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Corporate Debt Maturity and the Real Effects of the 2007 Credit Crisis

In **Corporate Debt Maturity and the Real Effects of the 2007 Credit Crisis** (NBER Working Paper No. 14990), co-authors **Heitor Almeida, Murillo Campello, Bruno Laranjeira, and Scott Weisbenner** measure the effect of financial contracting on corporate outcomes following a shock to the supply of credit — specifically the mortgage market crisis of August 2007. They find that in the immediate aftermath of such a shock, long-term financial contracts such as about-to-mature debt contracts can have a sizeable effect on firms' real and financial policies.

The authors use data compiled by COMPUSTAT, singling out over 1,000 robust firms capable of issuing long-term debt, and avoiding comparisons with weaker companies that would be shaken by a credit crunch in any event. They look particularly at the proportion of long-term debt that matured right after August 2007 in order to assess how firms are affected by credit contractions. They match firms that they would expect to be more susceptible to financial distress, those with debts coming due, with “control” firms that they would expect to be less affected by a credit shock, namely firms with debt that matures at a future date.

The researchers first document the existence of pronounced variation in the maturity structure of long-term debt at the onset of the 2007 crisis, which stemmed from contracting decisions made

“Debt maturity structure is an important variable in understanding how credit supply shocks spread through the corporate sector.”

several years prior to that credit shock. That variation in long-term debt maturity is persistent, with no sign of change in the years leading up to 2007. After matching firms on numerous characteristics, the researchers are also able to isolate firms with a large fraction of long-term debt maturing right after the crisis (the treated firms) that are virtually identical to other firms whose debt happens to mature in later years (the control firms). These groups of firms are identical across all of the characteristics that the researchers consider except for debt maturity structure. For example, the two groups of firms display similar investment rates in the three quarters immediately leading up to the crisis (7.8 percent of capital on a quarterly basis for the treatment group, and 7.3 percent for the control group).

For firms with long-term debt

maturing just after the credit crisis, quarterly investment rates decrease to an average 5.7 percent of capital, a significant fall of 2.1 percent. In contrast, similar firms that did not have debt maturing do not

decrease their investment; indeed, their quarterly investment-over-capital actually increases by 0.1 percent. Moreover, the relationship between the debt maturity structure and investment strengthens when the researchers focus on firms for which long-term debt is a more important source of financing; in that case, the drop in investment is 3.4 percent. As expected, the relationship disappears when they use firms with insignificant amounts of long-term debt.

The relationship between debt maturity structure and investment holds only for the period surrounding the recent financial crisis. Replicating their central tests, which involve data from 2007, for each year between 2000 and 2006, they find no relationship between debt maturity structure and investment. The only year in which investment rates differ for firms with

and without substantial amounts of long-term debt maturing is at the end of 2007. This suggests that the negative effect of debt maturity on investment is indeed attributable to firms' inability to refinance the maturing portion of their long-term debt in the one period in recent years that experienced a pronounced credit squeeze.

The authors conclude that their unique, quasi-experimental methodology reveals a novel link between debt maturity structure and corporate investment. In particular, their analysis points to the importance of debt maturity structure in affecting corporate financial flexibility. Their results also provide evidence that the 2007 credit crisis

had real effects on corporate behavior, and underscore that debt maturity structure is an important variable in understanding how credit supply shocks spread through the corporate sector.

— Matt Nesvisky

Five Decades of Poverty

Despite a range of public programs that are designed to ameliorate poverty, the official U.S. poverty rate is virtually the same today as it was in 1970. Rather than being an indictment of the effects of economic growth or anti-poverty programs, this fact reflects important flaws in how official poverty is measured. In **Five Decades of Consumption and Income Poverty** (NBER Working Paper No. 14827), **Bruce Meyer** and **James Sullivan** present alternative measures of poverty that more accurately reflect how well-being has changed for disadvantaged families since the early 1960s. They examine improved measures of income based poverty as well as measures based on consumption. They emphasize that changes in the poverty rate over the past five decades differ considerably depending on how poverty is measured.

Among the biggest concerns with the official U.S. poverty rate is that it is based on pre-tax money income. Consequently, the measure ignores tax programs and in-kind transfers that provide resources to the poor, including the Earned Income Tax Credit, food stamps, housing assistance, Medicaid, and the National School Lunch Program. The Earned Income Tax Credit is one of the largest anti-poverty programs in the United States,

but its subsidies show up in after-tax rather than pre-tax income. This study shows that between 1990 and 1996, the expansion of the Earned Income Tax Credit resulted in a decline in poverty of 1.3 percentage points. And between the early 1960s and 2005, a money-income poverty measure that incorporates taxes declined by an additional 3.9

“Consumption data show greater improvements in poverty rates and the depth of poverty than income data.”

percentage points as compared to a pre-tax measure of income poverty.

