

The Age of Reason: Financial Decisions Over the Lifecycle

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May 2008

The views expressed in this paper are not necessarily those of the Federal Reserve Bank of Chicago or of the Federal Reserve Board.

“Performance” peaks.

- Baseball: 29 (James 2003)
- Mathematicians, theoretical physicists, and lyric poets: early 30s (Simonton 1988).
- Chess players: mid-30s (Charness and Bosman 1990).
- Autocratic rulers: early 40s (Simonton 1988).
- Novelists: 50 (Simonton 1988).
- Economists?
 - 20s (Hamermesh and Oster 1998)
 - Nobel-Prize-winners (Weinberg & Galenson 2005)
 - “Conceptual” laureates: 43
 - “Experimental” laureates: 61

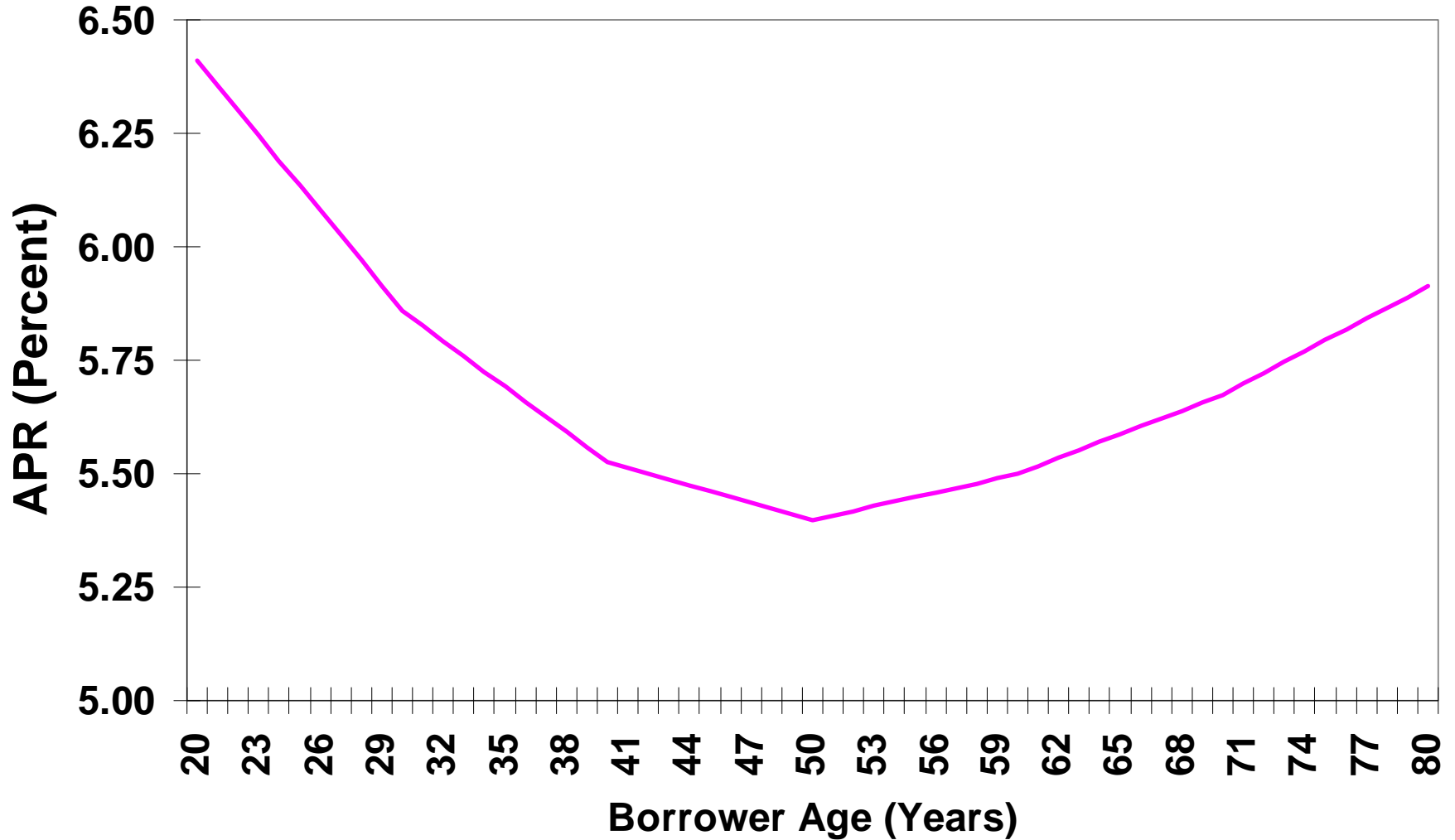
Our findings:

- Financial “performance” rises then declines with age
- Performance:
 - negotiate low (borrowing) interest rates
 - pay fewer fees
- This regularity is confirmed for 10 separate types of financial choices
- On average, financial performance peaks at age 53

