

Interest Rates: Prices Hidden in Plain Sight

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Credit disclosures in dollar Terms

- Interest rates standard method to communicate price on credit
- For credit cards/lines of credit only price disclosure available at time of purchasing decision that enables calculation of cost obligation
- This has not always been the case!
 - First two thirds of the 20th Century, households in U.S. obtained credit directly from retailers
 - Overwhelmingly quoted in dollar terms
 - “Installment”/“Time” Credit

BUDGET POWER TABLE

Covered by Prudential Insurance

| UNPAID BALANCE (Total amount, less down payment, if any) | Carrying charge | MONTHLY PAYMENT |
|--|--------------------|--------------------|
| \$ 10.00 to \$ 12.50 | \$ 1.25 | \$5 |
| 12.51 to 15.00 | 1.50 | |
| 15.01 to 20.00 | 2.00 | |
| 20.01 to 25.00 | 2.50 | |
| 25.01 to 30.00 | 3.00 | |
| 30.01 to 40.00 | 4.00 | |
| 40.01 to 50.00 | 5.00 | |
| \$ 50.01 to \$ 60.00 | \$ 6.00 | \$6 |
| \$ 60.01 to \$ 70.00 | \$ 7.00 | \$7 |
| \$ 70.01 to \$ 80.00 | \$ 8.00 | \$8 |
| 80.01 to 90.00 | 9.00 | |
| \$ 90.01 to \$ 100.00 | \$10.00 | \$9 |
| \$100.01 to \$ 110.00 | \$11.00 | \$10 |
| 110.01 to 120.00 | 12.00 | |
| 120.01 to 130.00 | 13.00 | |
| \$130.01 to \$ 140.00 | \$14.00 | \$11 |
| 140.01 to 150.00 | 15.00 | |

Installment/Time Credit

Spiegel 1956 Spring Catalog

Features of Installment/Time Credit in Retail setting

- Treated as an account at a store that customers can refer purchases to
 - Not one contract for each item purchased
- Allowed to “add-on” new purchases to the installment account
 - monthly payment amount to account sometimes adjusted
- Prepayment options – e.g., if pay within 30 day, no charge is added

Shift to Interest Rate disclosures

- 1950s and 1960s retailers en masse started "revolving credit"
- Charged a monthly percentage fee on credit accounts based on outstanding credit balance
- Typically monthly minimum payment stays the same even as balance decreases
- Only disclose interest rates to convey costs – like credit cards

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| 140.01 to 150.00 | 15.00 | |

Installment/Time Credit

Spiegel 1956 Spring Catalog

BUDGET POWER

buys up to **50% MORE** for
the same monthly payment!

Budget Power Payment Table

| Monthly Payment | Unpaid Balance (Total amount* less down payment, if any) | Monthly Payment | Unpaid Balance (Total amount* less down payment, if any) |
|--------------------|--|--------------------|--|
| FOR ONLY | YOU CAN BUY | FOR ONLY | YOU CAN BUY |
| \$ 5 | \$100 | \$16 | \$350 |
| \$ 6 | \$120 | \$17 | \$400 |
| \$ 7 | \$140 | \$18 | \$430 |
| \$ 8 | \$160 | \$19 | \$460 |
| \$ 9 | \$180 | \$20 | \$480 |
| \$10 | \$200 | \$21 | \$500 |
| \$11 | \$220 | \$22 | \$530 |
| \$12 | \$240 | \$23 | \$550 |
| \$13 | \$260 | \$24 | \$580 |
| \$14 | \$280 | \$25 | \$600 |
| \$15 | \$310 | \$30 | \$720 |

ORDERS OVER \$720. For monthly payments on balances of more than \$720 . . . or to request a larger Credit Trust Fund, please write us. Your Prudential Life Insurance protects you on any balance up to \$1000.

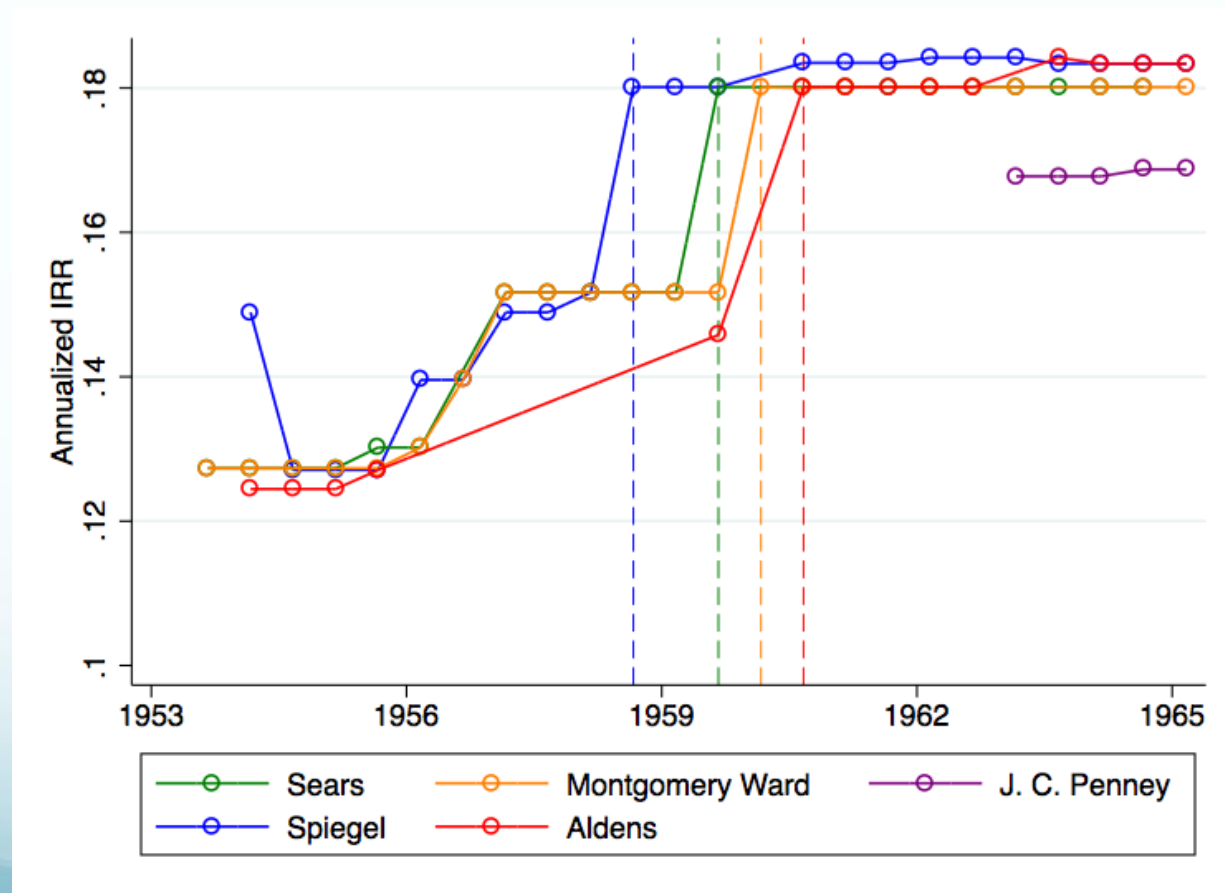
***SERVICE CHARGE.** There are no carrying charges. Instead, a small service charge of 1½%, minimum 50¢, will be added to your opening balance each month.

Revolving Credit

Spiegel 1962 Fall Catalog

Credit Plan Prices in Catalogs

Prices of Most Expensive Credit Plans in Each Catalog for a \$200 Purchase



Questions and Preview

- Could consumer inability to translate interest rates to cost obligations play a role in these pricing patterns?
 - Use experiment to understand consumer
 - Find:
 - Consumers *cannot* rather than *do not* translate interest rates into credit cost obligations
 - Cases of underconsumption and overconsumption
- Investigate historical clues for evidence that
 - Diminished consumer ability to determine credit cost obligations also diminished creditor incentives to compete on price

Experiment

- Test if consumers incorporate credit costs into their purchasing decision
- Recruited from online labor market: Amazon Mechanical Turk
 - 1,477 participants
 - February 2017
 - Real-stakes: 1/30 chance choices materialize

Purchasing Question

You will receive \$5 a month for 13 months with the first payment starting in one month.

You can use some of the money from your income stream to purchase one of these specially priced Amazon Gift Cards:



Credit Plans

B: Basic Revolving

A: Installment

CREDIT PLAN

| <i>Step 1: Look up the price of the Gift Card</i> | <i>Step 2: Add the one-time service fee listed below to the PRICE of the Gift Card to calculate your starting Credit Balance.</i> | <i>Step 3: Pay the amount listed below Every Month Until your credit balance is 0*</i> |
|---|---|--|
| \$10.00 | \$0.23 | \$5 |
| \$20.00 | \$0.78 | \$5 |
| \$30.00 | \$1.68 | \$5 |
| \$40.00 | \$2.94 | \$5 |
| \$50.00 | \$4.58 | \$5 |

* These payments will be automatically withdrawn from your income stream. If the remaining credit balance in any one month is less than the monthly payment, you will only pay the remaining balance from your income stream. The first withdrawal starts in one month.

