

# Consumer Payment Choice: A Central Bank Perspective

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# Outline

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Brief history of money and payments

New consumer payments data results (2010-2011)

Boston Fed research:

- Economics of consumer payment choice
- Analyses of recent public policies toward payments

# Development of money

## Four major innovations in history of money\*:

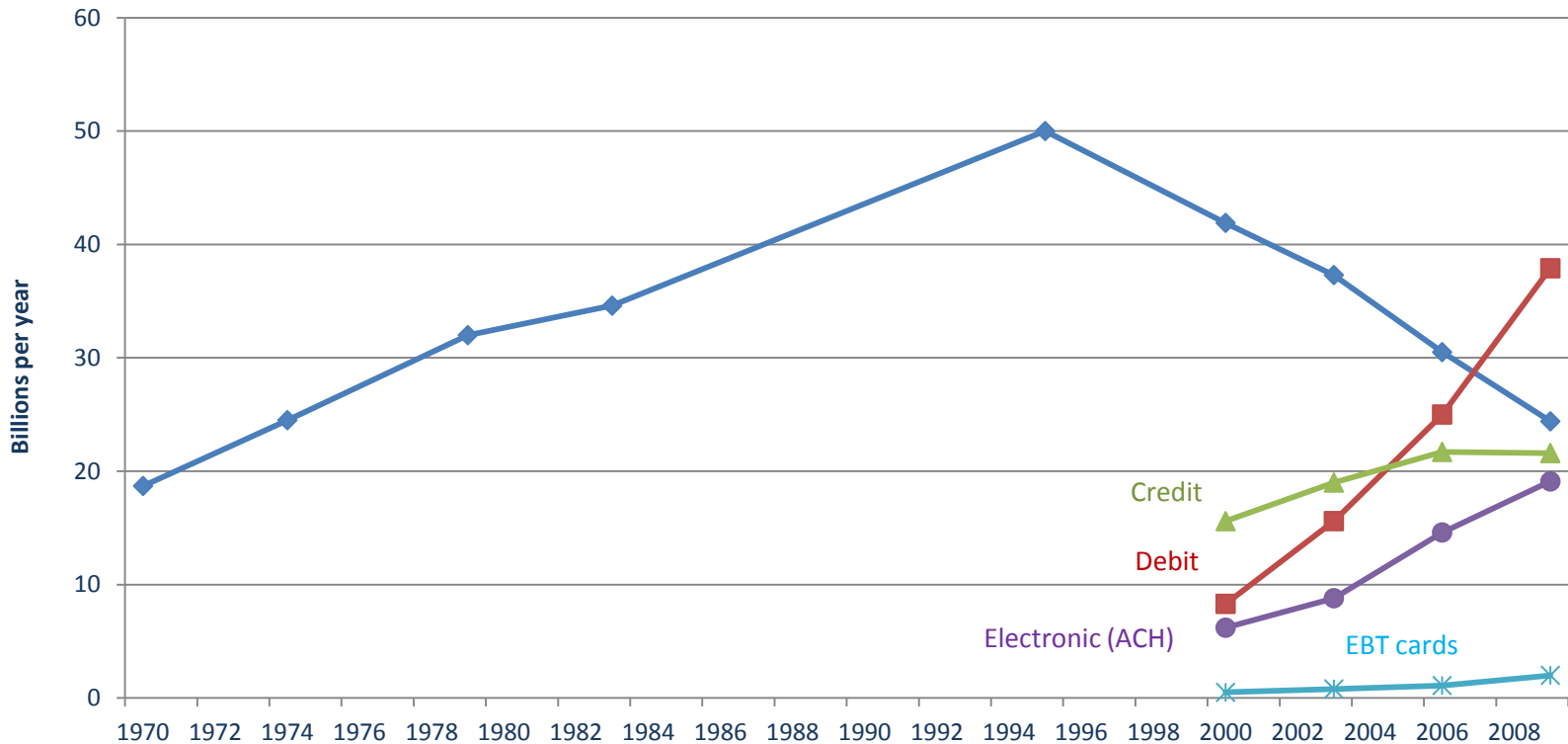
- I. Birth of commodity money (metallic coins)
- II. Creation of “checks” (promise of future money)
- III. Creation of paper (fiat) money
- IV. Emergence of electronic “money” (cards, cyber, cellular, etc....)

\* David Evans and Richard Schmalensee, “From Seashells to Electrons,” *Paying with Plastic* (chapter 2), MIT Press, 2005.