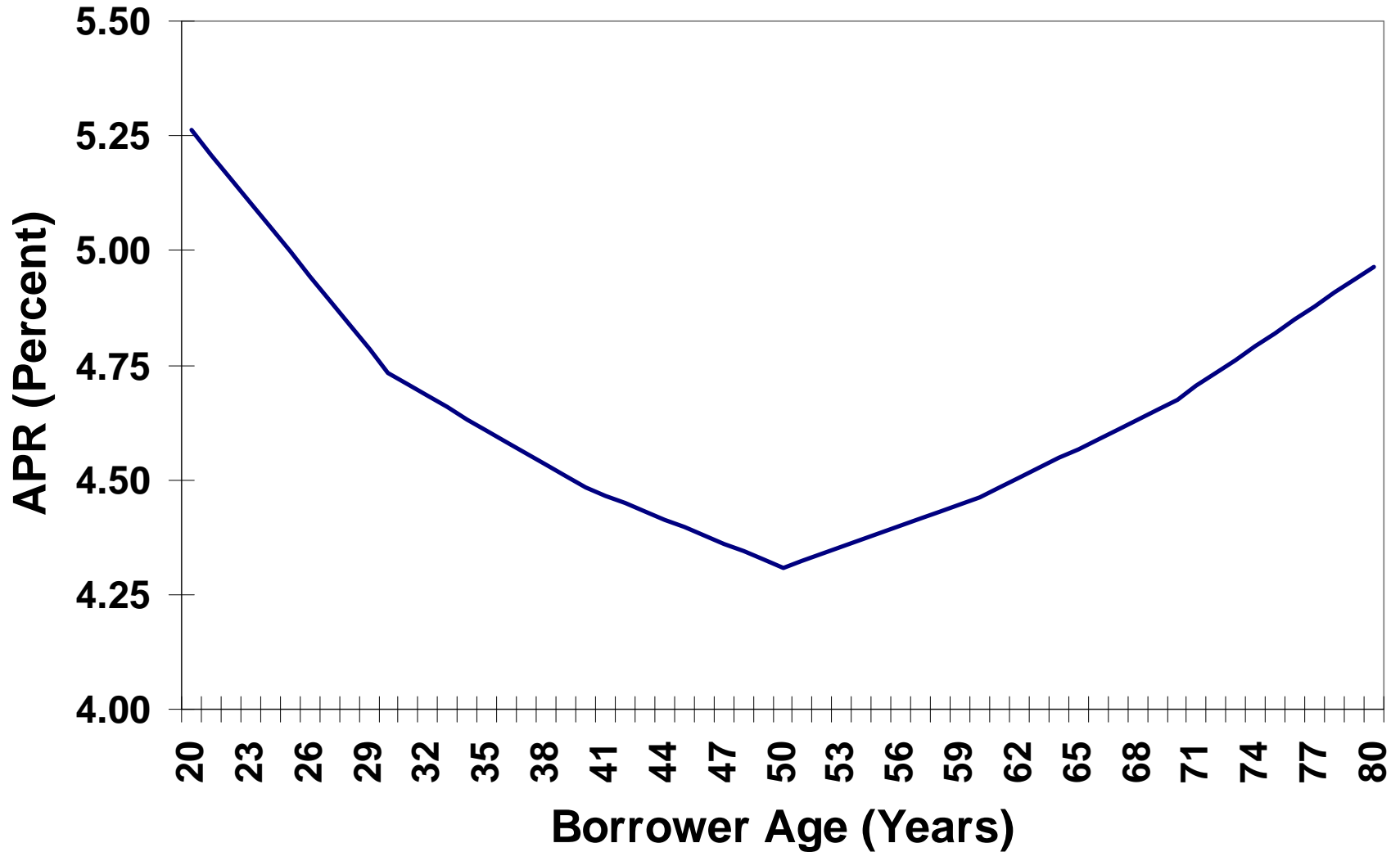
(1,2) Home Equity Loans and Home Equity Credit Lines

- Proprietary data from large financial institutions
- 75,000 contracts for home equity loans and lines of credit, from March-December 2002
- We observe:
 - Contract terms: APR and loan amount
 - Borrower demographic information: age, employment status, years on the job, home tenure, home state location
 - Borrower financial information: income, debt-to-income ratio
 - Borrower risk characteristics: FICO (credit) score, loan-to-value (LTV) ratio

