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Bad Debt Rising

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Charge-offs on credit card loans are rising sharply. While many analysts blame this trend on an expanding supply of credit cards, a closer look reveals the importance of two demand factors—wealth and the share of the population at peak borrowing age—in explaining the increase in bad debt.

Credit card charge-offs—the loans that banks write off as uncollectible—are on the rise. Although this trend has only recently made news, it has been under way for more than a decade. From 1971 to 1983, commercial banks charged off just 2.3 percent of their credit card loans on average. Since 1983 the charge-off rate has averaged 3.8 percent and is now approaching 5 percent. This increase in charge-offs parallels the trend in the household debt burden, which has climbed steeply since the early 1980s.

What is behind the rise in bad debt? Most analysts tend to blame lenders, arguing that banks are granting credit cards to riskier borrowers without raising rates to compensate. That supply-side focus is easy to understand given the aggressive marketing of credit cards in recent years, but it overlooks another possibility: perhaps rising demand for credit is driving up debt burdens and charge-offs.

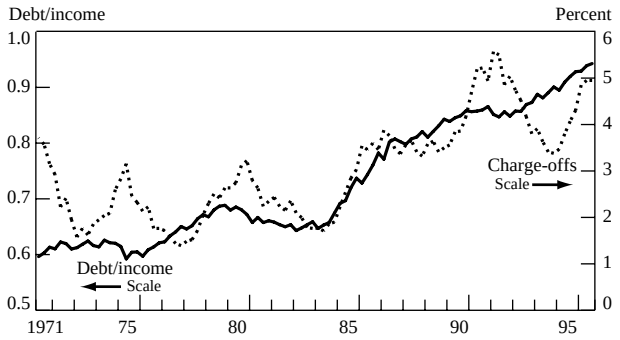
This edition of *Current Issues* weighs both supply and demand explanations for the rise in bad debt. Beginning with the supply side, we ask whether continued growth in credit card balances—despite growing risk—reflects a greater willingness on the part of credit card lenders to gamble on risky borrowers. Although several developments in the credit card industry have the potential to expand the supply of credit card lending, we find no evidence that a supply shift has occurred. Interest rate spreads on credit cards have not fallen since the early 1980s, nor have charge-offs on credit cards risen faster than charge-offs on other consumer loans.

Our look at the demand side of the story is more revealing. Our analysis shows that changes in two important demand factors—wealth and the share of heavy borrowers in the population—have influenced the growth of debt burdens. Before 1983, these variables moved in offsetting directions, tending to stabilize credit demand and the debt burden. Since 1983, however, wealth and the share of heavy borrowers in the population have increased together. Using regression analysis, we show that the combined force of these two demand shifts does a good job of explaining the rise in debt burdens and bad debt.

Charge-offs and the Household Debt Burden: Parallel Trends

The rise in charge-offs closely mirrors the trend in the overall household debt burden, defined as the ratio of total debt to income (Chart 1).[1] These parallel trends are no mere coincidence; a mounting debt burden *causes* higher charge-offs because heavily indebted borrowers are more exposed to income shocks such as layoffs, illness, and divorce. Credit card borrowers are especially sensitive to such shocks because credit cards

Chart 1
Credit Card Charge-offs and the Household Debt Burden



Sources: Federal Financial Institutions Examination Council, Reports of Condition and Income; Ausubel (1995); Board of Governors of the Federal Reserve System, Flow of Funds Accounts.

provide revolving loans that are usually not secured. When income drops, the revolving feature of credit card loans allows cardholders to slow the repayment of their debt—or even run up their balances.[2] As their debt accumulates, borrowers are then tempted to default on their credit card debt because these loans are rarely secured by collateral.

Despite this rising risk of charge-offs, credit card balances have expanded dramatically—in real terms, by 11.5 percent per year between 1984 and 1996.[3] Why are analysts so quick to suggest that the rapid growth in credit card debt reflects expanding supply? Several developments in the credit card industry could lead one to suspect a supply shift. As we explain below, the potential for high profits, the securitization of credit card loans, and the use of credit-scoring models to assess the risk of borrowers could encourage lenders to take on more risk.