CREDIT PLAN

Step 1: Look up the price of the Gift Card. This will be the Credit Balance in the first month.

*Step 2: Pay the amount listed below Every Month Until your Credit Balance is 0**

| | |
|---------|-----|
| \$10.00 | \$5 |
| \$20.00 | \$5 |
| \$30.00 | \$5 |
| \$40.00 | \$5 |
| \$50.00 | \$5 |

* These payments will be automatically withdrawn from your income stream. The CREDIT BALANCE in each subsequent month after the first month is calculated by first adding a service fee of 1.5% of the previous month's credit balance to the previous month's credit balance and then subtracting the monthly withdrawal amount (listed in the second column of the table above). If the summation of the previous month's credit balance plus the service fee is smaller than the monthly withdrawal amount, then only the previous month's credit balance plus the service fee will be withdrawn. The first withdrawal starts in one month.

Calculation Question

Assume that you will be receiving \$5 for 13 months with your first payment starting in one month.

If you are interested in purchasing the following Amazon Gift Card:



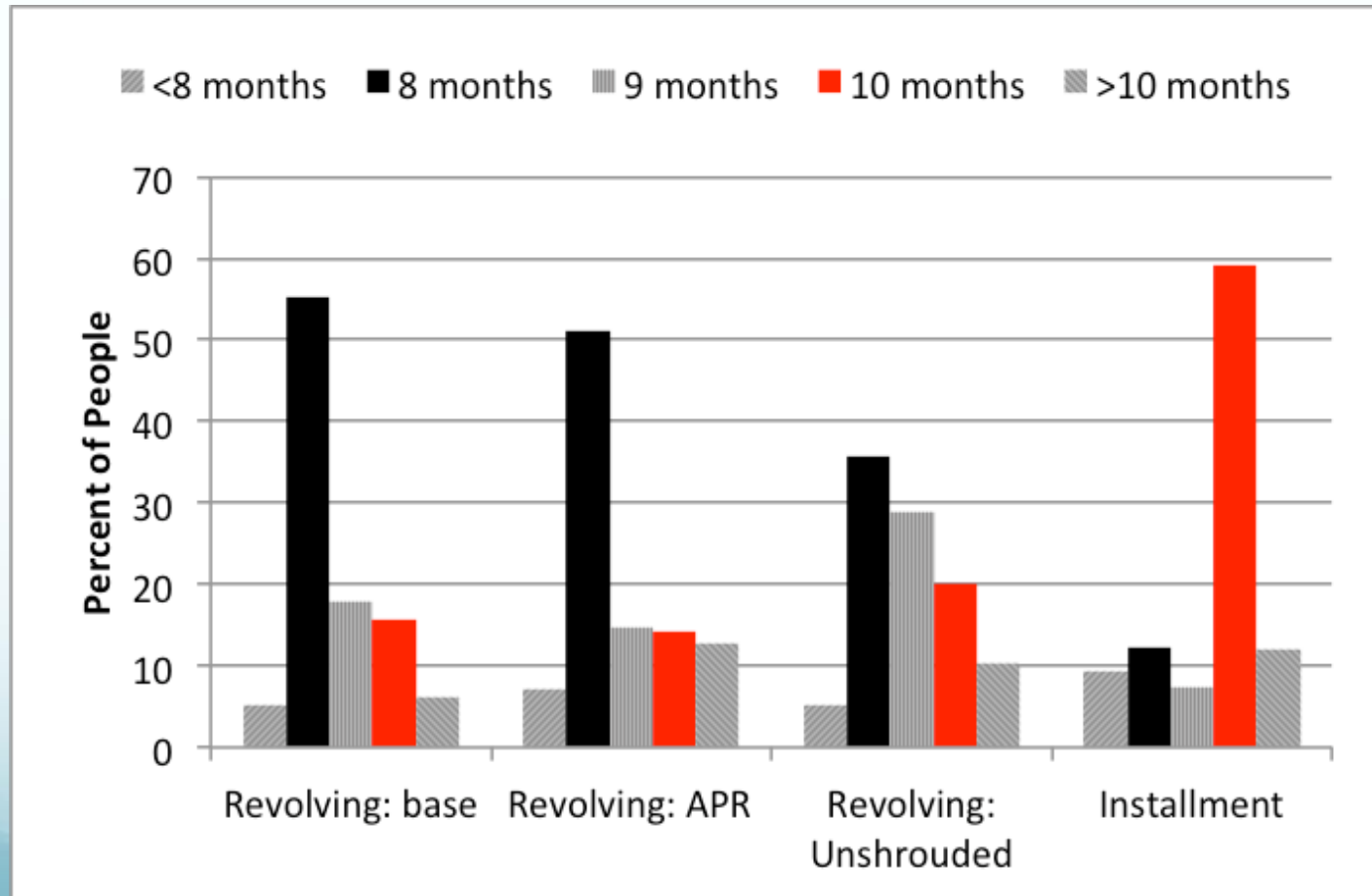
and you are planning to purchase it using the following credit plan:

| CREDIT PLAN | | |
|---|---|--|
| Step 1: Look up the price of the Gift Card | Step 2: Add the one-time service fee listed below to the PRICE of the Gift Card to calculate your starting Credit Balance. | Step 3: Pay the amount listed below Every Month Until your credit balance is 0* |
| \$10.00 | \$0.56 | \$5 |
| \$20.00 | \$1.94 | \$5 |
| \$30.00 | \$4.27 | \$5 |
| \$40.00 | \$7.77 | \$5 |
| \$50.00 | \$12.63 | \$5 |

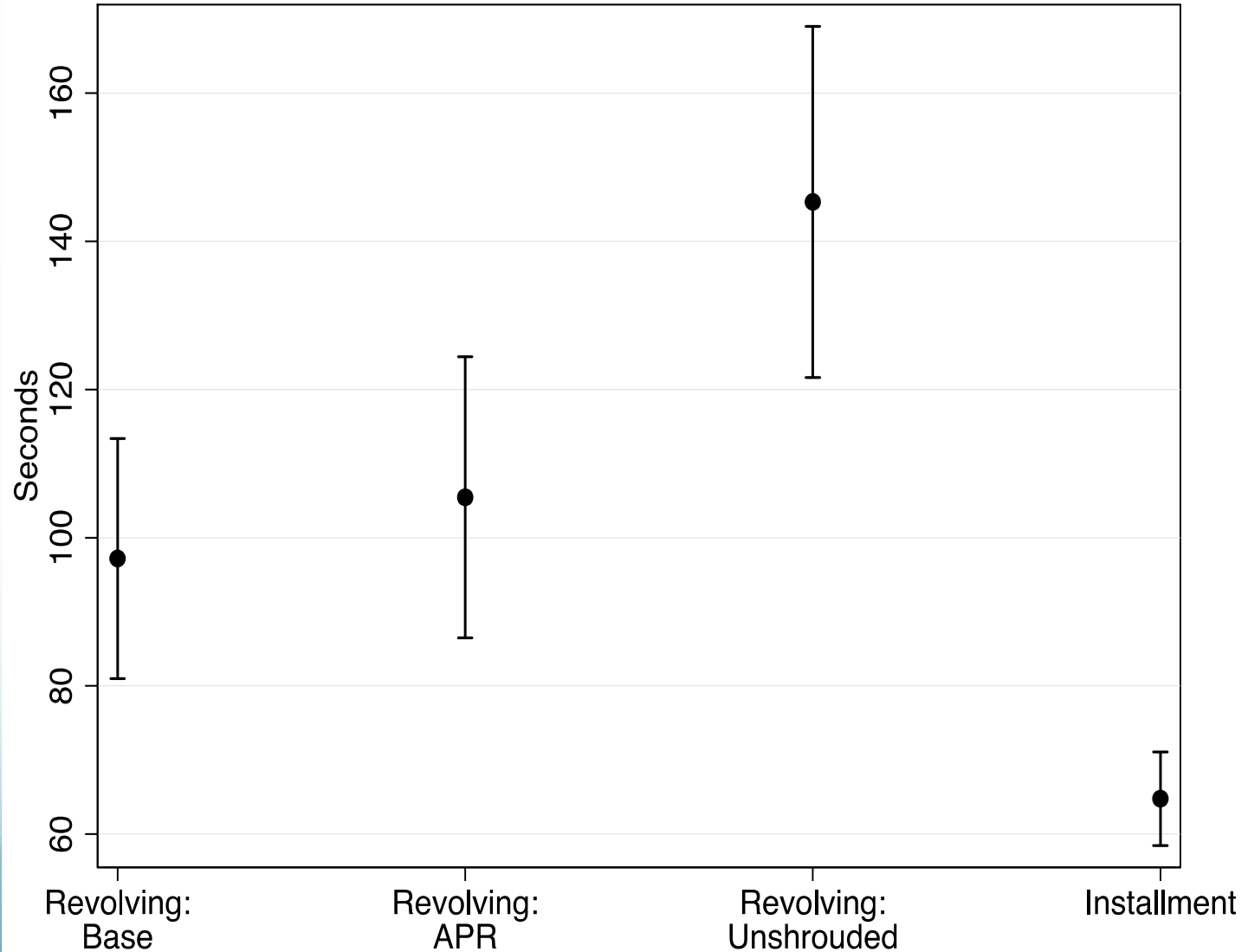
* These payments will be automatically withdrawn from your income stream. If the remaining credit balance in any one month is less than the monthly payment, you will only pay the remaining balance from your income stream. The first withdrawal starts in one month.