Home Equity Loan APR by Borrower Age



Home Equity Credit Line APR by Borrower Age



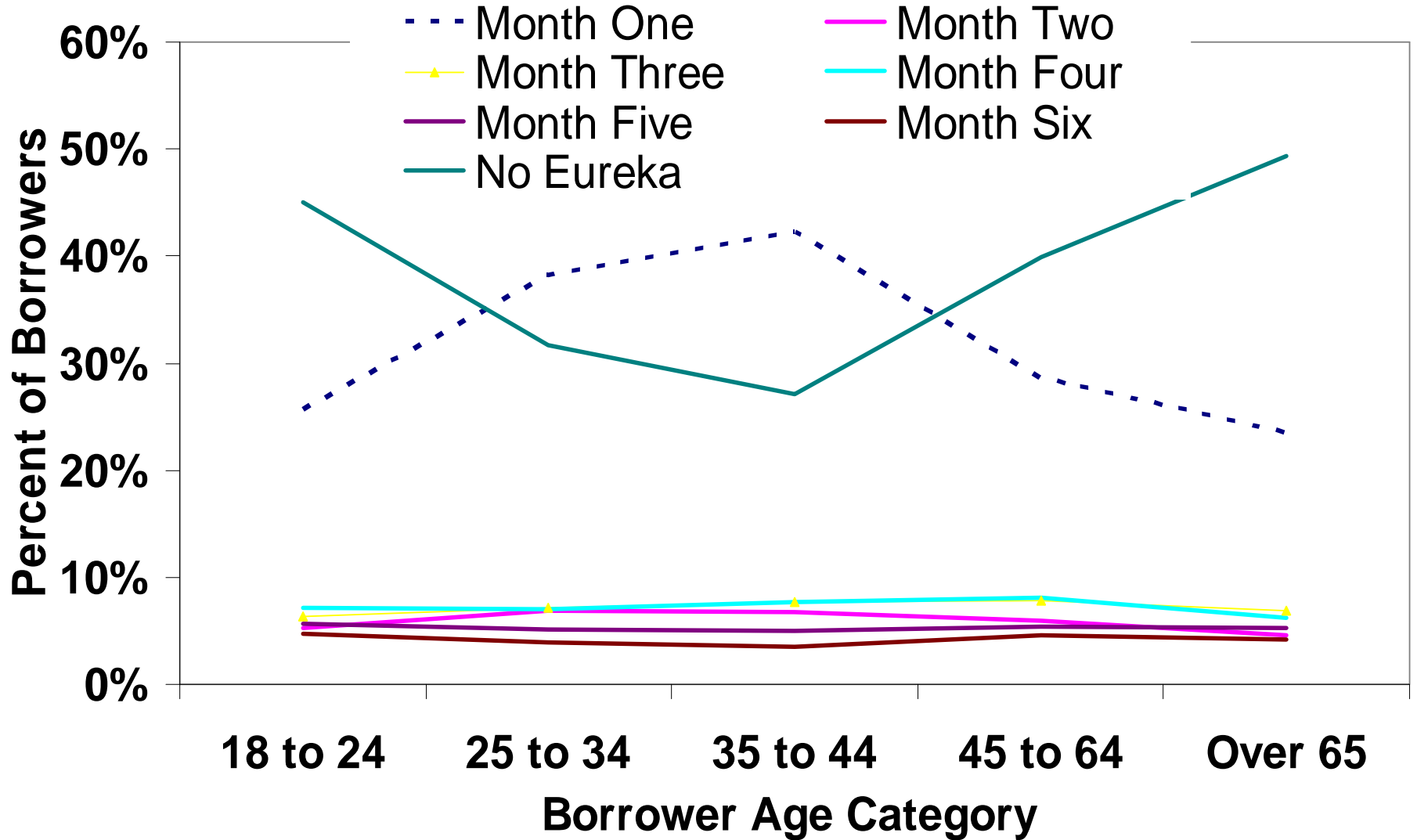
(3) “Eureka”: Learning to Avoid Interest Charges on Balance Transfer Offers

- Balance transfer offers: borrowers pay lower APRs on balances transferred from other cards for 6-9 months
- New purchases on card have higher APRs
- Payments go towards balance transferred first, then towards new purchases
- Optimal strategy: make **no** new purchases on card to which balance has been transferred

Eureka: Predictions

- Borrowers may not initially understand card terms
- Borrowers learn about terms through usage
 - We will see “eureka” moments: new purchases on balance-transfer cards drop to zero in the month after borrowers “figure out” how to optimize
- Study: 14,798 balance transfer accounts over the period January 2000 to December 2002