Another important concern is that official poverty, “while described as an absolute measure, is far from it.” The official poverty measure over-adjusts for inflation because it is based on the Consumer Price Index, which has some well-known biases. The authors make clear that poverty rates vary significantly depending upon how the poverty measure is adjusted for inflation. For example, correcting for known biases in the Consumer Price Index increases the decline in poverty between the early 1960s and 2005 by 14 percentage points.

Another way of gauging poverty is in terms of consumption, rather than income. The authors argue that a consumption based measure of poverty offers advan-

tages over an income based measure, not only because consumption is a more direct measure of well-being but also because evidence suggests that consumption is more accurately measured for those at the bottom. For single mothers, for example, the fifth percentile of expenditures exceeds the fifth percentile of income by 50 percent;

the difference is 25 percent at the twentieth percentiles, the authors report. This difference is attributable in large part to underreporting of income, particularly transfer income such as food stamp benefits and welfare payments.

In general, the authors find that consumption data show greater improvement in poverty rates and the depth of poverty than income data. They note that the amount of improvement varies across family types: for example, since 1980 poverty as measured by consumption has fallen faster than income based poverty for single parents and the elderly, but consumption based poverty has fallen more slowly for married couples with children.

— Linda Gorman

The Investment Strategies of Sovereign Wealth Funds

The state-owned investment portfolios known as sovereign wealth funds (SWFs) have grown impressively over the past decade to a total estimated value in 2008 of \$3.5 trillion. In **The Investment Strategies of Sovereign Wealth Funds** (NBER Working Paper No. 14861), co-authors **Shai Bernstein, Josh Lerner, and Antoinette Schoar** find that politicians' involvement affects the funds' success levels.

Drawing on three different investment databases, the researchers focus on 2,662 investments made by 29 SWFs between 1984 and 2007; this includes acquisitions, venture capital and private equity investments, and structured minority purchases in public entities. Bernstein, Lerner, and Schoar note that the average transaction is \$351 million, but there is substantial variation among the funds. Middle Eastern funds make the largest deals on average, around \$604 million, while western funds make the smallest deals on average, at \$97 million per transaction. Similarly, the average acquisition stake of SWFs is substantial (56.6 percent), with the stake of Middle Eastern funds averaging 62.2 percent as compared to an average of 25.7 percent for western funds.

The analysis reveals that SWFs located in Asian, Middle Eastern, and western regions do not differ greatly in the average price-earnings (P/E) levels of the sec-

tors in which they invest. Asian and Middle Eastern funds typically invest at significantly lower P/E ratios domestically and at higher P/E ratios abroad, while the opposite is true for western funds. SWFs are more likely to invest at home

“SWFs with political figures involved in their governance have a much greater likelihood of investing domestically, while funds relying on external managers are less likely to do so.”

when domestic equity prices are higher, and more likely to invest abroad when foreign prices are higher. Perhaps as a consequence, Asian groups, and to a lesser extent Middle Eastern SWFs, experience a drop in the industry P/E ratios of their home investments in the year after investment and a positive change in the P/E ratio in the year after their foreign investments.

The data also show that SWFs with political figures involved in their governance have a much greater likelihood of investing domestically, while funds relying on external managers are less likely to do so. Domestic investment might be propelled by politicians' sensitivity to their nations' social needs, the researchers theorize, but they note that this does not square with the propensity to invest in the high P/E industries, especially in view of the negative returns that characterize these sectors. Moreover, controlling for the differing propensity to invest domestically, the researchers find

that SWFs with external managers tend to invest in lower P/E industries, while those with politicians involved in the governance process invest in high P/E industries. In addition, the former tend to be associated with a more posi-

tive change in industry P/E in the year after the investment, while the politically controlled funds trend toward the negative.

Their analysis suggests that high levels of home investments by SWFs, particularly those with the active involvement of political figures, are associated with trend chasing and worse performance. Politician-influenced funds invest in the highest P/E industries. The researchers note that SWFs are commonly perceived as tools for furthering the geopolitical and strategic economic interests of their governments. The emphasis of Singaporean SWFs on investing in India and China, for example, has been interpreted as a means of Singapore's forging strategic ties with its much larger and more powerful neighbors. But accomplishing political goals while maintaining strong financial returns appears challenging indeed.