# The Payments Transformation

*Cards & electronics are replacing checks in U.S. non-cash payments*

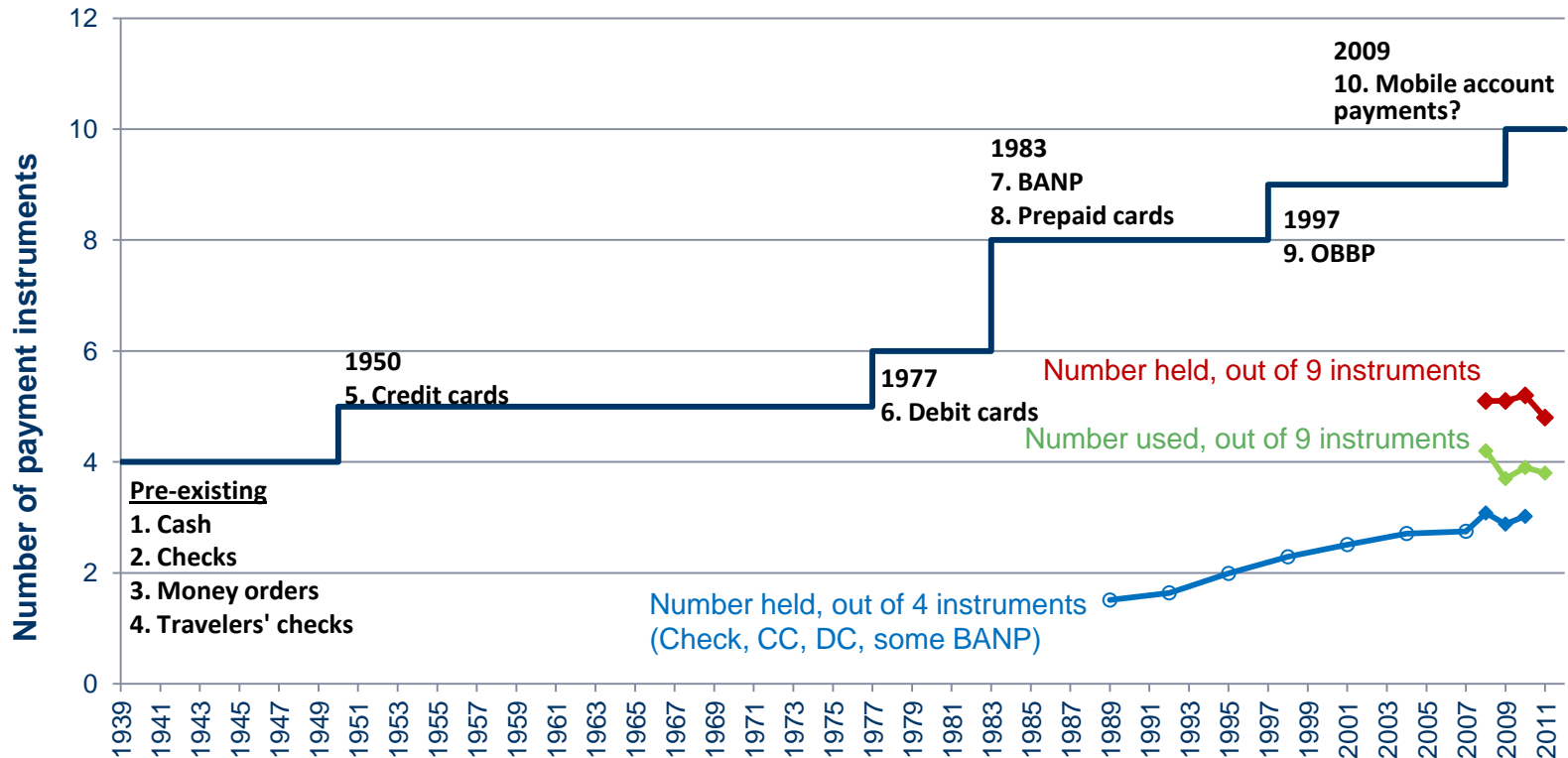
**Number of US payments by all sectors (household, business, government)**



SOURCES: Federal Reserve Payment Study (FRPS, 2000-2009); Federal Reserve Bank of Atlanta (1981, 1983); Gerdes and Walton (*Federal Reserve Bulletin*, 2002).

# Consumer payment choices

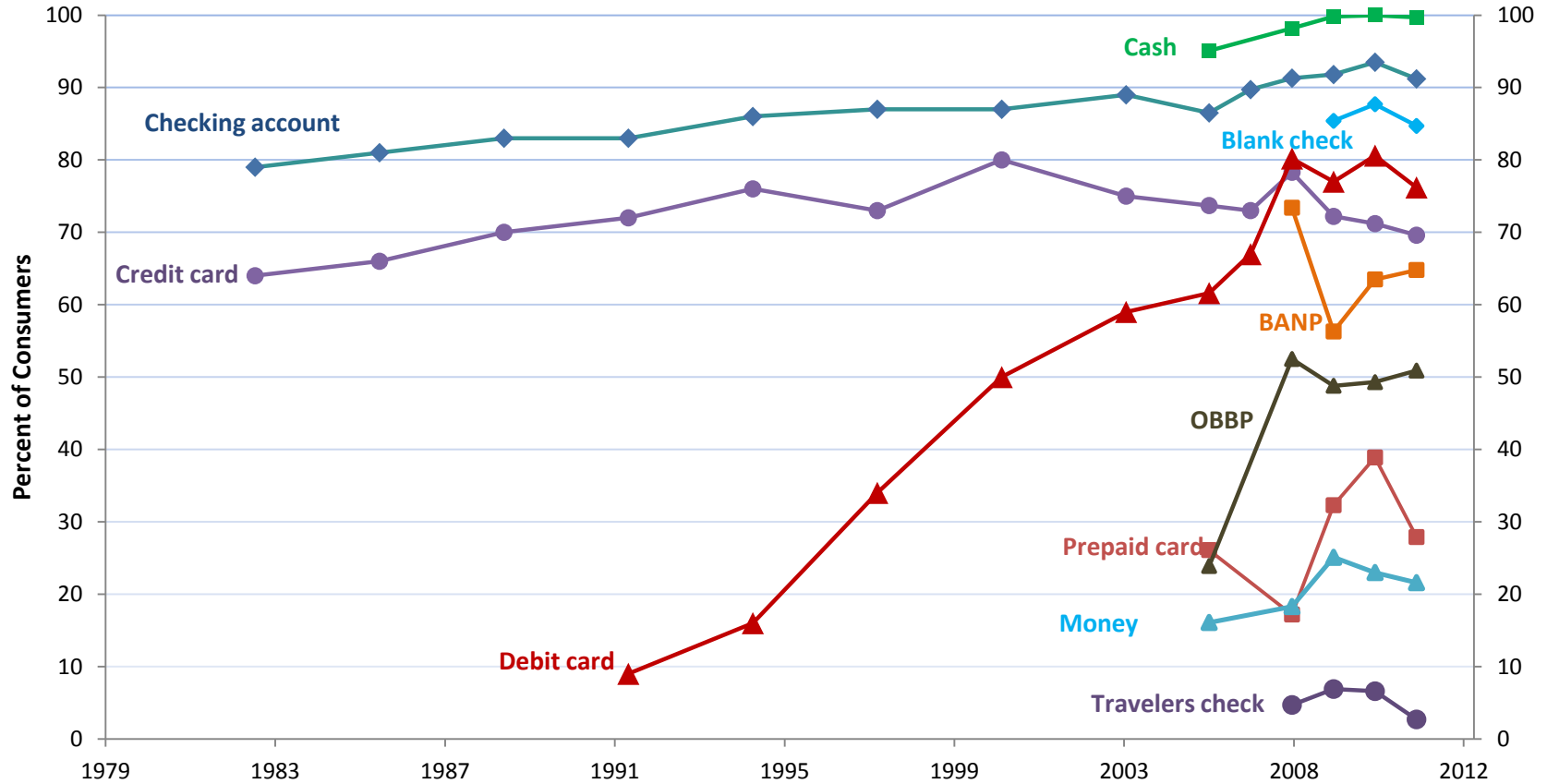
*U.S. consumers have more payment instruments to choose from and are taking advantage of the greater selection...*