then how many months will it take you to pay off your credit balance? For example, if your credit balance will be equal to 0 in one month from today, then your answer is "1". Please type your response in the box below:

Calculation Question Response



Calculation Question Response Time



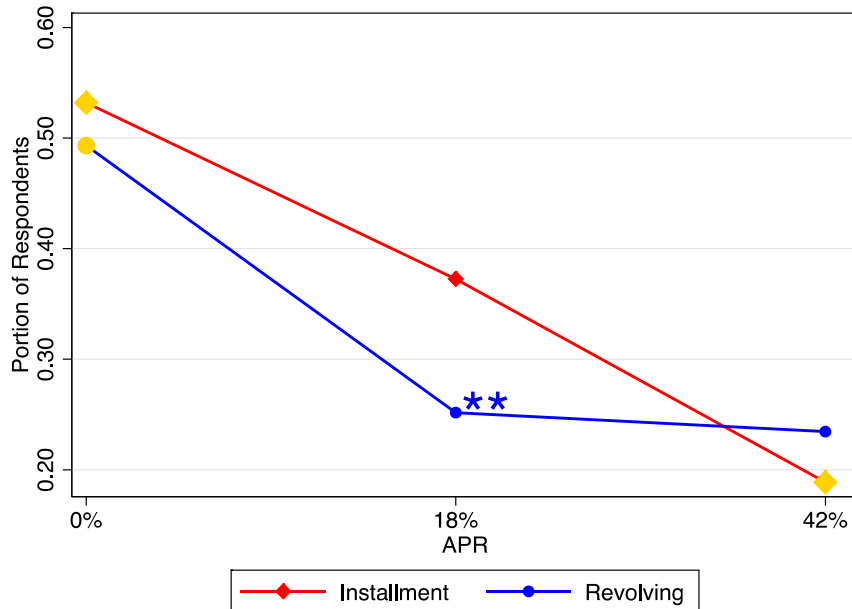
Experiment

Finding #1

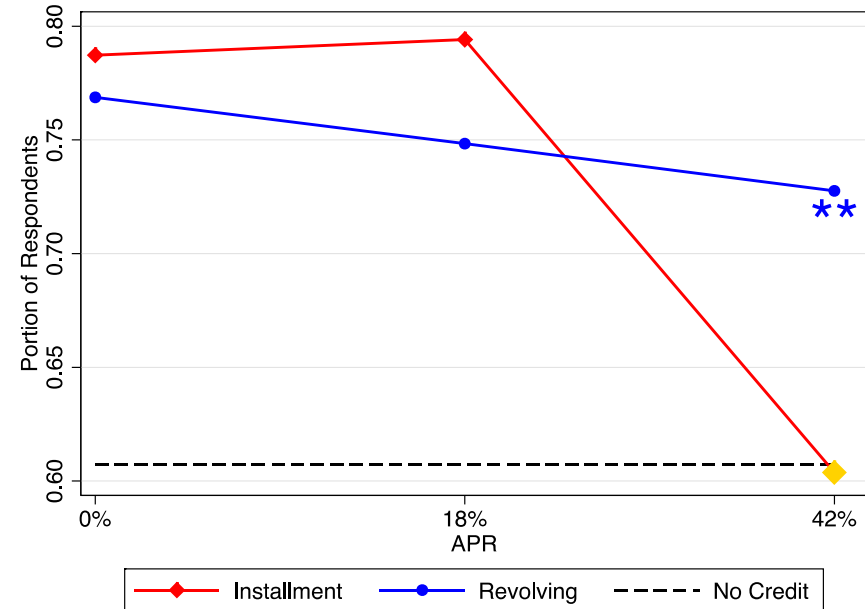
- Consumers *cannot*, rather than *do not*, translate interest rates into cost obligations
- True even with effort, incentives, and no limitations on utilizing outside tools

Borrowing and Purchasing Decisions

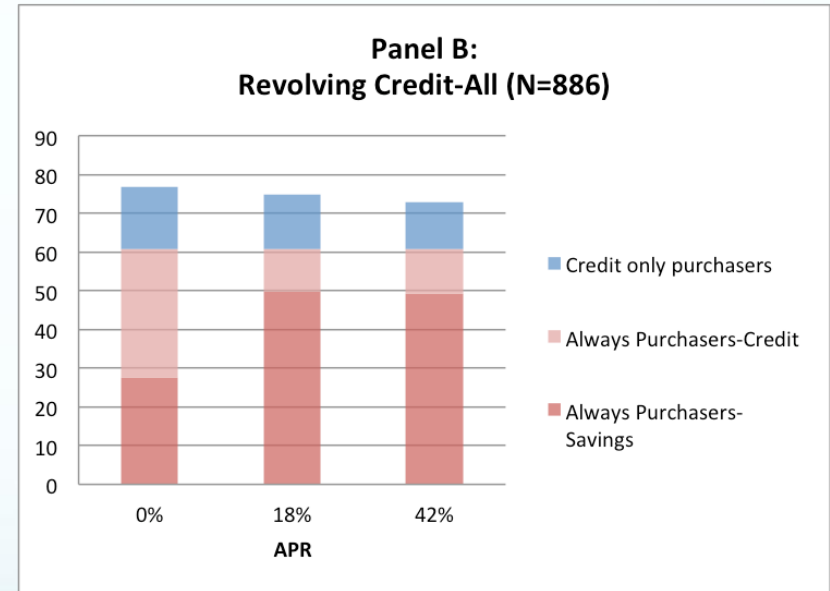
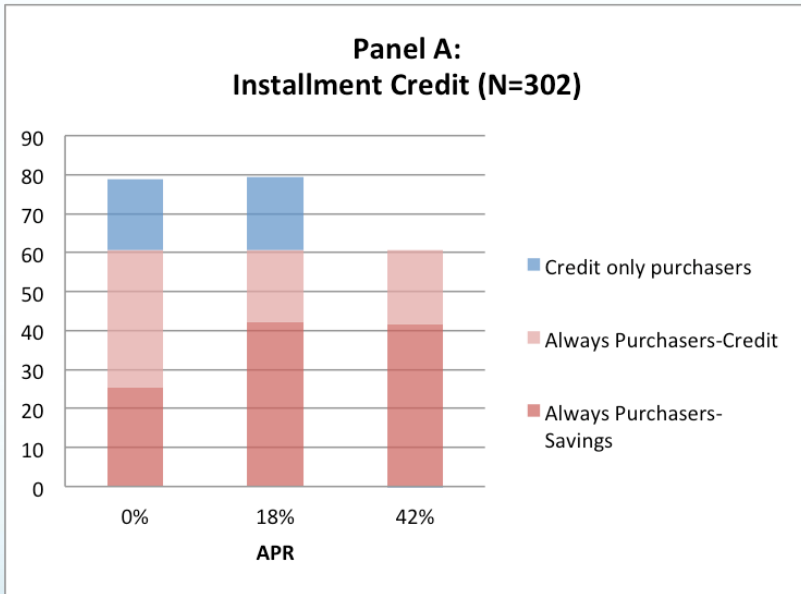
% of Participants who use credit