— Matt Nesvisky

The Impact of the AIDS Pandemic on Health Services in Africa

In the past twenty years, the AIDS crisis has had crippling

effects on the health care systems of many countries. The pandemic

has compromised the ability of health systems to deliver care, in

part because health professionals have fallen ill or have chosen to leave for less risky assignments elsewhere. The nature of care offered by clinics and hospitals has also changed, with limited resources shifted toward those infected with HIV or full-blown AIDS. A recent World Bank evaluation also reports changes in its funding for health, nutrition, and population programs (HNP) over the decade from 1997 to 2007, noting that “while the overall levels of lending in HNP have not changed much over the past decade, the composition of the portfolio has shifted rather dramatically toward communicable disease projects, particularly AIDS...”

AIDS may also reduce the demand for non-AIDS related health services in Africa: prime-aged adults who fall ill may need to leave the labor force and other family members may find it necessary to change their work patterns in order to care for the sick. These costs of lost work, together with the financial costs of covering illnesses associated with AIDS, can drive families into poverty, reducing their ability to fund non-AIDS related care.

These strains on health systems and households have taken their toll, according to a recent study by NBER researchers **Anne Case** and **Christina Paxson**. In **The Impact of the AIDS Pandemic on Health**

Services in Africa: Evidence from Demographic and Health Surveys (NBER Working Paper No. 15000), they use data on four-

“Erosion of health services is highly correlated with increases in AIDS prevalence. Regions of countries that have light AIDS burdens have witnessed small or no declines in health care.”

teen sub-Saharan African countries collected in Demographic and Health Surveys (DHS) to document the impact of the AIDS crisis on non-AIDS related health services. They find deterioration in a number of survey measures of health care, including the presence of trained attendants at birth deliveries, tests done as part of antenatal care, and rates of immunization for children born between 1988 and 2005.

The most recent DHS survey for each country collected data on HIV prevalence, so Case and Paxson are able to examine the association between HIV burden and health care. They find that erosion of health services is highly correlated with increases in AIDS prevalence. Regions of countries that have light AIDS burdens have witnessed small or no declines in health care, using the measures noted above. Those regions currently shouldering the heaviest burdens have seen the largest erosion in treatment for pregnant women and children. The authors date the beginning of the diver-

gence in health services between high- and low-HIV regions to the mid-1990s.

The Demographic and Health

Surveys are large, nationally representative household-based surveys conducted at approximately four to five year intervals in low- and middle-income countries. They focus primarily on population, health, and nutrition. Women aged 15 to 49 are asked about their fertility histories, including information on prenatal care, delivery assistance, and children’s immunizations. In some of the surveys, information on antenatal care is available for a woman’s most recent birth; in others, it is collected for all births that occurred within a particular time period.

The authors analyze data from 41 DHS surveys conducted between 1988 and 2006 in sub-Saharan Africa, including multiple surveys from eight West African countries where HIV prevalence rates are relatively low — Burkina Faso, Cameroon, Cote d’Ivoire, Ghana, Guinea, Mali, Niger, and Senegal — and six countries in East and Southern Africa where rates are higher — Ethiopia, Kenya, Malawi, Tanzania, Zambia, and Zimbabwe.

— Lester Picker

Charitable Memberships, Volunteering, and Discounts

As charities turn to the Internet to reach new donors, they face the challenge of knowing which traditional fundraising techniques will work online.

A new study by **Andreas Lange** and **Andrew Stocking** shows that past donors tend to give more than non-donors, as one might expect. However, it also shows that past

financial donors to a nonprofit group react differently to special membership discounts than do people who have only volunteered their time. “We believe that our study is

the first to explicitly consider the interaction between fundraising mechanism and mode of previous contributions to the charity,” they write in **Charitable Memberships, Volunteering, and Discounts: Evidence from a Large-Scale Online Field Experiment** (NBER Working Paper No. 14941).

Lange and Stocking look at online solicitations by a large left-leaning U.S. civil-rights advocacy group that were sent to 702,890 individuals. Some of the solicitations offered membership to the organization for \$35; others offered a \$10 discount off the \$35 price; a third batch offered a \$25 membership with no mention of a discount. Interestingly, the response rates to the \$25 and \$35 offers were identical: 0.23 percent. The simple price-cutting only reduced the average contribution from \$45.21 to \$36.32. But when the offer mentioned a special discount, the response rate went up to 0.27 percent. The average contribution did fall to \$37.94, but the improved response was enough to make up the shortfall, so the nonprofit raised as many dollars with this appeal as with the \$35 membership group.