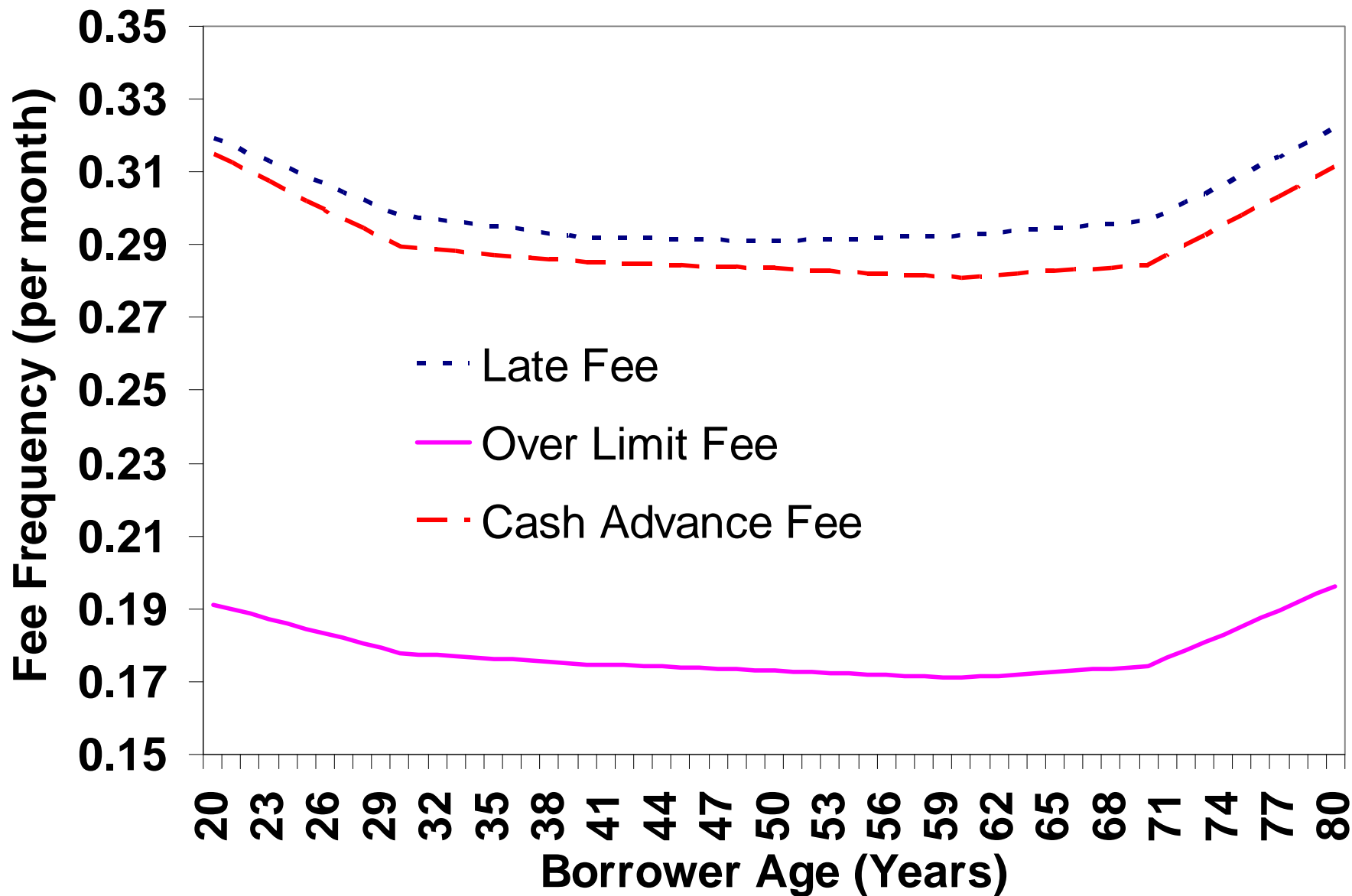
Fraction of Borrowers in Each Age Group Experiencing a Eureka Moment, by Month



(4,5,6) Fee payments

- We examine payments of three types of credit card fees:
 - Late payment fees
 - Over credit limit fees
 - Cash advance fees
- We again see U-shaped patterns by age
- The opportunity cost model (younger and older adults have more time to avoid fees) would predict the opposite pattern
- 3.9 million month-borrower observations on credit card purchases from January 2002 through December 2004

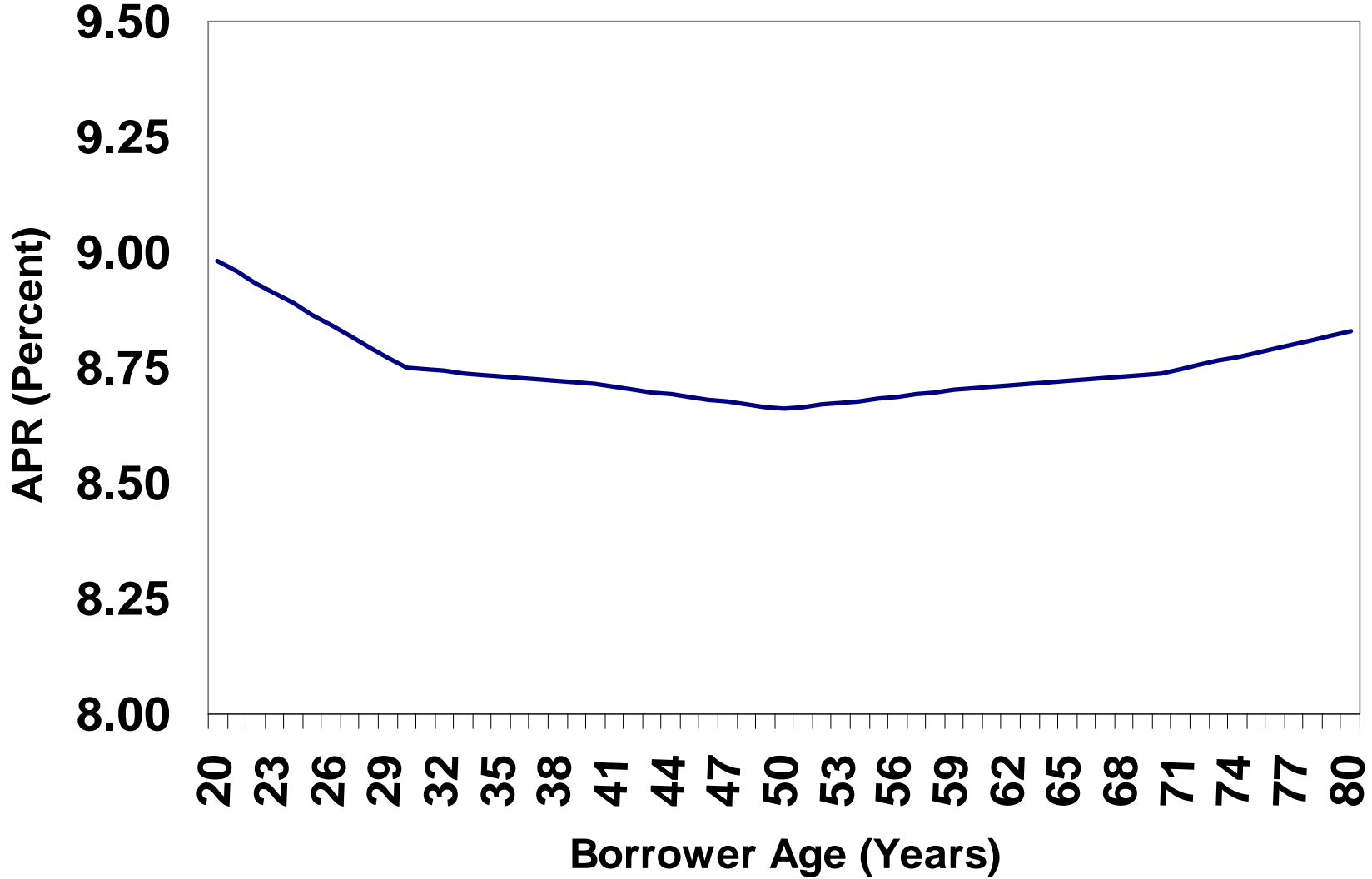
Frequency of Fee Payment by Borrower Age