% of Participants who make a purchase

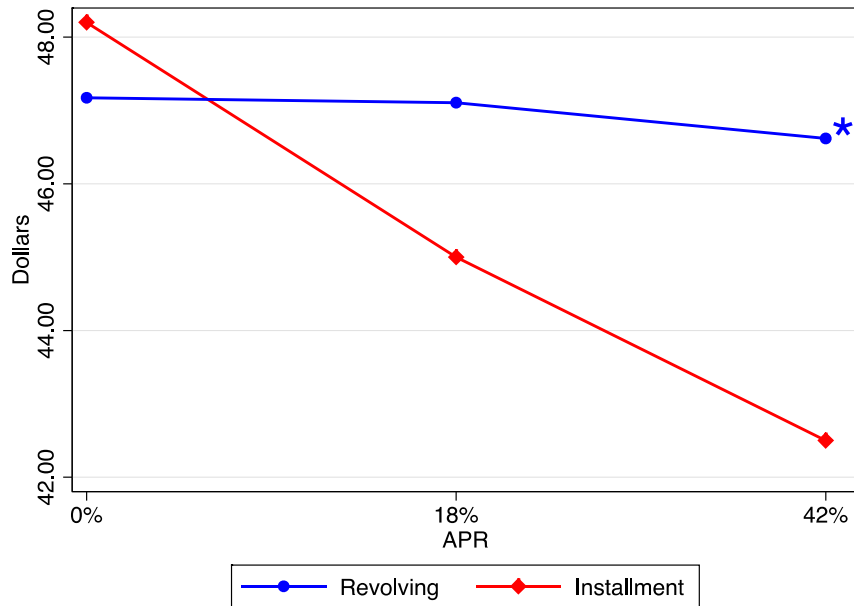


Percentage of Participants who make a purchase

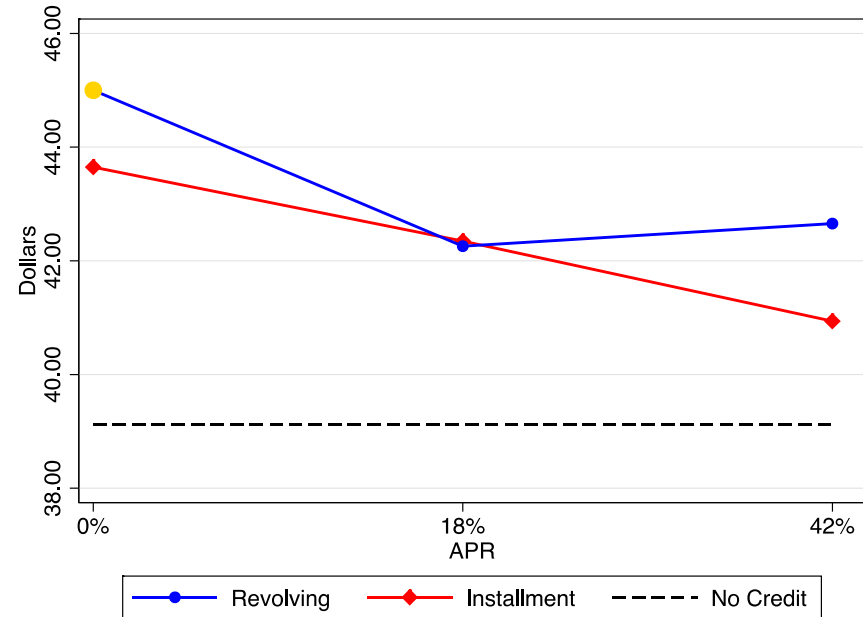


Intensive Margin

Borrowed Amount per Borrower



Purchased amount per Purchaser



Experiment Finding #2

- Two different reactions to obfuscated credit costs:
 - Rule to never use credit
 - non-optimally avoiding credit (underconsumption)
 - Rule to always use credit
 - non-optimally consuming credit (overconsumption)
- Isolated impact of interest rate disclosures even before adding other (more complicating) flexible revolving credit features

Historical Setting

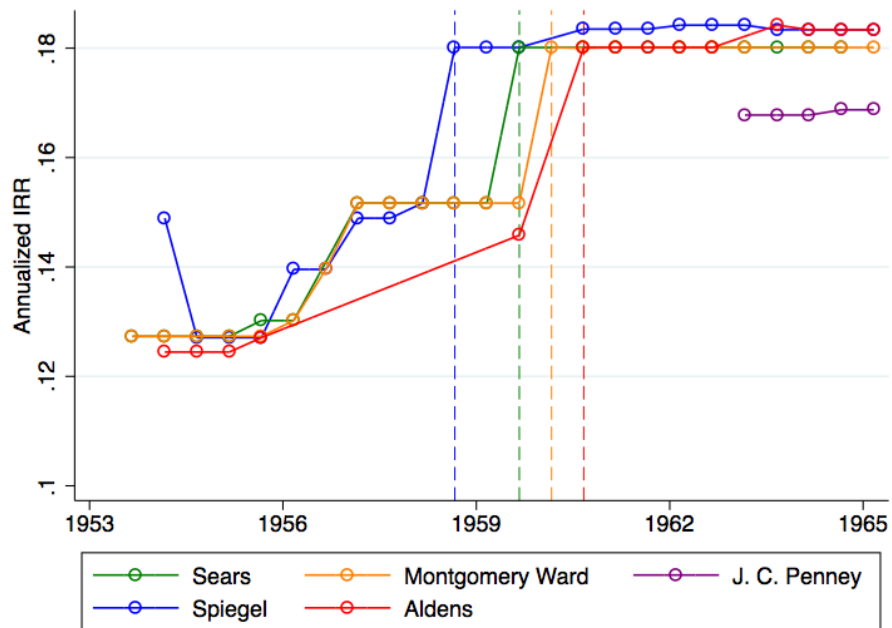
- U.S. General Merchandise Mail-order Catalog companies (e.g., furniture, appliances, apparel)
- 1963: Mail-order houses accounted for 11.3% of department store sales
- Retailers were historically a major source of (nonautomobile and nonmortgage) consumer credit in U.S.
- All offered credit to facilitate sales
 - Originally had installment/time credit
 - (30-day) charge account
 - Eventually all had revolving credit
- 1981: 57% of U.S. households held at least one Sears credit card

Catalog Data

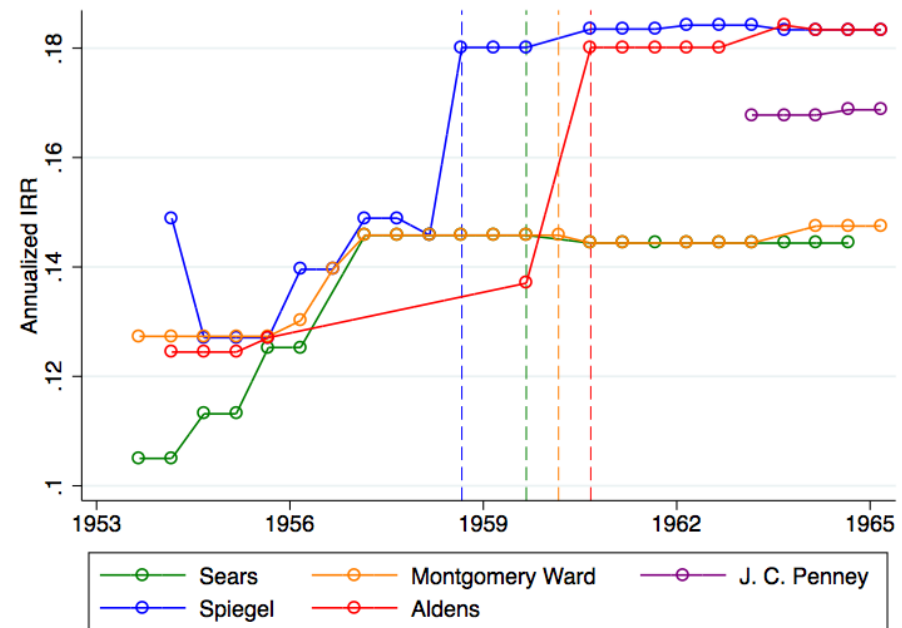
- Credit terms from 5 catalog (1928-1994)
 - Large:
 - Sears
 - Montgomery Ward
 - J.C. Penney (late entry)
 - Small:
 - Spiegel
 - Aldens
- 1963: Sears, Montgomery Ward, Spiegel captured 90.7% of market
- Main Price term: Internal Rate of Return for paying minimum required payments for life of loan