Source: 2011 Survey of Consumer Payment Choice.  
 Note: The 2011 SCPC data are preliminary and subject to changes.

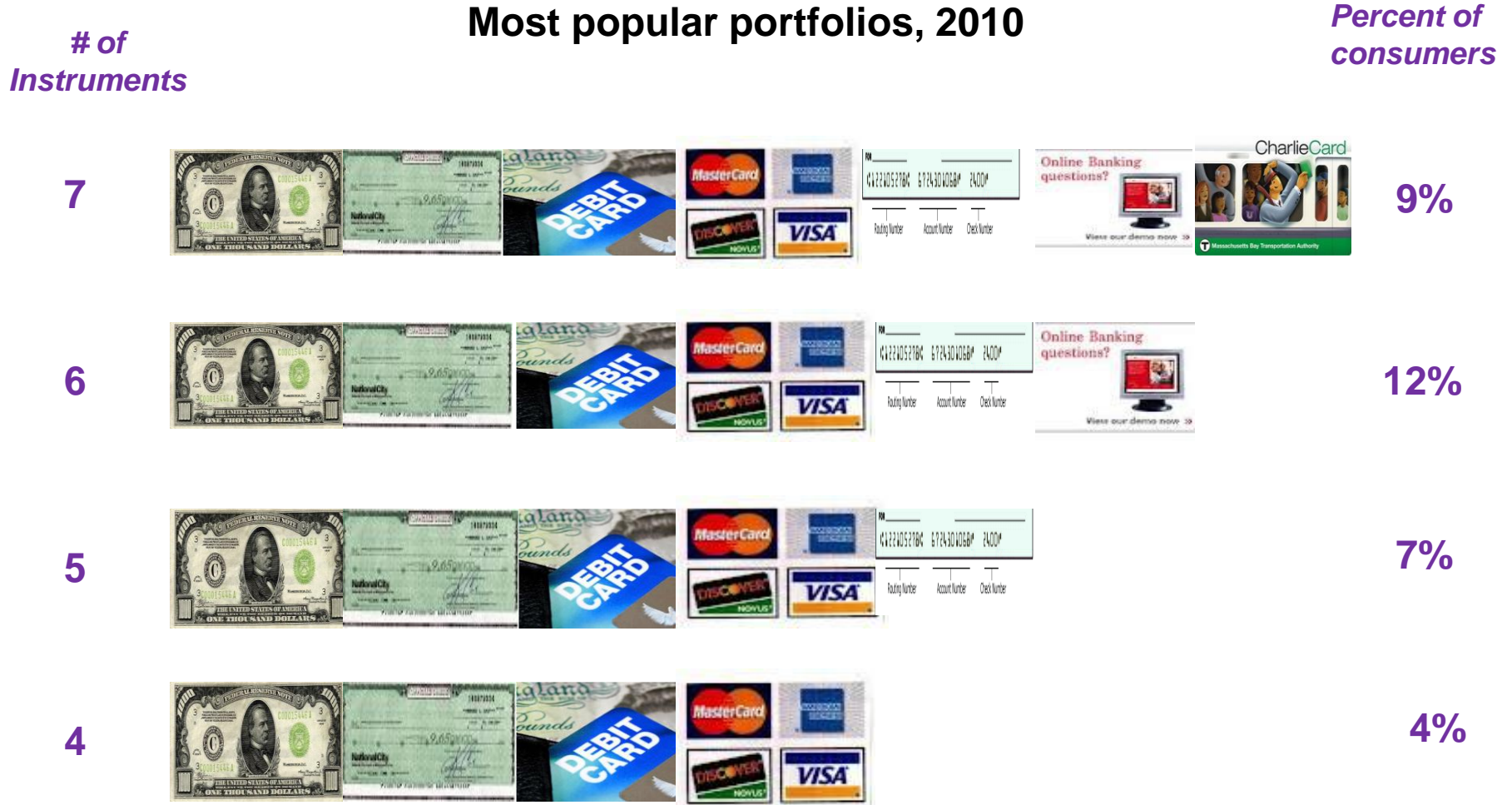
# Consumer adoption of payments

*Consumers are adopting new instruments but not discarding old ones...*



Source: 2011 Survey of Consumer Payment Choice.  
 Note: The 2011 SCPC data are preliminary and subject to changes.