(7) Auto Loans

- Proprietary data from several large financial institutions
- 6,996 loans for purchase of new and used autos
- We observe:
 - Contract terms: APR and loan amount
 - Borrower demographic information: borrower age and state of residence
 - Borrower financial information: income, debt-to-income ratio
 - Borrower risk characteristics: FICO score
 - Automobile characteristics: value, age, model, make and year.

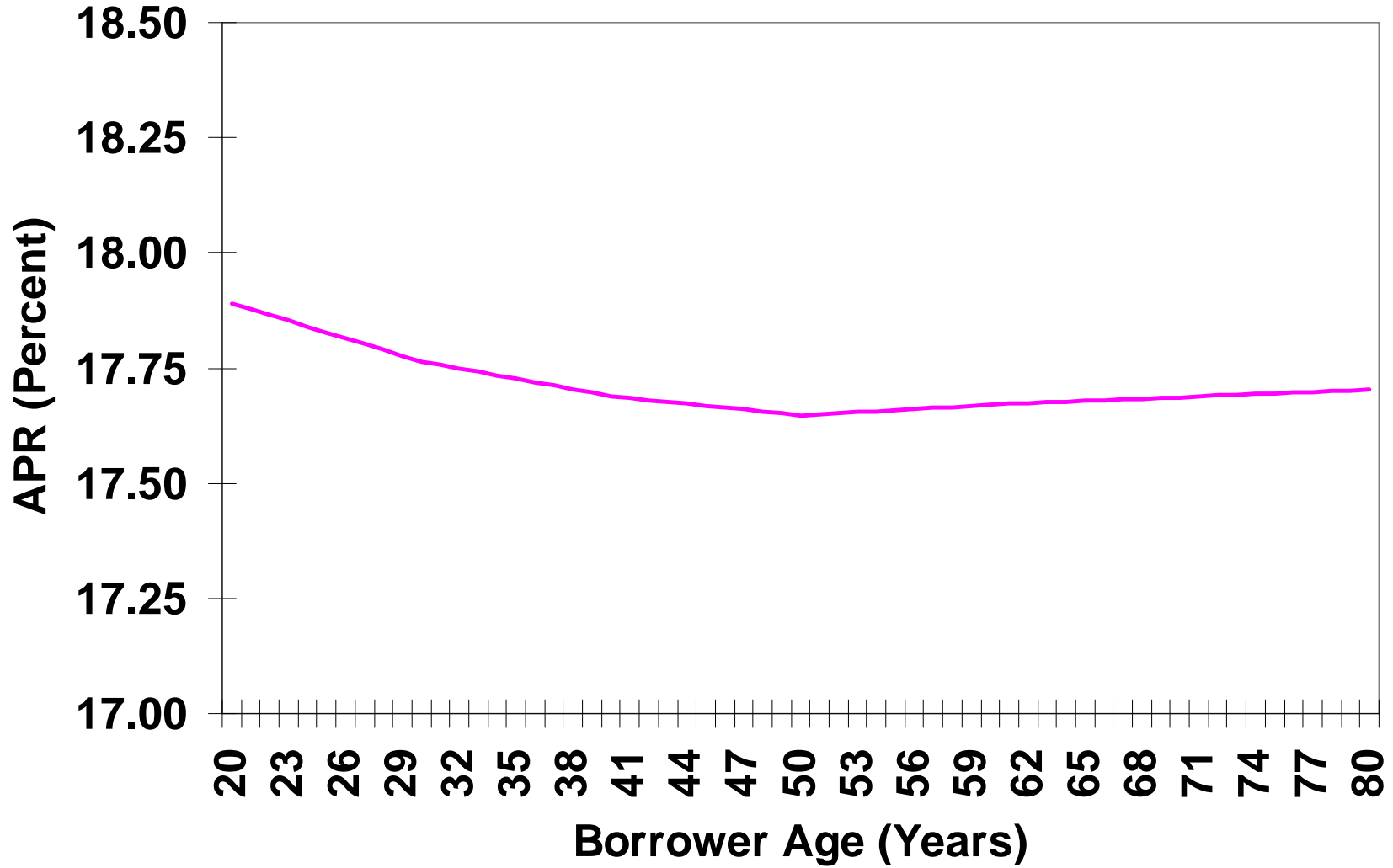
Auto Loan APR by Borrower Age



(8) Credit Card APRs

- Proprietary data from a large financial institution that issues credit cards nationally
- 128,000 accounts over a 36 month period from 1/2002 to 12/2004
- We observe:
 - Card terms: APR, fees paid