Observation 1: Price Jump

Prices of Most Expensive Credit Plans in Each Catalog for a \$200 Purchase

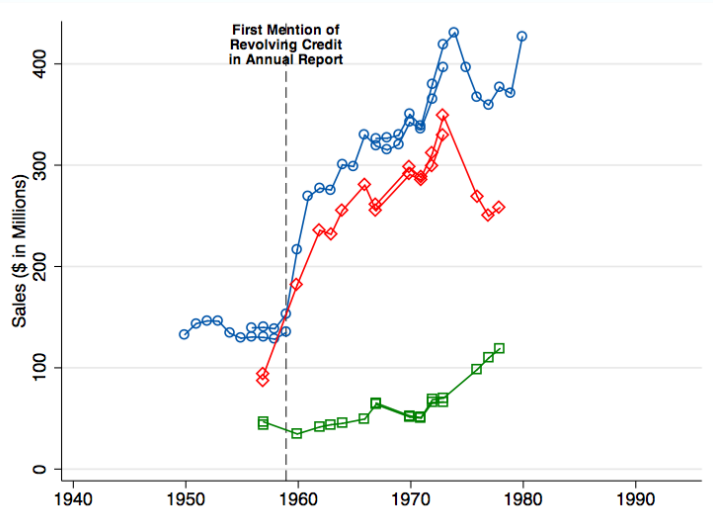


Prices of Least Expensive Credit Plans in Each Catalog for a \$200 Purchase

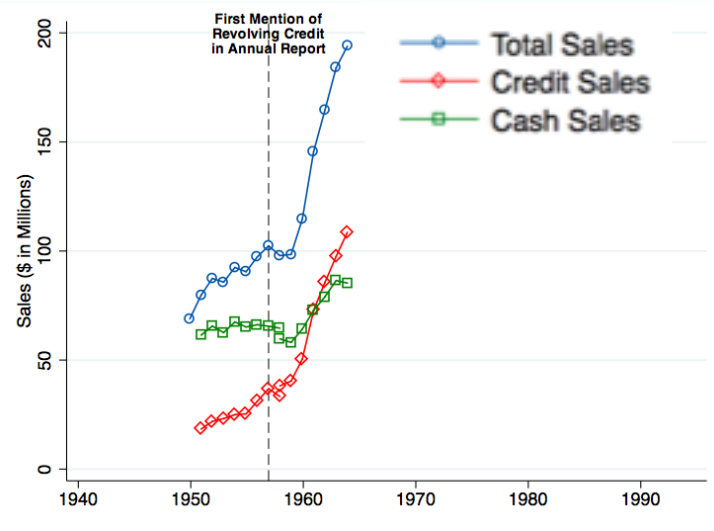


Observation 2: Sales Jump

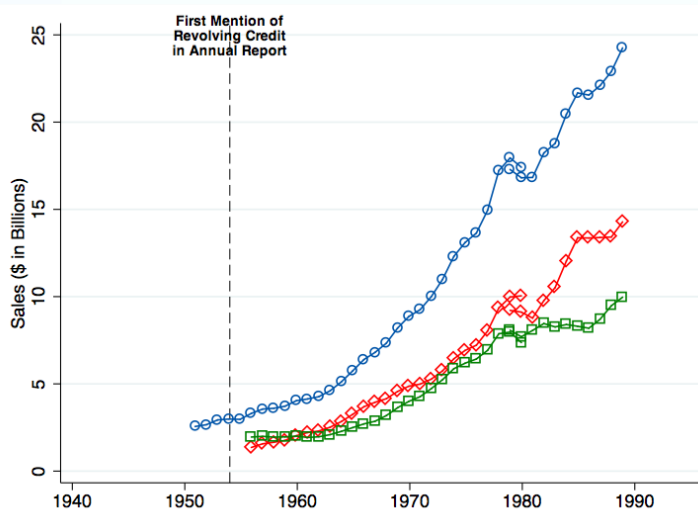
Spiegel



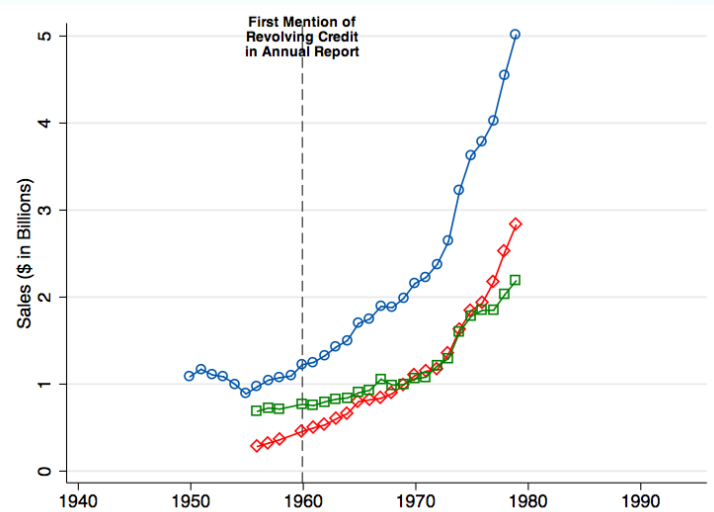
Aldens



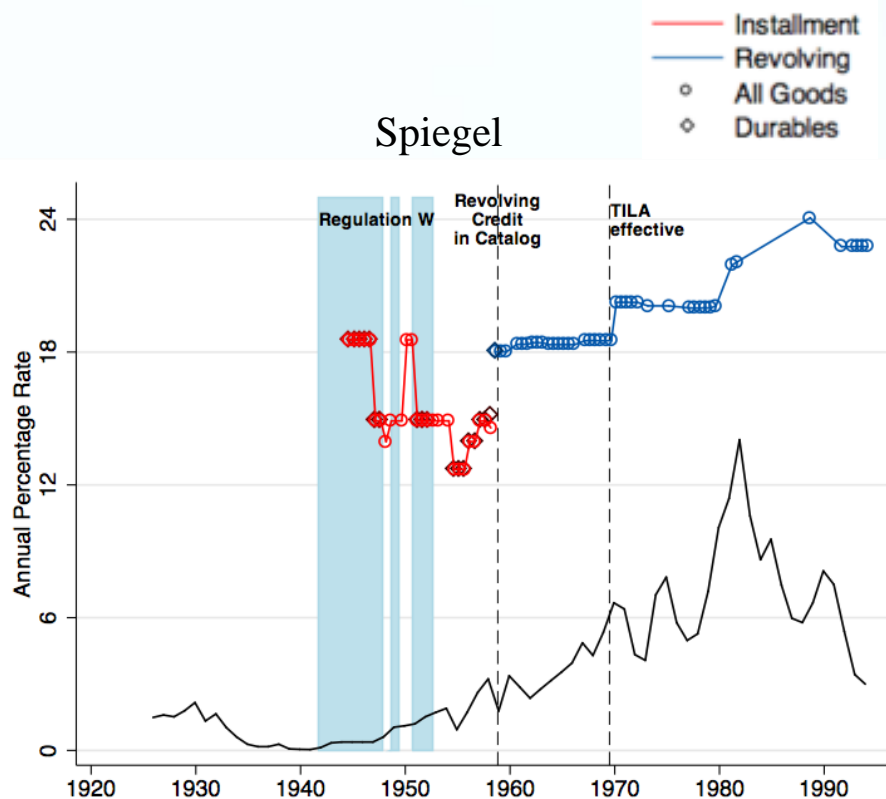
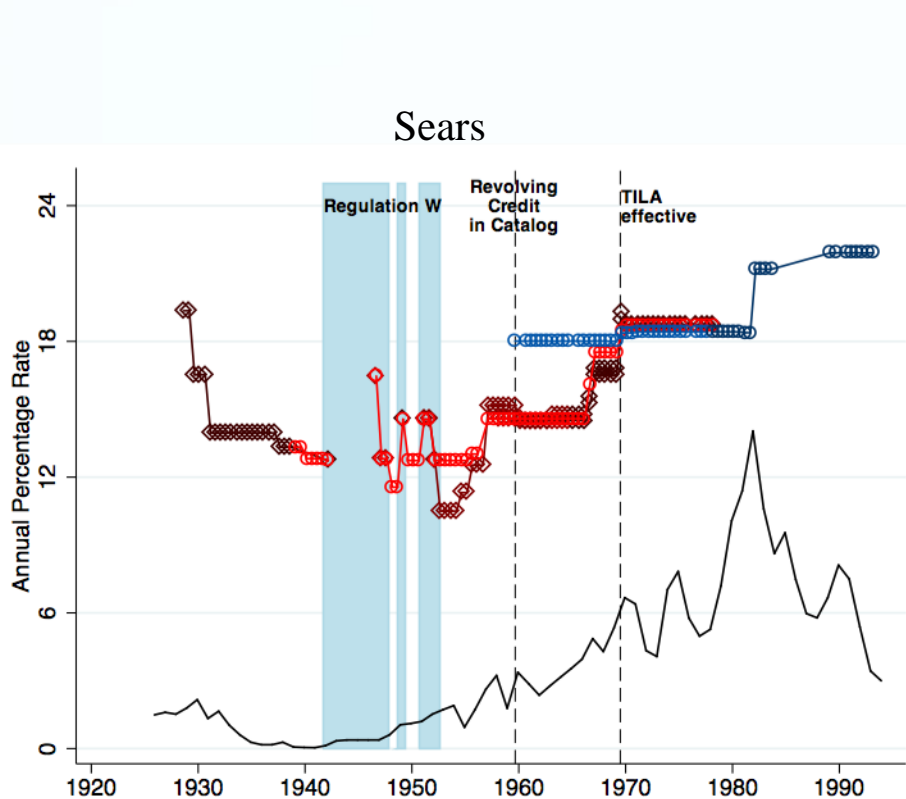
Sears