Supply-Side Developments

Profitability in the credit card industry has been two to three times higher than in the overall banking system since the early 1980s, when credit card rates were deregulated. Ausubel (1991) argues that profits in the industry are higher than one would expect in a competitive industry, even allowing for the higher charge-offs and the other risks associated with credit card lending. If he is correct, competition for those profits would drive up charge-offs as new lenders who were willing to gamble on riskier borrowers entered the market.[4]

A more recent development that could be expanding credit card lending is securitization. Until the late 1980s, credit card lenders had to screen potential borrowers, monitor the credit, and bear the risk. Today, lenders can package the loans made to individual borrowers into securities and sell them to investors. Securitization allows the lenders to specialize in their comparative advantage—screening and monitoring—while shifting some of the risk to investors.[5] Specialization, in turn, could lower the cost of producing credit and thus increase the supply of lending. Securitization might also expand the credit card lending of banks, in particular, by reducing the amount of capital they must hold to satisfy the requirements imposed by bank regulators.[6]

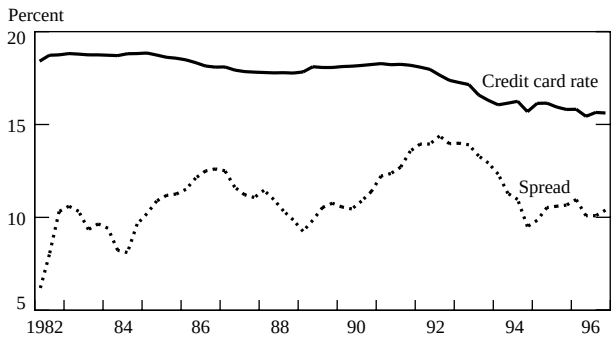
Several developments in the credit card industry could lead one to suspect a supply shift.

The advent of credit-scoring models could also cause a shift in the supply of credit cards. These models enable lenders to use the credit histories of millions of borrowers to predict the default risk of loan applicants. By automating the credit-screening process, these computerized models could increase the supply of credit card loans by lowering the costs of producing credit. The models may also allow more accurate screening, so lenders can target narrower risk classes and price their cards accordingly. This ability to slice and price the market more precisely could expand credit card lending.

A Look at the Evidence

But have these factors created a supply shift? If so, we would expect to see interest rates on credit card loans falling relative to other interest rates. Yet credit card spreads have actually trended upward over the past fifteen years (Chart 2). The spread shown in the chart is

Chart 2
Credit Card Rate and Spread



Source: Board of Governors of the Federal Reserve System, G.19 Statistical Release "Terms of Credit at Commercial Banks and Finance Companies."

Note: The spread is the credit card rate less the one-year Treasury bill rate.

simply the difference between the credit card rate and the one-year Treasury bill rate, which measures the cost of funds to lenders. While the credit card rate has fallen in recent years, the spread is a more relevant measure because it reflects the compensation lenders require for the risks they are taking.[7] Apart from cyclical variation, the spread has clearly moved upward—from 6.1 percentage points in the second quarter of 1982 to 11 percentage points in the first quarter of 1996. This trend parallels the climb in charge-offs shown in Chart 1, indicating that banks have been raising the spread to compensate for the rising risk of charge-offs.[8]

Another way to identify a supply shift in the credit card market is to examine charge-offs on non-credit-card consumer loans. If lenders have become more willing to gamble on credit card loans than on other consumer loans, credit card charge-offs should be rising at a faster rate. The charge-off rates on credit card loans and on other consumer loans, primarily installment loans, are shown in Chart 3. Contrary to the supply-side story, charge-offs on other consumer loans have risen at virtually the same rate as credit card charge-offs.

Although developments in the credit card market might lead one to suspect that a supply shift is causing the rise in charge-offs, the evidence presented here contradicts that story. Moreover, the uniform rise in all consumer charge-offs steers us toward another explanation: perhaps rising demand for credit is raising debt burdens, making borrowers riskier, and forcing up charge-offs across the board.

The Demand-Side Story

Our demand-side explanation draws on the two leading theories of household borrowing—the permanent income theory and the life-cycle theory. According to the permanent income theory, spending and the demand for credit will rise along with wealth. Suppose home values double.