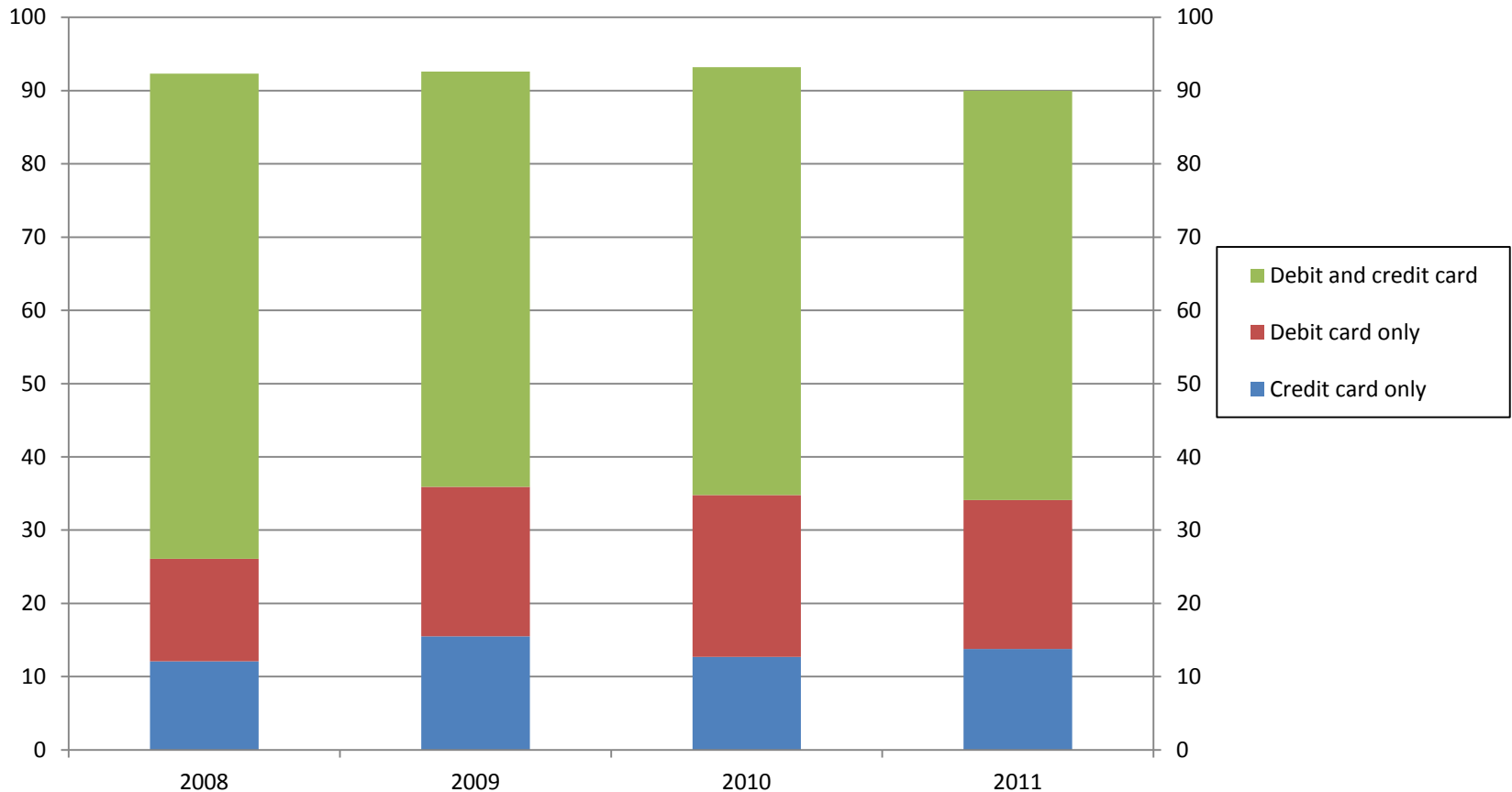
# Instrument portfolios



SOURCE: 2010 Survey of Consumer Payment Choice

# Adoption of debit & credit cards

*Most consumers have a debit or credit card; more than half have both.*



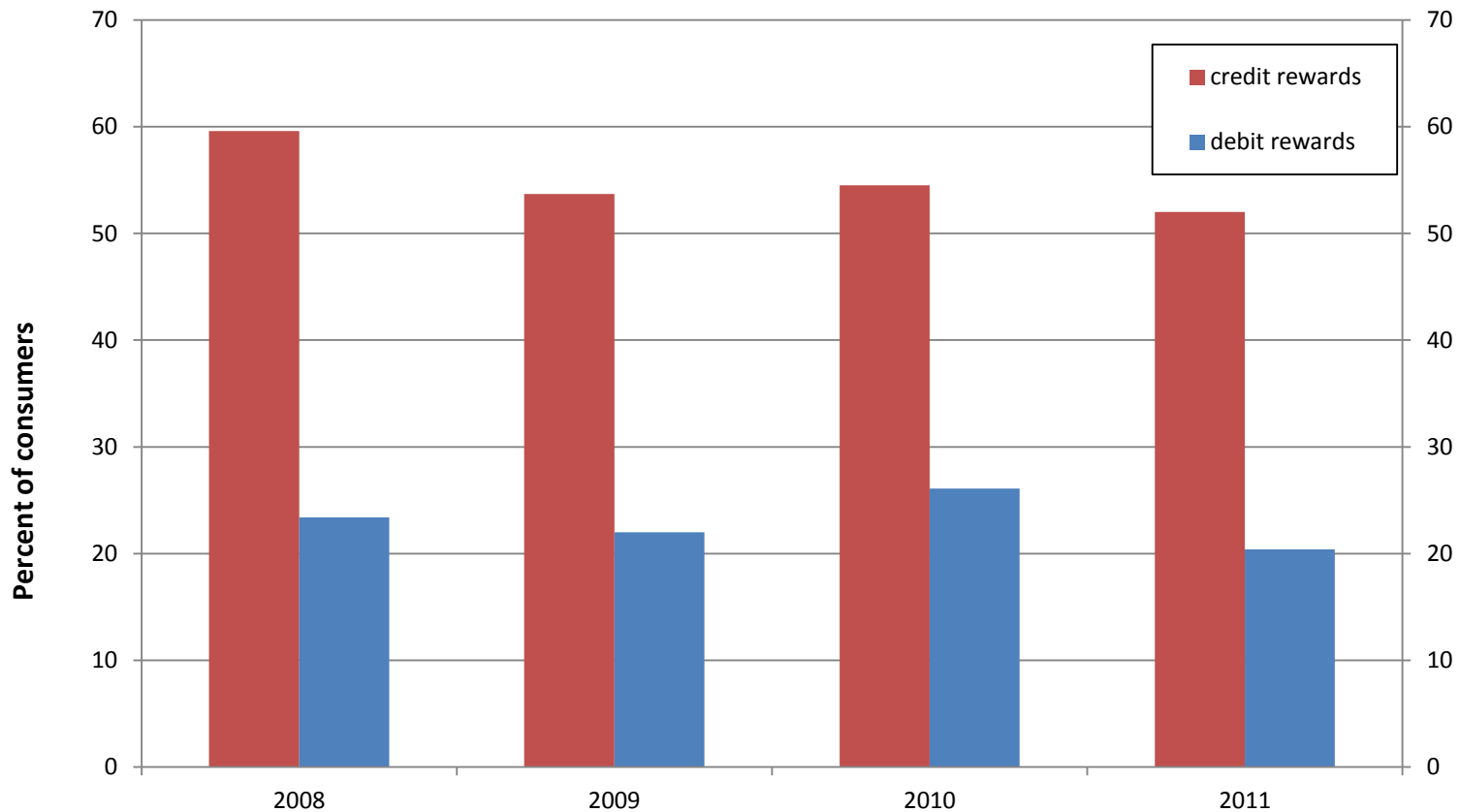
Source: 2011 Survey of Consumer Payment Choice.

