undergraduate degrees in science and engineering, while the concentrations were lower in European countries including in

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“... foreign student demand for U.S. doctorate programs, especially in science and engineering, has grown in countries where undergraduate education has expanded.”

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Great Britain at 35 percent, and in the United States at 32 percent.

Beyond the increase in numbers of foreign undergraduate students prepared for graduate work, periodic “demand shocks” affect foreign representation in U.S. doctorate programs. These include increased birth-cohort size and undergraduate degree attainment in countries of origin; development of networks among successful immigrants in the United States; and political transformations, such as the fall of the Soviet Union in 1989, the fall of the Shah and American hostage crisis in Iran in 1979, and normalization of relations with China in the early 1980s. However, there is little evidence to suggest that these demand shocks have led to direct “crowd-out” or reductions in degree attainment among U.S. residents, the authors

find. For example, the large influx of Chinese students in the early 1980s had no discernible impact on the number of students from the United States or any other nation receiving doctorates in the sciences. Instead, the overall number of doctorates increased, with foreign stu-

dent representation increasing particularly at less highly ranked U.S. programs.

While there is no direct evidence of crowd out in doctoral programs, the influx of foreigners into the science and engineering labor market in the United States has changed the return to investment in advanced degrees in science and engineering for U.S. residents. Bound, Turner, and Walsh suggest that these effects explain why domestic demand for programs in science and engineering has remained stagnant or declined in the period of increasing foreign demand. Over the last quarter century, the relative returns to U.S. students from advanced study in the sciences have not increased. Labor market data show that the earnings of new advanced degree recipients in science-and-engineering fields

trail earnings for other college-educated workers. At U.S. universities, the extended duration of low-wage post-doctorate appointments has

lengthened the time between entry and completion of graduate school; the salary gap between senior and junior faculty has widened; and

permanent university employment is uncertain.

— Sarah H. Wright

## Why Do Foreign Firms Leave U.S. Equity Markets?

**I**n **Why Do Foreign Firms Leave U.S. Equity Markets?** (NBER Working Paper No. 14245), authors **Craig Doidge**, **G. Andrew Karolyi**, and **René Stulz** investigate Securities and Exchange Commission (SEC) deregistrations by foreign firms from the time the Sarbanes-Oxley Act (SOX) was passed in 2002 through 2008. Until the SEC adopted Exchange Act Rule 12h-6 in 2007 the deregistration process was extremely difficult for foreign firms. That may explain why over half of the authors' sample of 144 deregistrations that took place between 2002 and 2008 occurred after the rules were loosened in 2007. Before that, the firms that left were far smaller than the firms that stayed—that is not surprising, because the old rules required them to have fewer than 300 registered U.S. shareholders before they could leave. After the rule change, the size difference between firms that left and those who stayed disappeared. Easing these procedures led to a spike in deregistration activity in the second-half of 2007 that did not extend into 2008.

The authors observe that firms that deregister grow more slowly, need less capital, and experience poor stock return performance prior to deregistration compared to other U.S.-listed foreign firms that do not deregister. The deregistrations are generally associated with adverse

stock-price reactions, they find, but these reactions were much weaker in 2007 than in other years.

The authors consider two explanations for these departures: the first is “loss of competitiveness,” meaning that SOX and other regulatory developments made U.S. capital markets less competitive with other mar-

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“Foreign firms list shares in the United States in order to raise capital at the lowest possible cost to finance growth opportunities and, when those opportunities disappear, a listing becomes less valuable.”

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kets in holding onto foreign cross-listings. The second is “bonding,” whereby the controlling shareholders of foreign firms—who had credibly bonded themselves by being subject to U.S. laws and institutions—were able to raise capital cheaply, but when their firms were no longer growing, or no longer needed to raise new capital, they quit U.S. markets. If the first explanation were true, then the stocks of the deregistering firms would have been affected by various U.S. regulatory announcements. For example, when the SEC adopted the rule making it easier to leave U.S. equity markets, shareholders might well have boosted their purchases of shares of companies most likely to use the rule. But the authors find no evidence of that.

Overall, the evidence supports the bonding explanation rather than

loss of competitiveness. Foreign firms list shares in the United States in order to raise capital at the lowest possible cost to finance growth opportunities and, when those opportunities disappear, a listing becomes less valuable. The authors write that “deregistering firms are poor performers, have lower growth opportunities, and have a

financing surplus, all characteristics that reduce the value of a cross-listing... If a firm is no longer expected to require outside finance because its growth opportunities have been taken advantage of or because they have disappeared, a [U.S.] listing is no longer valuable for insiders.”

Looking at market reaction, the authors find that companies' stocks fell significantly when they announced they were deregistering *before* the rules were loosened, but did not fall significantly after the rule change. However, they also find that companies with better growth opportunities and larger financing deficits saw their stock prices fall much more significantly. That would be consistent with the bonding theory.

— Laurent Belsie

## The Cost of Low Fertility in Europe

As in many parts of the world, Europe has seen a rapid decline in fertility. In 1960, Estonia was the only European nation whose total fertility rate was less than two. Today, only two European countries—Albania and Iceland—have fertility rates above two. Several factors are thought to be driving that decline in Western Europe: socioeconomic incentives to delay childbearing; a decline in the desired number of children; and institutional factors, such as labor market rigidities, lack of child care, and changing gender roles. Also, Eastern European nations have gone through major economic, political, and social change.