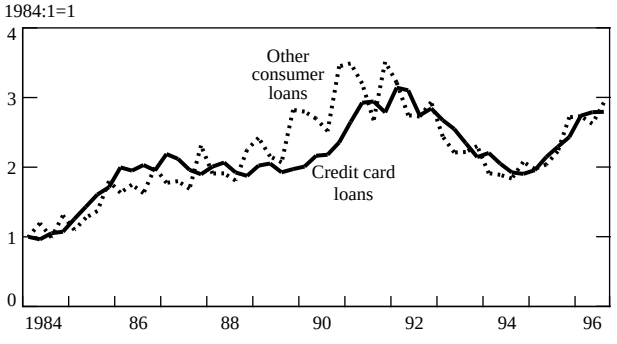
The uniform rise in all consumer charge-offs steers us toward another explanation: perhaps rising demand for credit is raising debt burdens, making borrowers riskier, and forcing up charge-offs across the board.

To consume some of this new wealth without selling their homes, homeowners can simply take out a loan. If debt increases more than current income, households' debt burden—the ratio of debt to income—rises.

The second theory relates the demand for credit to borrowers' age. According to this life-cycle theory, people try to maintain a stable standard of living over time, even though incomes tend to rise over a person's working life. To smooth consumption, younger individuals borrow against future income and then work down their debt as they grow older and their income rises.

These two theories lead us to look for shifts in wealth and demographics that could be driving up the debt burden—and charge-offs. We measure wealth with net worth per capita in 1983 dollars. Our age variable is the percent of the population in the peak borrowing age of twenty-five to fifty-four. We identified these as the peak borrowing years on the basis of data from the Federal Reserve Board's periodic *Survey of Consumer Finances;* the surveys for 1989 and 1992 reveal that the debt burden is highest across those age groups (Canner, Kennickell, and Luckett 1995).

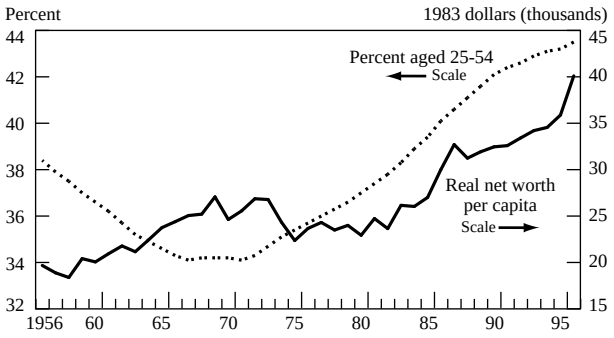
Chart 3
Relative Charge-off Rates for Credit Card and Other Consumer Loans



Source: Federal Financial Institutions Examination Council, Reports of Condition and Income.

Note: Series are scaled by their first-quarter 1984 values.

Chart 4
Wealth and the Share of the U.S. Population Aged Twenty-Five to Fifty-Four



Sources: Board of Governors of the Federal Reserve System, Flow of Funds Accounts; U.S. Bureau of the Census.

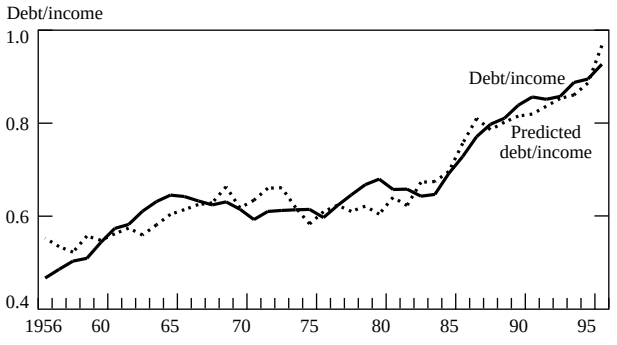
Although there have been several notable swings in the net worth and age variables over the last forty years, before 1983 the variables usually moved in opposite directions (Chart 4). Between 1956 and 1972, the share of the population at peak borrowing age was falling or level while net worth was rising or stable. When net worth began to fall in 1973, the share of heavy borrowers had already begun to rise. According to the theory, these counter movements should tend to offset the effect on credit demand and debt burdens. In the early 1980s, however, net worth turned up, and both variables have since risen together steadily.