Note: The 2011 SCPC data are preliminary and subject to changes.



# Adoption of rewards cards

*Holding of credit and debit rewards cards may be edging down...*

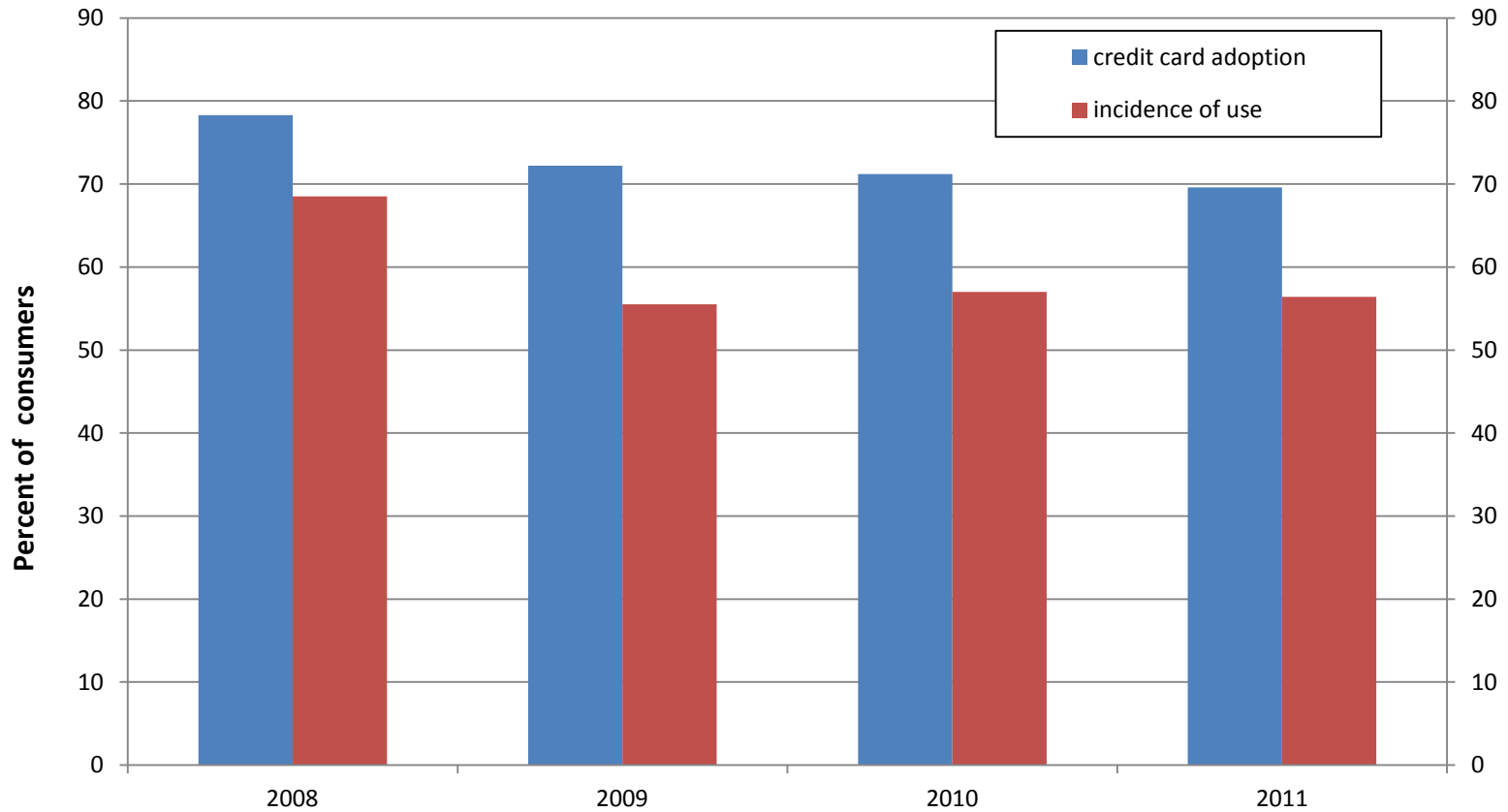


Source: 2011 Survey of Consumer Payment Choice.

Note: The 2011 SCPC data are preliminary and subject to changes.