Montgomery Ward



Observation 3: Price Stickiness



Observation 4: Price Stickiness

Bank Credit Cards

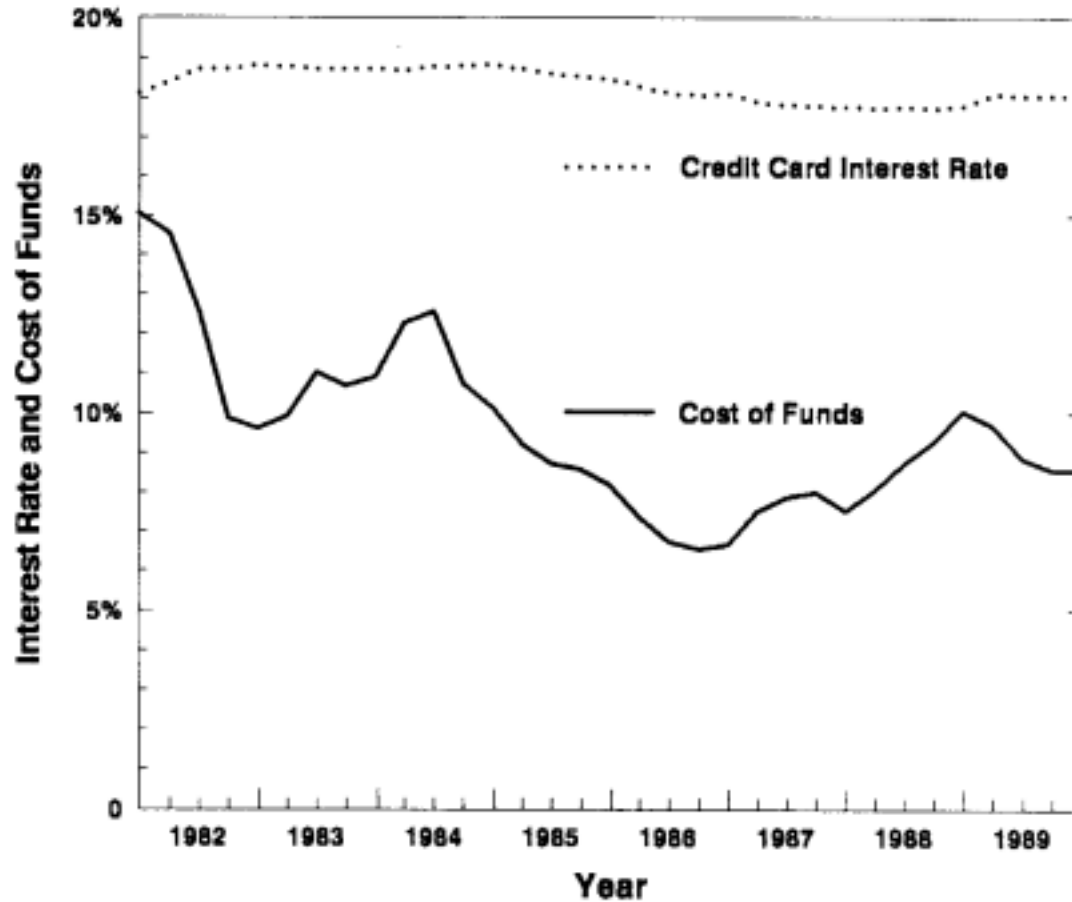
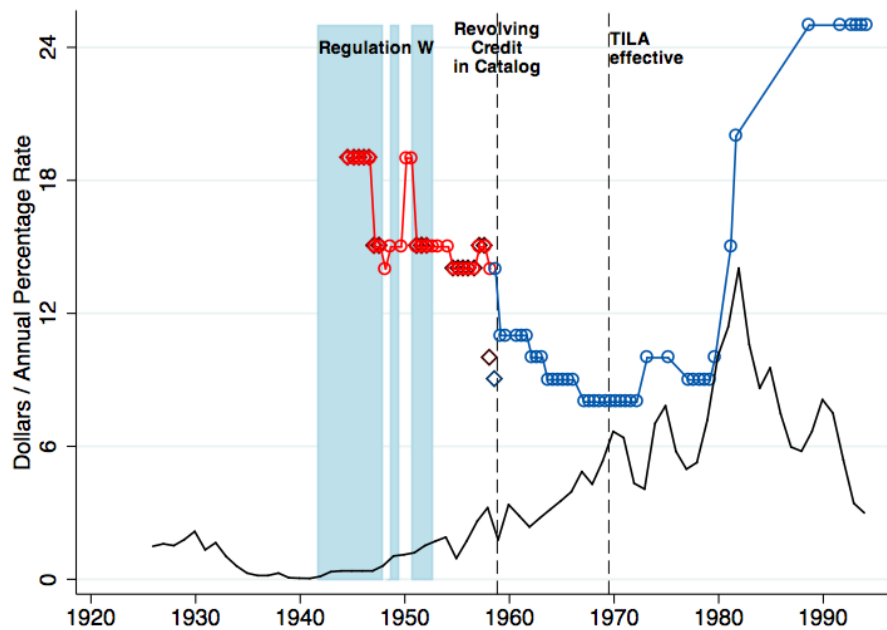


FIGURE 1. STICKY CREDIT CARD INTEREST RATES, 1982-1989

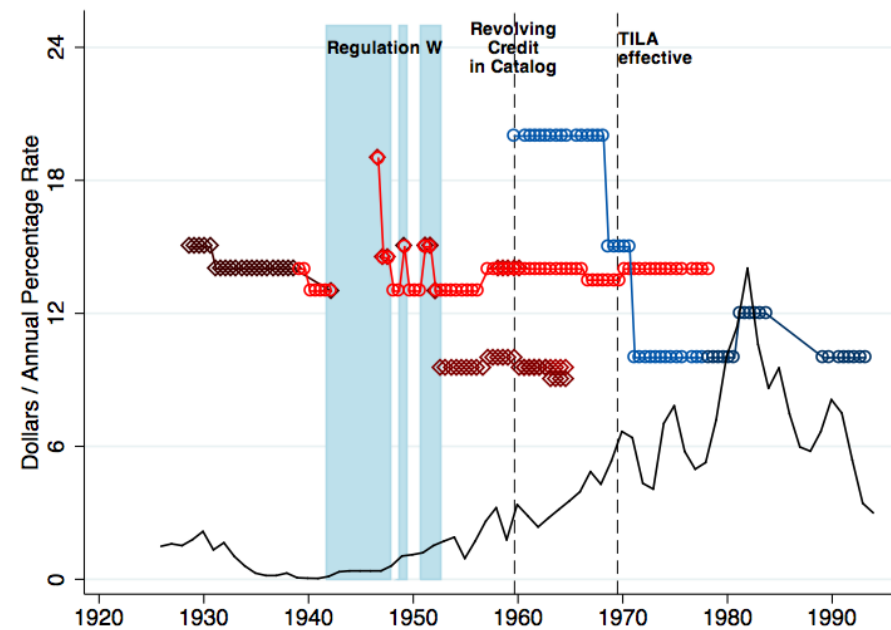
Source: Ausubel (1991)