The combination of rising net worth and the increasing share of heavy borrowers can account for the mounting debt burden.

The combination of rising net worth and the increasing share of heavy borrowers can account for the mounting debt burden. Indeed, these two variables predict most of the variation in the debt burden over the last forty years (Chart 5).[9] The debt burden increased only moderately between the late 1950s and the early 1980s, a period when the movements of the wealth and age variables partially offset one another. Since the early 1980s, the combined forces of rising net worth and an increasing share of heavy borrowers have driven up the household debt burden.

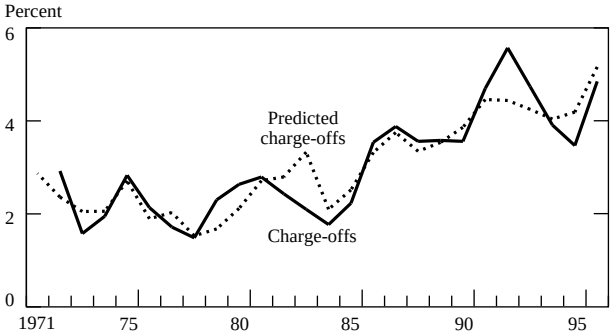
The debt burden predicted by the wealth and age variables can, in turn, explain the rise in charge-offs (Chart 6).[10] To demonstrate this relationship, we regressed the charge-off rate on the level of the debt burden we predicted using the wealth and age variables (shown in Chart 5). We included the annual rate of job growth in the regression to capture cyclical influences. If a supply shift had occurred, the charge-off rate would consistently exceed the rate we predicted using only the demand-side and cyclical variables. Charge-offs *were* somewhat higher than predicted in the early 1990s, but that deviation likely reflects the added effect of the recession in 1990-91. Since 1993, however, charge-offs have actually been a bit lower than predicted. Overall, the predicted rate tracks the actual rate very closely, confirming the role of the demand-side factors in explaining the increase in charge-offs.[11]

Chart 5
Actual and Predicted Debt Burden, Based on Wealth and Age



Sources: Board of Governors of the Federal Reserve System, Flow of Funds Accounts; U.S. Bureau of the Census; authors' forecasts.

Chart 6
Actual and Predicted Credit Card Charge-offs, Based on Predicted Debt Burden



Sources: Federal Financial Institutions Examination Council, Reports of Condition and Income; Board of Governors of the Federal Reserve System, Flow of Funds Accounts; authors' forecasts.

Conclusion

Why are credit card charge-offs rising? Many analysts blame lenders for supplying cards to riskier borrowers without raising rates to compensate. Although we consider developments that could expand credit card lending, we find no evidence that the rise in charge-offs reflects a supply shift. Credit card spreads have risen along with charge-offs over the past fifteen years, suggesting that lenders are charging for the extra risk they face. Moreover, charge-offs on other consumer loans are rising just as fast as credit card charge-offs, suggesting that some other force is driving up bad debt.

Finding no evidence of a supply shift, we then consider demand-side developments that many analysts have overlooked. Two variables that drive household borrowing, wealth and the share of heavy borrowers in the population, moved in offsetting directions before the early 1980s, keeping demand in check. Since 1983, however, these two variables have moved in one

direction—up. This convergence has fueled the demand for credit and has driven up debt burdens, making borrowers riskier. As a result, bad debt is on the rise.

Notes

1. The charge-off series in Chart 1 has two parts. The series since 1984 is from the Federal Financial Institutions Examination Council's Reports of Condition and Income (commonly known as Call Reports), which are filed each quarter by all U.S. banks. The series before 1984 is from Lawrence Ausubel (1995), who derived it from publications by Visa International. The two series had a correlation of .97 in the period when they overlapped (1984-1991:2), so we simply combined them to generate the series in Chart 1.

2. Borrowers are subject, of course, to a minimum payment and a maximum credit limit. The revolving or open-ended feature distinguishes credit card lending from closed-end lending, such as installment loans, which require fixed payments over a specified term and do not allow additional borrowing.