# Incidence of use of credit cards

*Credit card activity is down from 2008, but relatively steady since 2009*

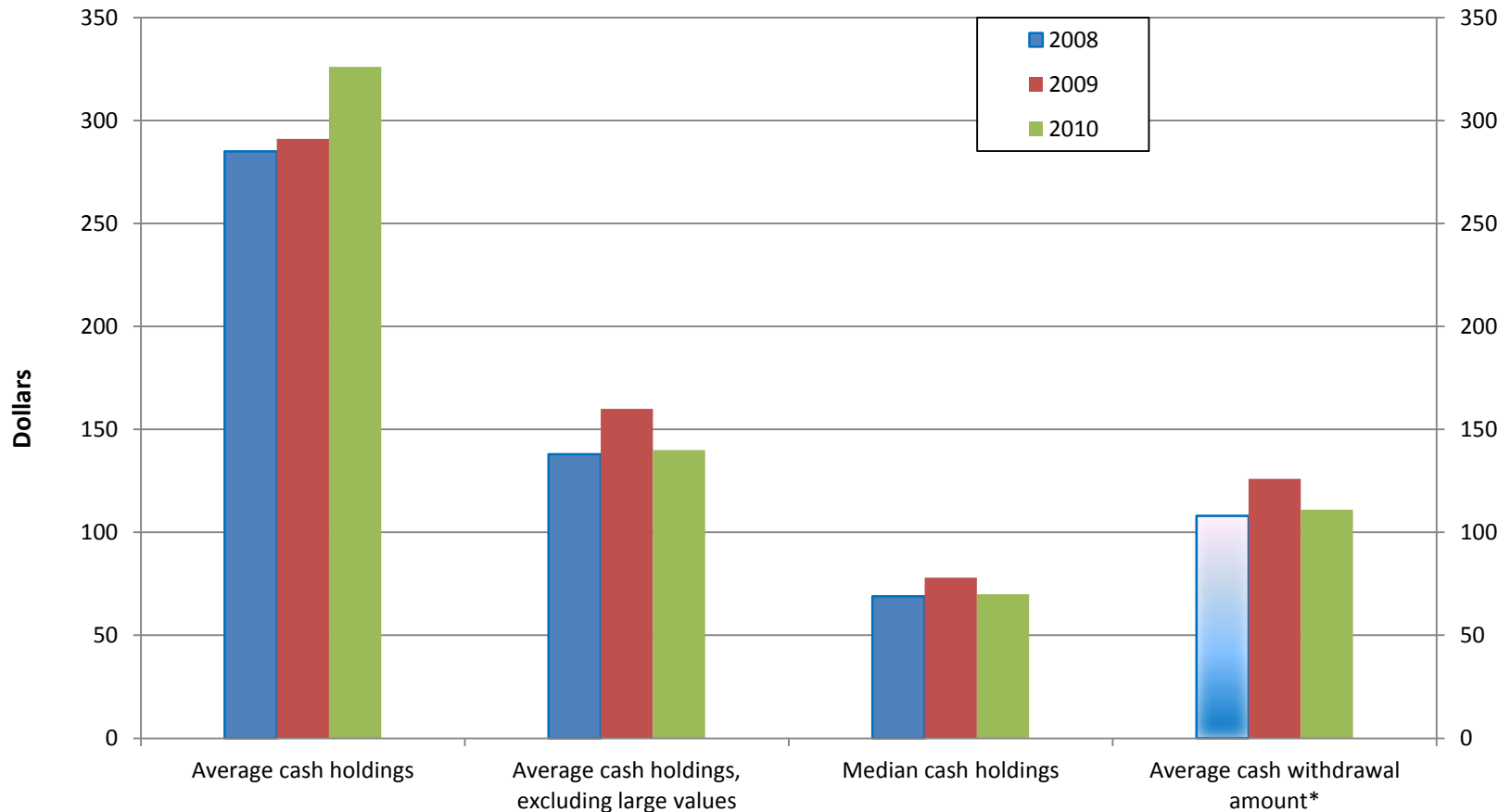


Source: 2011 Survey of Consumer Payment Choice.

Note: The 2011 SCPC data are preliminary and subject to changes.