Observation 5: Not rationing at price ceiling as cost of funds increase

Spiegel:
First Monthly Payment for a \$200
Purchase

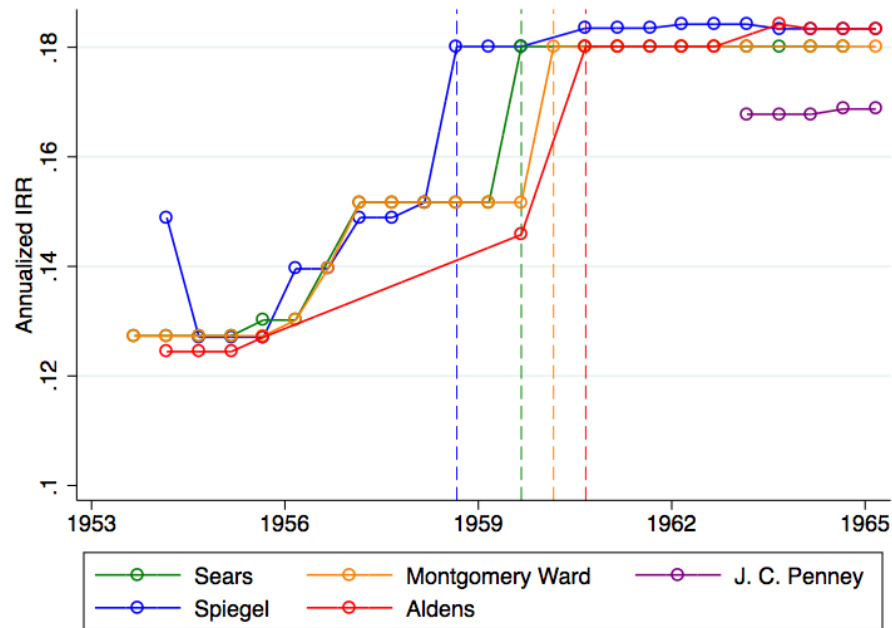


Sears:
First Monthly Payment for a \$200
Purchase

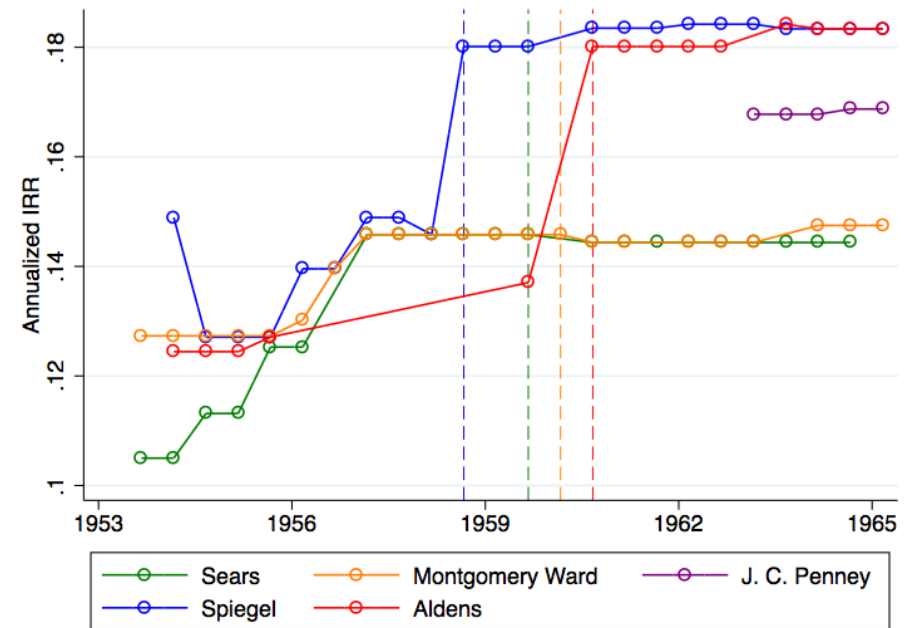


Observation 6: Resistance to Price pressures over long periods of time

Prices of Most Expensive Credit Plans in Each Catalog for a \$200 Purchase

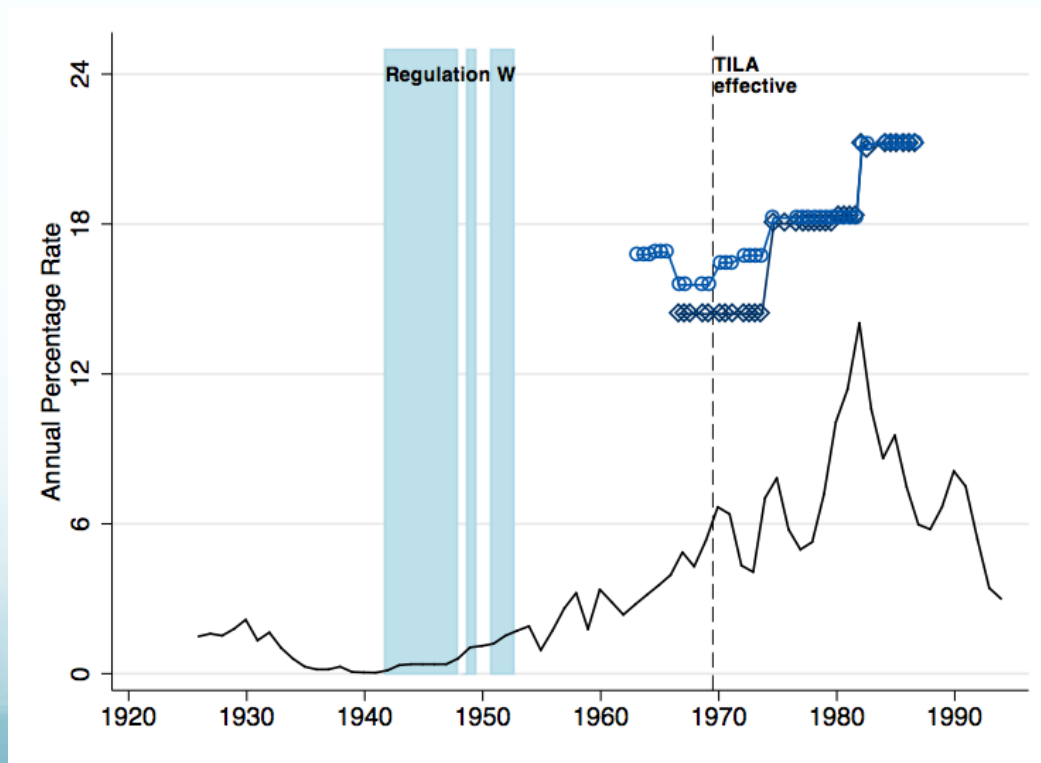


Prices of Least Expensive Credit Plans in Each Catalog for a \$200 Purchase

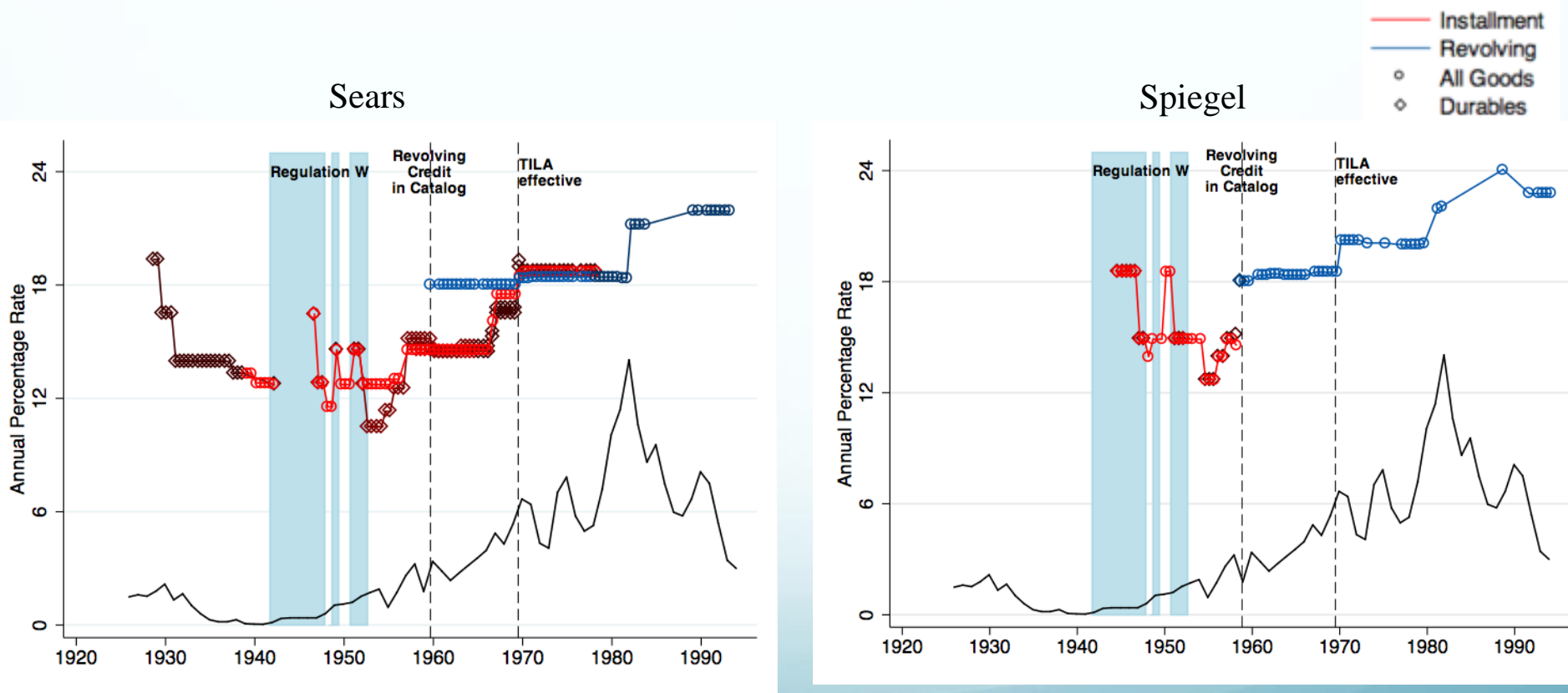


Observation 6: Resistance to Price pressures over long periods of time

J.C. Penney, Price of all credit plans



Observation 7: Installment credit appears more responsive to price pressure



Observation 8: Profitability of Revolving Credit

- Sears sold credit card business in 2003 which provided 60% of its annual profits (NYT, July 2003)
- At the time, 8th largest credit card portfolio in US
- Ausubel (1991) findings on credit card industry profitability despite low barriers to entry and number of banks in industry

credit/interest rate price disclosures shroud credit cost obligations

- If consumers are sufficiently inattentive to interest rates price disclosures or revolving credit too complex, then optimal to not educate consumers nor compete on costs
- Why? Revelations lead consumers to avoid credit purchases altogether rather than borrow from the cheapest creditor.
- Disincentive to educate → creditors raise prices in equilibrium without experiencing lowered demand.
- “Shrouded Equilibrium” : No creditor educates consumers on costs

Shrouding equilibrium behaviors (Heidhues et al. 2017)