3. The growth of credit card balances does not explain rising debt burdens because credit card debt remains a small portion of total household debt.

4. Not all analysts accept Ausubel's (1991) arguments; Ausubel (1995) addresses his critics.

5. Although this shifting of risk would appear to tempt lenders to offer cards to riskier borrowers, bankers report that the charge-off rate on the loans they hold is about the same as that on securitized loans (Board of Governors of the Federal Reserve System 1996).

6. Banks are required to hold capital against their assets; securitization reduces banks' assets and thus their required capital.

7. The credit card rate shown is the rate most commonly charged by banks. Because banks now seem to offer a wider range of rates, we were concerned that this mode rate might overstate the average rate in recent years. To address this concern, we calculated the average rate (interest income on credit card lending at all banks/credit card balances at all banks) using data available since 1986 and found that it tracked the mode rate very closely. Another consideration was that banks might be lowering fees rather than spreads. Although Ausubel (1991) notes that fees have declined steadily since the early 1980s, he also observes that lenders have raised late charges and other "hidden" fees to compensate.

8. We regressed the spread and the charge-off rate on a constant and a trend term. The trend coefficients, .189 and .195, were both significant (at 5 percent or lower) but did not differ significantly. By comparing the spread with charge-offs, we accounted for the loss of principal resulting from charge-offs but not the loss of interest. To account for both, we used the risk-adjusted spread = $r_c - r_t - p - p\,(r_c - r_r)$, where r_c denotes the credit card rate, r_t the Treasury bill rate, p the charge-off rate, and r_r the recovery rate on charge-offs, which is about 15 cents per dollar charged-off (according to the Call Reports). Using that figure, we calculated the risk-adjusted spread between 1982 and 1996 and found it was essentially trendless. This result is not sensitive to the assumption of a constant recovery rate, because the term pr_r is an order or two smaller than the other terms.

9. The ratio of debt to income was predicted using the following regression equation, estimated with the forty-one annual observations between the first quarter of 1956 and the first quarter of 1996: debt/income = -.064 + .007 (share aged 25 to 54) + .019 (real net worth per capita). The coefficients were both significant at 5 percent or lower. The adjusted R-squared is .91. If a trend is included, the age variable is insignificant, but wealth is still highly significant. We are inclined against including a trend, however, because the life-cycle theory suggests that the demographic variable should help explain the trend in the debt burden.

10. The equation used to predict charge-offs, estimated using annual observations between second-quarter 1971 and first-quarter 1996, was as follows: charge-offs = -2.61 + 8.39 (predicted debt-to-income ratio) – .193 (annual job growth). The predicted debt-to-income ratio is plotted in Chart 5, and the equation used to predict that ratio is described in note 9. All the coefficients are significant at 5 percent or lower and the adjusted R-squared is .80. Including lagged charge-offs eliminates the serial error in the forecast and raises the adjusted R-squared to .94.

11. If the demand for credit is increasing, wouldn't the risk-adjusted spread, described in note 8, be rising? Not necessarily, because the demand factors we have identified—wealth and age—should increase demand across the board, not just the demand for credit card loans. Even if the relative demand for credit card loans were increasing, the risk-adjusted spread would increase only if the supply of credit card loans were inelastic. If the supply is elastic, lenders can accommodate the increased demand for loans without raising the risk-adjusted spread.

References

Ausubel, Lawrence. 1991. "The Failure of Competition in the Credit Card Industry." *American Economic Review,* March: 50-81.

———. 1995. "The Credit Market Revisited." Unpublished paper, University of Maryland, July.

———. 1997. "Credit Card Defaults and Credit Card Profits." *American Bankruptcy Law Journal.* Forthcoming.

Board of Governors of the Federal Reserve System. 1996. *Senior Loan Officer Opinion Survey on Bank Lending Practices,* May.

Canner, Glenn, Arthur Kennickell, and Charles Luckett. 1995. "Household Sector Borrowing and the Burden of Debt." *Federal Reserve Bulletin,* April: 323-38.

Laderman, Elizabeth. 1996. "What's Behind Problem Credit Card Loans?" Federal Reserve Bank of San Francisco *Economic Letter,* July 19.

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