# Cash holdings and withdrawals

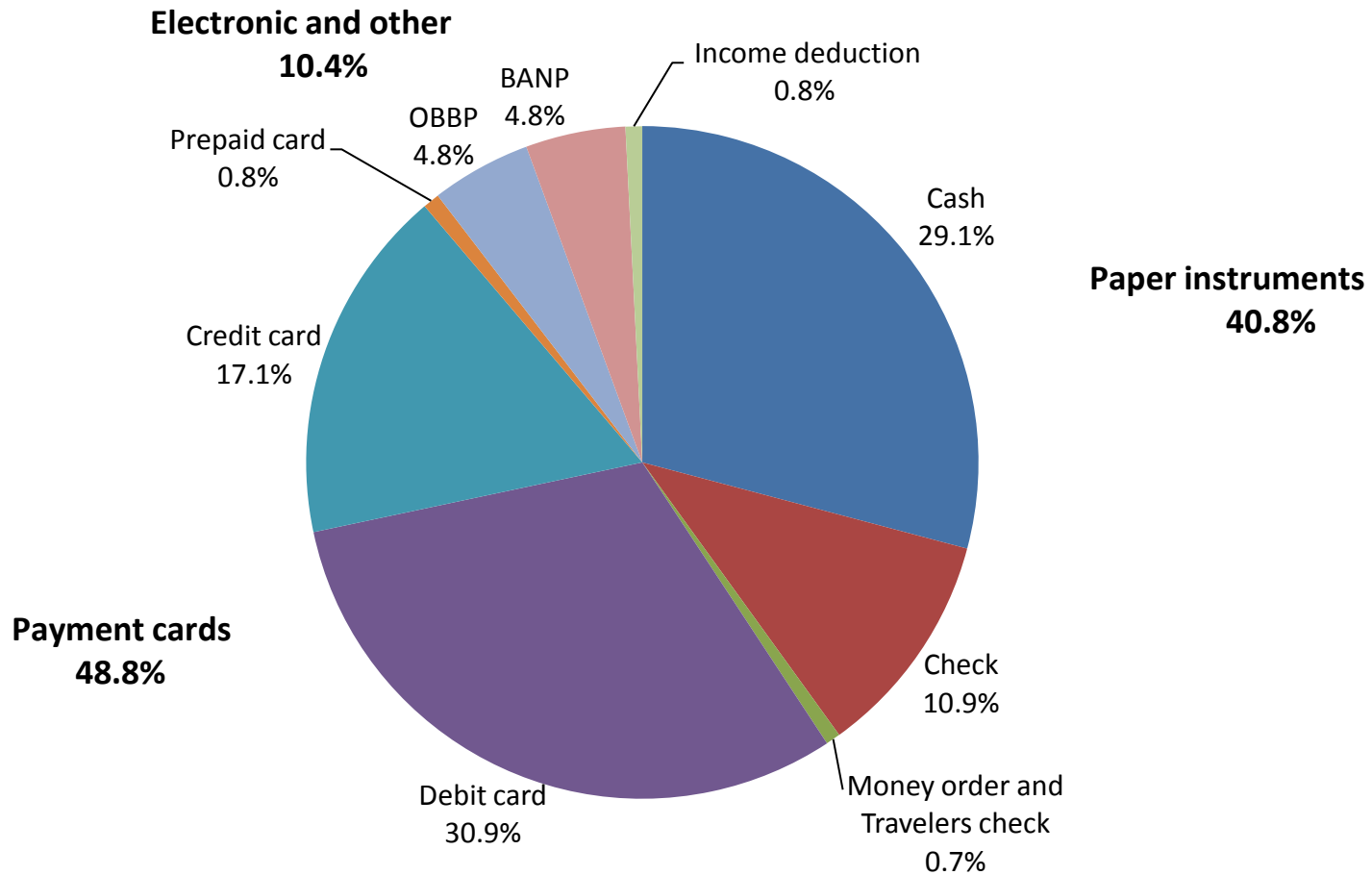
*Most consumers decreased their holdings and withdrawals of cash in 2010*



Source: 2010 Survey of Consumer Payment Choice

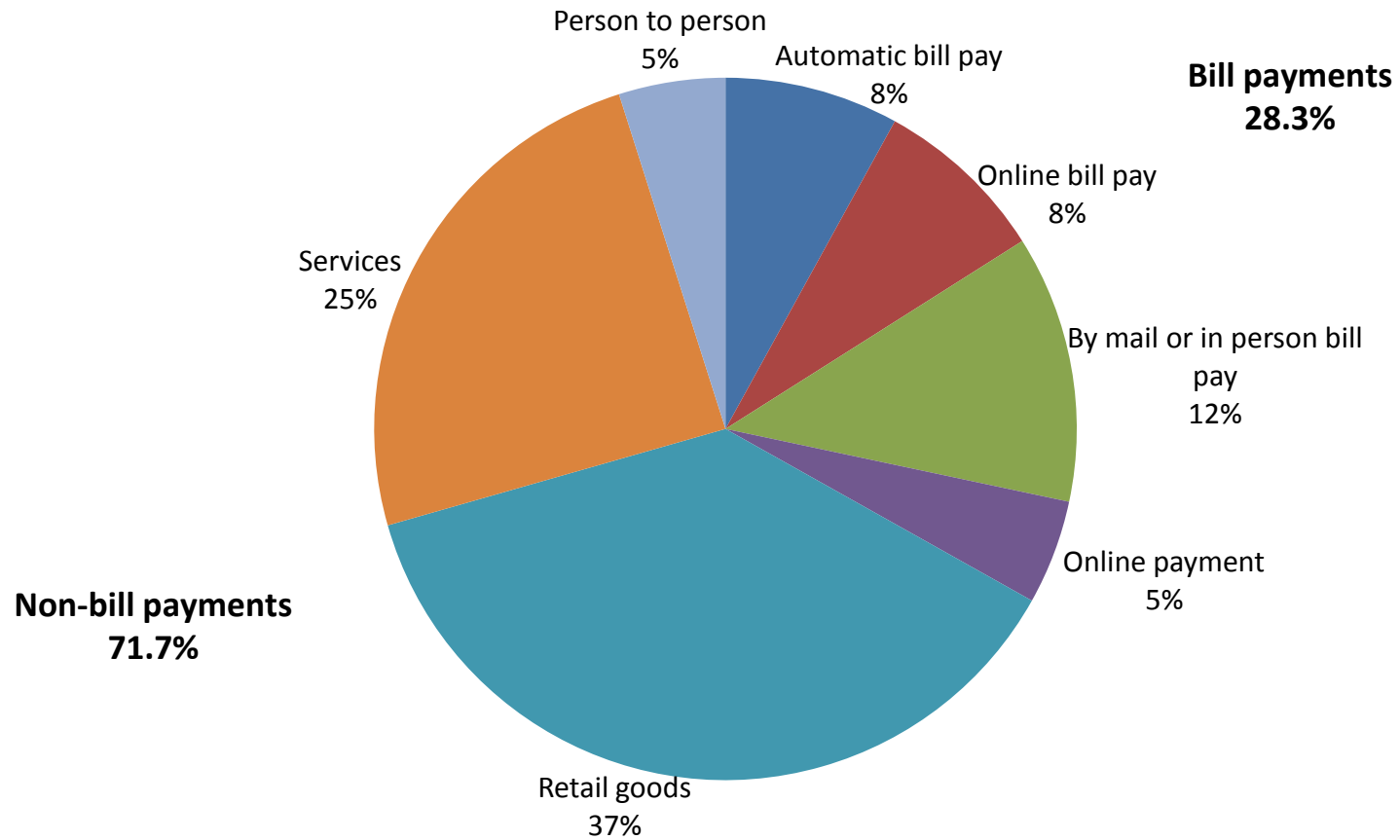
Notes: \*Estimate of average cash withdrawal amount in 2008 is not comparable to 2009–2010.