This point is crucial for fundraisers because they generally adhere to the theory of the “warm list effect.” That is, people who have donated money in the past

“Our study is the first to explicitly consider the interaction between fundraising mechanism and mode of previous contributions to the charity.”

(the warm list) are far more likely to do so again than non-donors. So if charities can use a special discount offer to increase their number of donors without sacrificing their dollar return, then they’re expanding their warm list. These are the people from whom they can solicit funds in the future.

This study also more closely examines the nonprofit’s past donors. Volunteers — those who donated time to the organization (such as writing their congressman in support of the organization’s viewpoint) — were slightly more likely to contribute when offered the special discount (an additional 0.035 percentage points), but their average donation fell by \$9.77. Also, the contribution rate of past donors was 2.6 times that of inactive donors; the rate for past money-donors was 14.5 times that

of non-money donors. To manage these different types of potential donors, the authors conclude that charities can benefit from using an “augmented warm list,” one that

denotes when someone donated and whether it was time or money.

To gather some hints about the “cost” and motivations of donors, Lange and Stocking look at the response to a picture-frame offer. If people donated more than \$20, this nonprofit offered to send along the frame as a “thank you.” It turns out that those who were offered a discount were more likely to accept the frame than the other two groups, but that past money- and time-donors were more likely to reject the frame than brand new donors. The authors conclude that “warm list subjects” not only generate more revenue for the charity but also generate lower fundraising costs — additional gifts are more likely to be turned down the more past donations (of money or time) a subject has made.

— Laurent Belsie

Pollution, Health, and Avoidance Behavior

Ozone is often described as having a deleterious effect on health, especially for children, the elderly, and those with existing respiratory illnesses. Yet the exact magnitude of that effect is difficult to estimate because individuals may select neighborhoods to live in based on the air quality there. For example, those with higher preferences for clean air or

higher income may live in areas with better air quality, and these same individuals may make other investments in their continued good health. Furthermore, individuals may adjust their exposure in response to changes in pollution. Those most at risk of being negatively affected by pollution have the greatest incentive to adopt “compensatory behaviors,” such as

reducing physical activity on days with poor air quality.

In **Pollution, Health, and Avoidance Behavior: Evidence from the Ports of Los Angeles** (NBER Working Paper No. 14939), authors **Enrico Moretti** and **Matthew Neidell** propose a novel approach to estimating the biological effect of ozone on health. They isolate the short-term

effect of ozone by using changes in pollution caused by boat arrivals and departures at the Ports of Los Angeles and Long Beach. Boat traffic significantly affects daily ozone levels in the Los Angeles area. But because boat traffic is unobserved by most residents, it generates an important source of variation in pollution that is difficult to avoid and cannot easily be offset by residents' compensatory behavior.

The authors draw two main conclusions from their analysis: first, the estimated effects of ozone on health are large. Second, it is important to account for avoidance behavior and measurement error in determining the full welfare effects of environmental quality. Simple correlations between ozone levels and health are significantly downward biased by unobserved avoidance behavior and/or measurement error.

The authors point out that behavioral responses to ozone levels may be substantial, especially in

Southern California. Since ozone is greatly affected by weather conditions, it is highly predictable. Daily ozone forecasts that inform

“It is important to account for avoidance behavior and measurement error in determining the full welfare effects of environmental quality.”

the public of dangers from episodic ozone conditions are widely available in Los Angeles through television and newspapers. This allows individuals to engage in protective behavior by spending less time outdoors to offset some of the adverse consequences from ozone exposure. If affected individuals compensate for changes in ambient ozone levels by reducing exposure, then estimates that do not account for these responses will understate the full welfare effects of ozone.

The authors' methodology avoids some of the measurement error problems that have plagued earlier studies. The most common approach for measuring expo-

sure is to assign data from ambient air pollution monitors to the residential location of the individual using various interpolation

techniques. Given the tremendous spatial variation in pollution within finely defined areas, this approach is likely to yield considerable measurement error. While several epidemiological field studies address this concern by using personal ambient monitors, these studies often involve very small samples that preclude the ability to obtain precise estimates of common outcomes of interest, such as hospitalizations.

— Lester Picker

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