



Risk-based pricing of interest rates for consumer loans[☆]

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Abstract

By focusing on observable default risk's role in loan terms and the subsequent consequences for household behavior, this paper shows that lenders increasingly used risk-based pricing of interest rates in consumer loan markets during the mid-1990s. It tests three resulting predictions: First, the premium paid per unit of risk should have increased over this period. Second, debt levels should have reacted accordingly. Third, fewer high-risk households should have been denied credit, further contributing to the interest rate spread between the highest- and lowest-risk borrowers.

For people obtaining loans, the premium paid per unit of risk did indeed become significantly larger after the mid-1990s. For example, for a 0.01 increase in the probability of bankruptcy, the corresponding interest-rate increase tripled for first mortgages, doubled for automobile loans and rose nearly six-fold for second mortgages. Additionally, changes in borrowing levels and debt access reflected these new pricing practices, particularly for secured debt. Borrowing increased most for the low-risk households who saw their relative borrowing costs fall. Furthermore, while very high-risk households gained expanded access to credit, the increases in their risk premiums implied that their borrowing as a whole either rose less or, sometimes, fell.

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1. Introduction

Credit industry literature suggests that by the early 1980s conventional lenders were using credit scores and the like to automate underwriting standards, but as late as the early 1990s they still simply posted one “house rate” for each loan type and continued to reject most high-risk borrowers (Johnson, 1992). As data storage costs subsequently fell and underwriting technology improved, however, lenders began to use estimates of default risk to price individual loans. This paper examines both the extent and consequences of this increased use of risk-based pricing of interest rates in consumer loan markets during the mid-1990s.

On the whole, the findings are in keeping with the predictions that flow naturally from these changes. First, for those obtaining loans, the premium paid per unit of risk became significantly larger over this time period, with the difference between high- and low-risk borrowers’ interest rates nearly doubling for secured loans and increasing for most unsecured loans as well. Second, changes in borrowing levels and access to debt reflected these new pricing practices, particularly for secured debt. While lower interest rates generally boosted borrowing in the late 1990s, the demand for credit increased most for low-risk households who saw lower relative borrowing costs. Third, these changes in pricing practices led to increased credit access for very high-risk households (again, particularly for secured debt), but the increase in the very high-risk premium also caused their average borrowing levels to either rise less or, for some loan types, to fall. Finally, changes in risk-based pricing may account for one- to three-quarters of the increase in debt levels for some secured loan types and may more than account for the increase in debt use by the highest-risk groups for secured debt.

There has not been much scrutiny of the potential for credit terms to vary by borrower risk, let alone empirical examinations of such variance in terms. On the theoretical side, Geanakoplos has written and co-written several papers showing the effect of default risk on loan terms in general equilibrium (some examples are Geanakoplos (2002) and Dubey et al. (2003)). Riley (1987) argues Stiglitz–Weiss style rationing will not be empirically relevant, as he postulates that lenders should vary interest rates by risk. However, using 1983 mortgage rate data, Duca and Rosenthal (1993) find no evidence of such interest rate variation. My findings are consistent with Duca’s and Rosenthal’s, suggesting that risk-based pricing did not become a significant factor in credit markets until more than a decade after 1983.

Only in the 1990s did improvements in underwriting models and reductions in data storage costs become sizeable enough to decrease the costs of risk-based pricing (Bostic, 2002).¹ Certain changes in consumer credit industry practices also spurred investment in developing new underwriting models. Canner and Passmore (1997) explain that in 1995 bank regulators began putting greater emphasis on lending in lower-income neighborhoods and to lower-income borrowers in measuring compliance with the Community Reinvestment Act. This increased the profitability of developing a technology to lend to higher-risk households. Furthermore, Fannie Mae, which previously bought only low-risk loans and essentially did not vary financial terms with loan risk, introduced an improved,

¹In addition, Peter McCorkell suggests insufficient data on defaults made risk-based pricing difficult prior to 1995. He also argues that until the late 1980s, mortgage lenders simply relied on their constantly appreciating collateral to moderate the costs of default (McCorkell, 2002).

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