- Less efficient creditors (who face higher cost of fund)
 - replace installment credit completely
 - raise credit prices to highest possible levels (stickiness)
 - set competitive salient terms (monthly minimum payment requirements)
 - experience a jump in credit vs. cash sales (because look more competitive)
 - Profitability can occur if lower bound on prices of goods
- Efficient creditors
 - offer both installment and revolving
 - keep installment at competitive terms to attract sophisticated/wary consumers
 - Not tempted to educate consumers because capture a large enough share of revolving credit market
- Long-term
 - Expensive revolving can co-exist with cheaper credit for long periods of time
 - If sufficient number of non-sophisticated consumers, efficient firms switch to revolving because more profitable than transparent installment credit

Possible Explanations

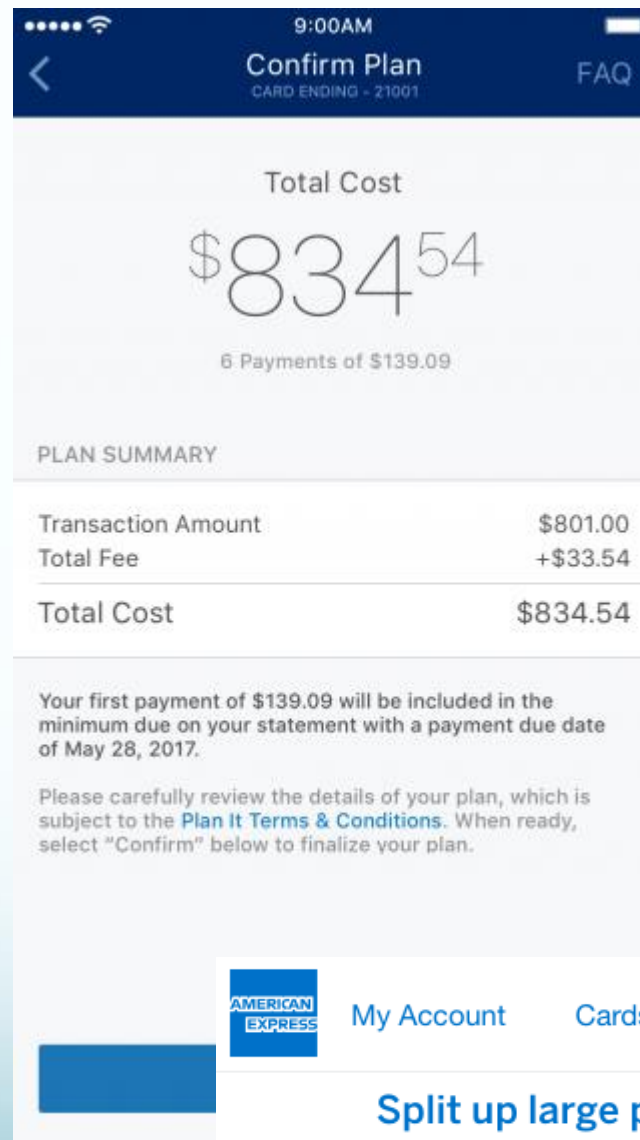
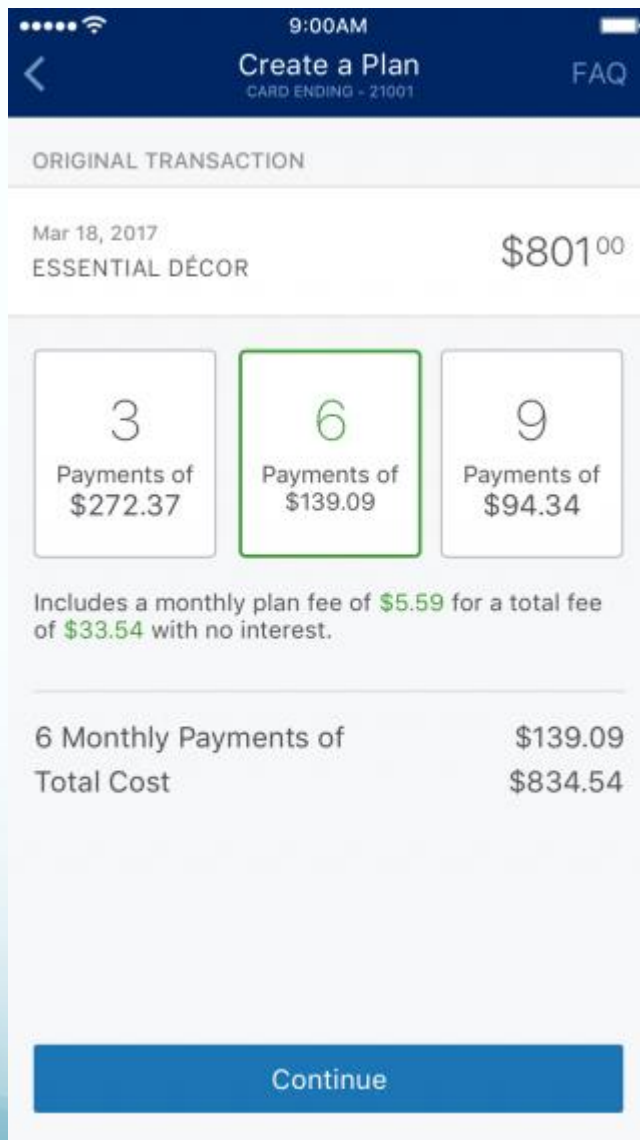
| | Possible Explanations for Pricing Behaviors | Price/ Credit Sales Jump | Price stickiness of revolving credit in catalogs | Price stickiness in bank credit cards | Not rationing at price ceiling as cost of funds increase | Resistanc e to price pressures over long periods of time | Prices not sticky and more responsive to pressure with Installment/ti me credit | Profitability |
|---|---|--------------------------------|--|--|---|---|--|-------------------------------|
| A | Interest rate price disclosures shroud cost obligations | x | x | x | x | x | x | x |
| B | Revolving credit provide more attractive terms or features | x | | | | | | |
| C | Revolving credit produces more defaults or offers more expensive features | x | | | | | | |
| D | Revolving credit offered to more risky customers | x | | | | | | |
| E | B, C, D + Binding Price Ceiling | x | x | x | | | x | |
| F | B, C, D + Goods in catalogs not perfect substitutes | x | x | | | x | opposite | x (not for bank credit cards) |
| G | B, C, D + Price of catalog goods move with cost of funds | x | x | | x | x | opposite | |

If shrouding conjecture True

- Shrouding through interest rate price disclosures can be added as another explanation for credit card price stickiness (Ausubel, 1991; Calem and Mester, 1995)
- Dispersion in credit card prices (Stango and Zinman, 2016) can be explained by consumers inability to appreciate cost differences between credit instruments when prices are quoted in interest rates
 - consumers may not be motivated nor aware enough to search and switch to cheaper credit

Conclusion and Discussion

- Even in its simplest form, consumers cannot translate revolving credit price disclosures into cost obligations
 - Support findings in financial literacy and marketing literature (Lusardi and Mitchell, 2011, 2017; Lusardi and Tufano, 2015; Soll, Keeney and Larrick, 2013)
- If the costs were to become more salient:
 - some convenience users could borrow/consume more
 - some borrowers could borrow/consume less
- Use of interest rates to deter borrowing not effective
 - TILA disclosures not sufficient
- Increased salience of costs needs to occur *before*, not after, purchasing decisions
 - CARD act bill disclosures too late
- Possible solutions:
 - Financial education
 - Disclosures on statements that predict interest costs based on spending
 - return to installment credit (AMEX) + pre-purchase calculators



American Express: Pay it/Plan it Feature

Split up large purchases over time for a fixed monthly fee and no interest.

Time Credit Today?

[My Account](#)[Cards](#)[Travel](#)[Rewards](#)[Business](#)[Help](#)

Pre-Purchase Calculator

Select an amount to see what monthly payment plan options could be available on the Card. This calculator is an illustrative tool only. It is not based on your personal creditworthiness or other factors. Your actual plan options and fees will be presented to you when you create a plan.

\$ 500 ▾

6

Payments of
\$87.49

Includes a monthly plan fee of
\$4.15
for a total plan fee of **\$24.90**

Total cost
\$524.90

12

Payments of
\$45.85

Includes a monthly plan fee of
\$4.18
for a total plan fee of **\$50.16**

Total cost
\$550.16

18

Payments of
\$31.94

Includes a monthly plan fee of
\$4.16
for a total plan fee of **\$74.88**

Total cost
\$574.88

American Express: Pay it/Plan it

Examples from Today?

Home / Electronics / Computers / Laptops / **Lenovo Ideapad 330-14AST Notebook Silver**



Lenovo Ideapad 330-14AST Notebook Silver

sku: 207753

Before: \$7,499

Now: **\$ 6,999**

Buy it with Coppel credit from **\$ 252 biweekly**
(**\$ 12,038 in 48 fortnights ***)

Exclusive price for Coppel.com