 - Borrower risk information: FICO (credit) score, card balances, other debt
 - Borrower demographic information: age, gender, income

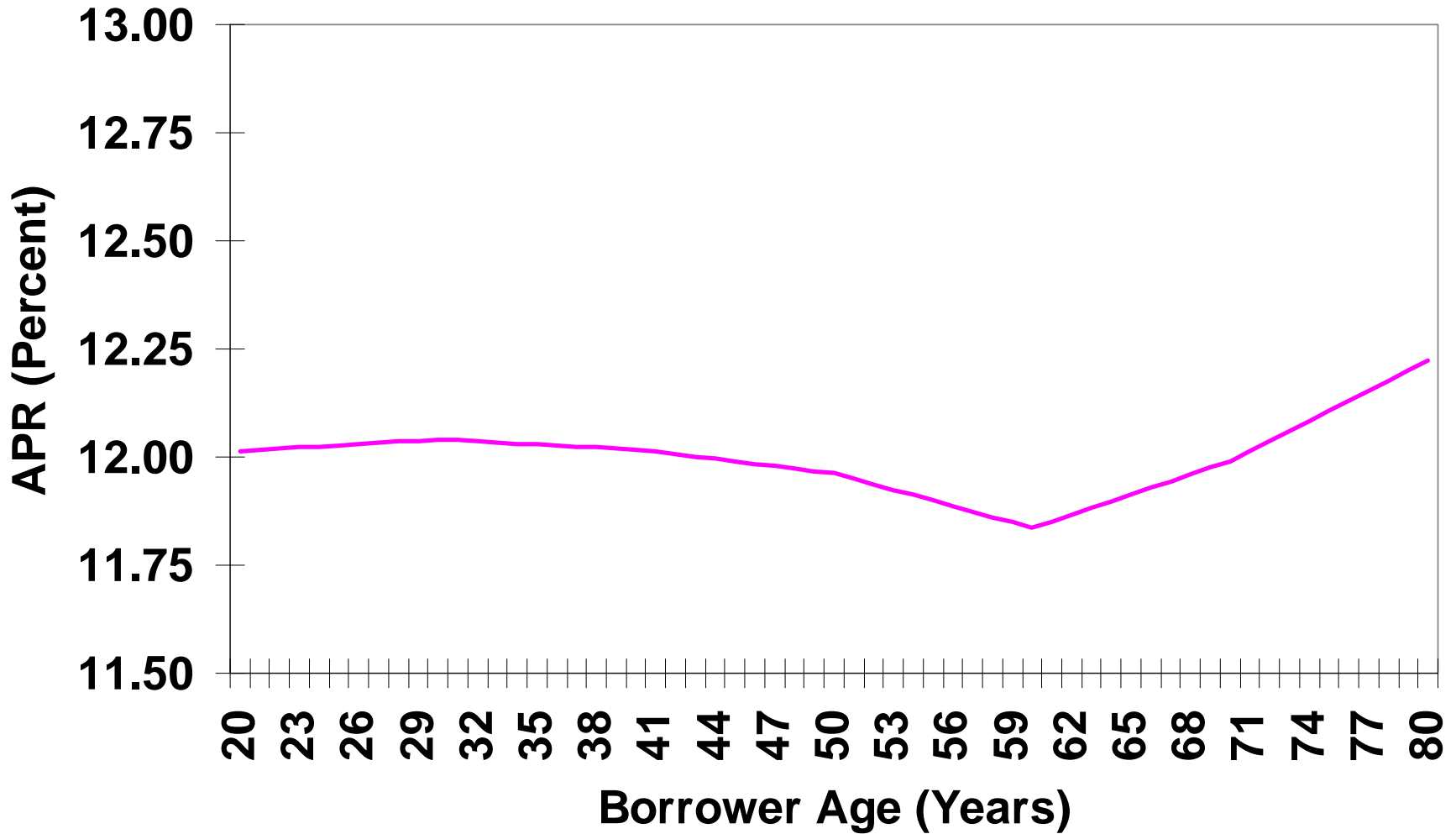
Credit Card APR by Borrower Age



(9) Mortgage APRs

- Proprietary data from a large financial institution that originates first mortgages in Argentina
- 4,867 fixed-rate, first-mortgage loans on owner-occupied properties between June 1998 and March 2000
- We observe:
 - Contract terms: APR and loan amount
 - Borrower demographic information: age, employment status, years on the job, home tenure, home location
 - Borrower financial information: income, debt-to-income ratio
 - Borrower risk characteristics: Veraz (credit) score, loan-to-value (LTV) ratio