In the long run, low rates of fertility are associated with diminished economic growth, according to a new study by NBER Research Associate **David Bloom** and his co-authors **David Canning**, **Günther Fink**, and **Jocelyn Finlay**. In *The Cost of Low Fertility in Europe* (NBER Working Paper No. 14820), they observe that in the short term, low fertility rates raise per capita income by lowering families' costs of child-rearing and boosting the share of working-age people. But as that working-age population moves into retirement, the number of workers who replace them will shrink. So, whatever short-term boon European nations may have gained from low youth dependency will be overwhelmed eventually by the economic burdens of old-age dependency.

If fertility rates stay at current levels and life expectancy averages 80 years, this study implies that Europe's share of working-age people will fall from about 70 percent

today to somewhere between 50 and 55 percent in the long run. That would suggest a 25 percent drop in the number of workers per capita, assuming that labor participation rates stay the same.

There are several ways to analyze

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“In the long run, low rates of fertility are associated with diminished economic growth.”

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the effects of fertility on economic growth—these authors choose to concentrate on age structure. The idea is that fertility, mortality, and net migration together determine the size of a nation's working-age population. The bigger is that group relative to the total population, the more workers there are, and thus the more income the nation is likely to generate. The smaller is that working-age group relative to total population, the smaller is output per capita in equilibrium.

Of course, small changes in any one of several variables can alter the picture dramatically. In France, for example, where life expectancy is 80, the fertility rate that would maximize the working-age share of France's population would be 2.1 if young people started working at age 20 and retired at age 60. With retirement at age 55, the working-age share-maximizing fertility rate would have to rise to 3.1. With retirement delayed until 70, that rate would drop to two.

The same dynamic works at the other end of the working-age spectrum. If young people entered the workforce at age 15, the fertility rate necessary to keep everything in balance would rise to 2.6. If they entered at 25, then fertil-

ity only would need to be at 1.8 (below replacement level) to maximize the working-age share of the population.

Another factor is immigration, which typically helps to boost the size of a nation's working-age popu-

lation. But its impact is usually quite small. Austria, for example, has Europe's third-highest net migration relative to its overall population, but over the past 45 years the absence of migration barely would have changed its share of working-age people, this study finds. Even if it did, political resistance to immigration is high.

“In short, migration is highly unlikely to have a major effect on falling working-age shares in Western European countries over the next decades,” the authors write. “The size of the economic repercussions of declining working-age shares on economic development, however, will critically depend on individual behavior.”

Previous research has shown that for every extra child that a woman has, her labor participation falls on average 1.9 years over her lifetime. So as fertility falls, women tend to spend more time working, which allows them to accumulate more savings, more experience, and possibly a better-paying job. This accumulation of physical and human capital may offset some of the overall long-term income decline that low fertility suggests.

— Laurent Belsie

## Disclosure and the Cost of Capital

In a new NBER Working Paper, **Christian Leuz** and **Catherine Schrand** study how firms' disclosure choices are related to their cost of capital by examining firms' adjusted disclosure policies in response to the Enron scandal in fall 2001. Their paper, **Disclosure and the Cost of Capital: Evidence from Firms' Responses to the Enron Shock** (NBER Working Paper No. 14897), concludes that firms successfully attempted to mitigate transparency concerns by expanding their financial statements. The firms' disclosure responses reduced their costs of capital and hence the impact of the transparency crisis.

The news about Enron's losses and subsequent accounting irregularities created widespread worry about the quality of corporate reporting in the United States. Leuz and Schrand argue that the sudden and unpredictable nature of Enron's collapse mitigates concerns that any observed changes in disclosures after the debacle were driven by other factors. The timing of this natural experiment is also fortunate because firms had a chance

to respond to the shock in their end-of-year financial statements.

The authors use financial statements for 1,868 public companies, which end their fiscal year in December and have reported financial data in each year from 1999–2001. Their sample excludes firms that have been significantly affected

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“... after Enron, firms expanded the number of pages of their annual 10-K filings, notably the sections containing the financial statements and footnotes.”

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by the events of September 11, 2001, including insurance companies and airlines. The extent of corporate disclosure is measured by the total page count as well as page counts for the main sections of firms' annual 10-K filings to the Securities and Exchange Commission (SEC).

Leuz and Schrand find that after Enron, firms expanded the number of pages of their annual 10-K filings, notably the sections containing the financial statements and footnotes. The increase in disclosure was particularly pronounced for firms that have positive cost of capital shocks

and larger financing needs. Firms also respond with additional interim disclosures (for example, 8-K filings) and these disclosures are complementary to the 10-K disclosures. Corporate disclosure itself has a significant effect on investors' evaluation of firm risk and subsequent market reaction: the authors estimate that a median

increase in the length of a 10-K filing was associated with a 5 percent decline in a firm's systematic risk as measured in March 2002.

Although this analysis suggests that a firm may effectively reduce the cost of capital in a transparency crisis by providing additional disclosure, the authors stress that the “results should not be used to justify additional disclosure requirements as firms that voluntarily responded more to the cost of capital shock were those with greatest hypothesized benefits.”

—Alex Teytelboym

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