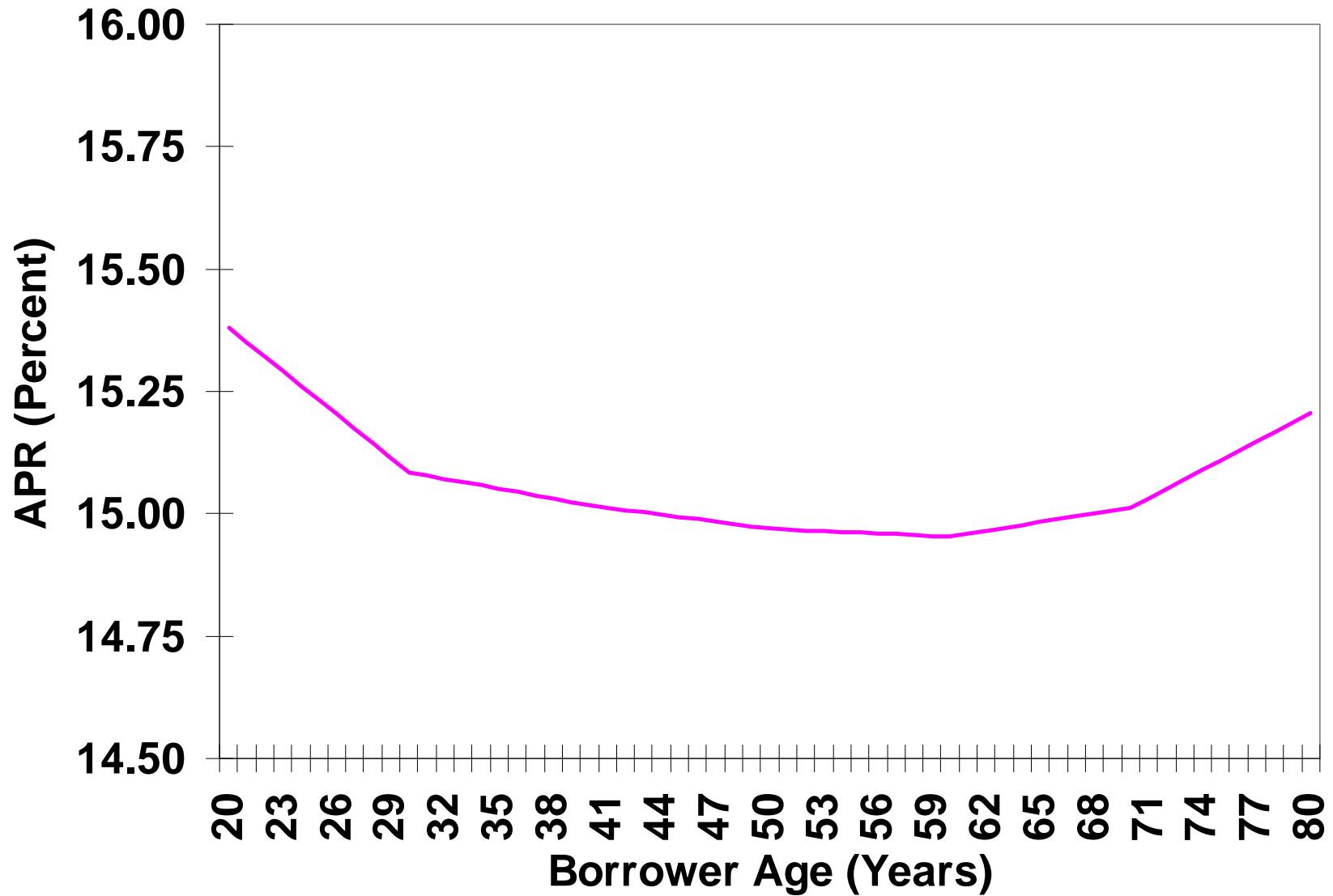
Mortgage APR by Borrower Age



(10) Small Business Credit Card APRs

- Proprietary data set from several large financial institutions that issue small business credit cards nationally
- 11,254 accounts originated between 5/2000 and 5/2002
- Most businesses are small and owned by single families
- We observe:
 - Credit card terms: APR
 - Borrower demographic information: age
 - Borrower risk information: credit score, total number of cards, total card balance
 - Business information: years in business

Small Business Credit Card APR by Borrower Age



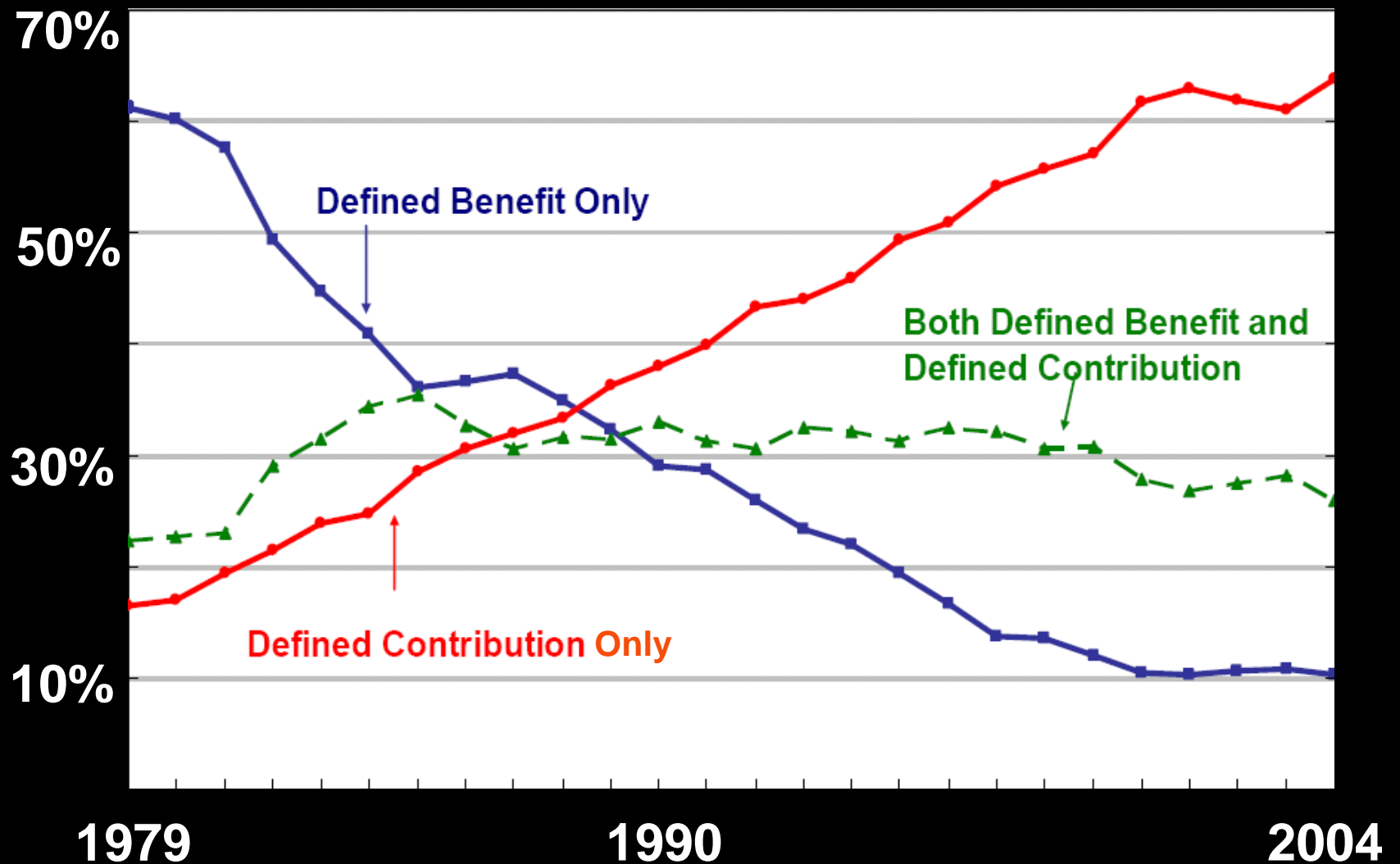
U-shape for financial mistakes in 10 examples

- Home equity loans
- Home equity lines of credit
- Eureka moments for balance transfers
- Late payment fees
- Over credit limit fees
- Cash advance fees
- Auto loans
- Credit cards
- Small business credit cards
- Mortgages

US: Rising Role of DC Plans

Private-Sector Workers

Pension type (as a proportion of all pensioned workers)



Breakdown of Retirement Assets in US Market (year-end 2007)

**Total US Retirement Assets:
\$17.4 trillion**

**Pension plans for
Government Employees:
\$4.4 trillion**

**Private pension plans:
\$13.0 trillion**

**DB Assets:
\$2.4 trillion**

**Other Assets:
\$10.6 trillion**

**IRA: \$4.6 trillion
DC: \$4.4 trillion
Annuities: \$1.6 trillion**

Most Retirement Savings is in Individual Accounts

**Total US Retirement Assets:
\$17.4 trillion**

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graph TD; A["Total US Retirement Assets:  
$17.4 trillion"] --> B["All DB Pensions  
$4.6 trillion"]; A --> C["Individual accounts:  
$12.8 trillion"];
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**All DB Pensions
\$4.6 trillion**

**Individual accounts:
\$12.8 trillion**

\$100 bills on the sidewalk

Choi, Laibson, Madrian (2004)

- Employer match is an instantaneous, riskless return on investment
- Particularly appealing if you are over 59½ years old
 - Have the most experience, so should be savvy
 - Retirement is close, so should be thinking about saving
 - Can withdraw money from 401(k) without penalty
- We study seven companies and find that on average, half of employees over 59½ years old are not fully exploiting their employer match
 - Average loss is 1.6% of salary per year
- Educational intervention has no effect

Conclusion

- U-shape for mistakes in all 10 examples
- Others have confirmed this pattern in their data sets:
 - Fiona Scott-Morton (auto loans)
 - Luigi Guiso (portfolio choice)
 - Lucia Dunn (credit cards)
- Implications for public policy
 - 401(k)'s
 - IRA rollover accounts
 - Annuitization
 - Medicare, especially Part D
 - Social Security Privatization
 - Regulation of financial advisors