# Number of payments by instrument, 2010



Source: 2010 Survey of Consumer Payment Choice.

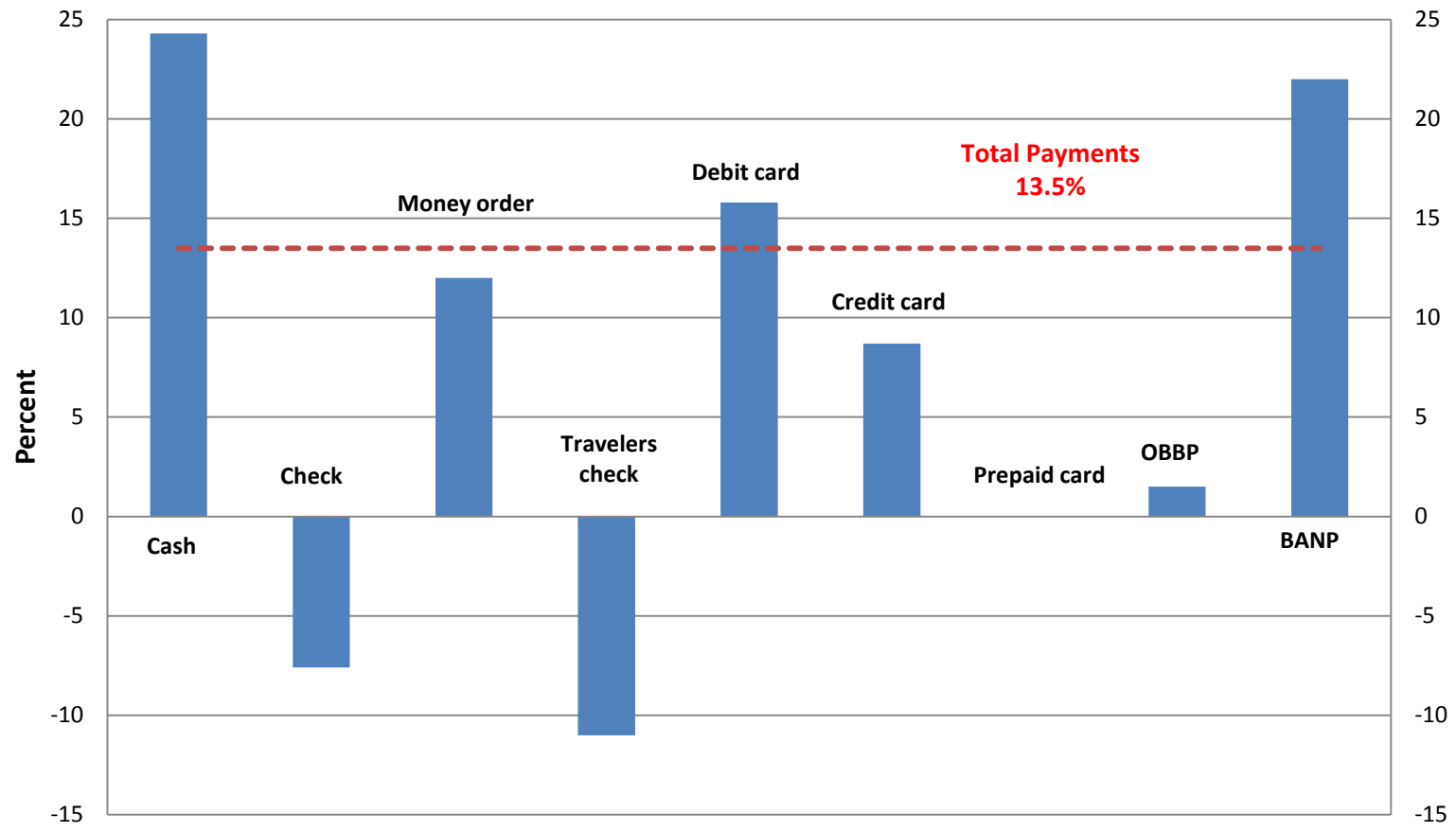
# Number of payments by transaction, 2010



Source: 2010 Survey of Consumer Payment Choice.

# Change in use by instrument, 2009-2010

*Cash and BANP increased, but checks continued their trend decline*



Source: 2010 Survey of Consumer Payment Choice.

# Payment characteristic ratings 2010

*Consumers view debit cards most favorably, but like cash and credit too*

	Acceptance for payment	Acquisition & setup	Cost	Convenience	Record keeping	Security	ROW AVG
Cash	4.6	4.3	4.5	4.0	2.3	2.7	3.7
Check	3.5	3.8	3.9	3.1	4.2	2.9	3.6
Debit card	4.4	4.0	4.0	4.3	4.1	3.1	4.0
Credit card	4.5	3.7	2.9	4.3	4.3	3.1	3.8
Prepaid card	3.8	3.4	3.4	3.4	2.8	2.7	3.2
Online banking bill pay	3.5	3.5	4.0	3.9	4.2	3.2	3.7
Bank account number	2.5	3.4	3.7	2.9	3.9	2.6	3.2
<b>COL AVG</b>	<b>3.8</b>	<b>3.7</b>	<b>3.8</b>	<b>3.7</b>	<b>3.7</b>	<b>2.9</b>	<b>3.6</b>

NOTE: Ratings are on a 5-point scale (1 is lowest, 5 is highest)

SOURCE: 2010 Survey of Consumer Payment Choice.

# Collecting consumer payments data

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## Three ways to collect data:

1. Survey (SCPC)
  - Consumer recall of payments in “typical” month (errors?)
2. Diary (DCPC)
  - Consumer recording of daily payments (3 days)
3. Transactions data (bank, processor, etc.)
  - Exact record of all transactions (proprietary)



# Survey/Diary payment estimates

*Survey undercounts total payments, but most shares are close to diary*

### Share of number of payments, by instrument

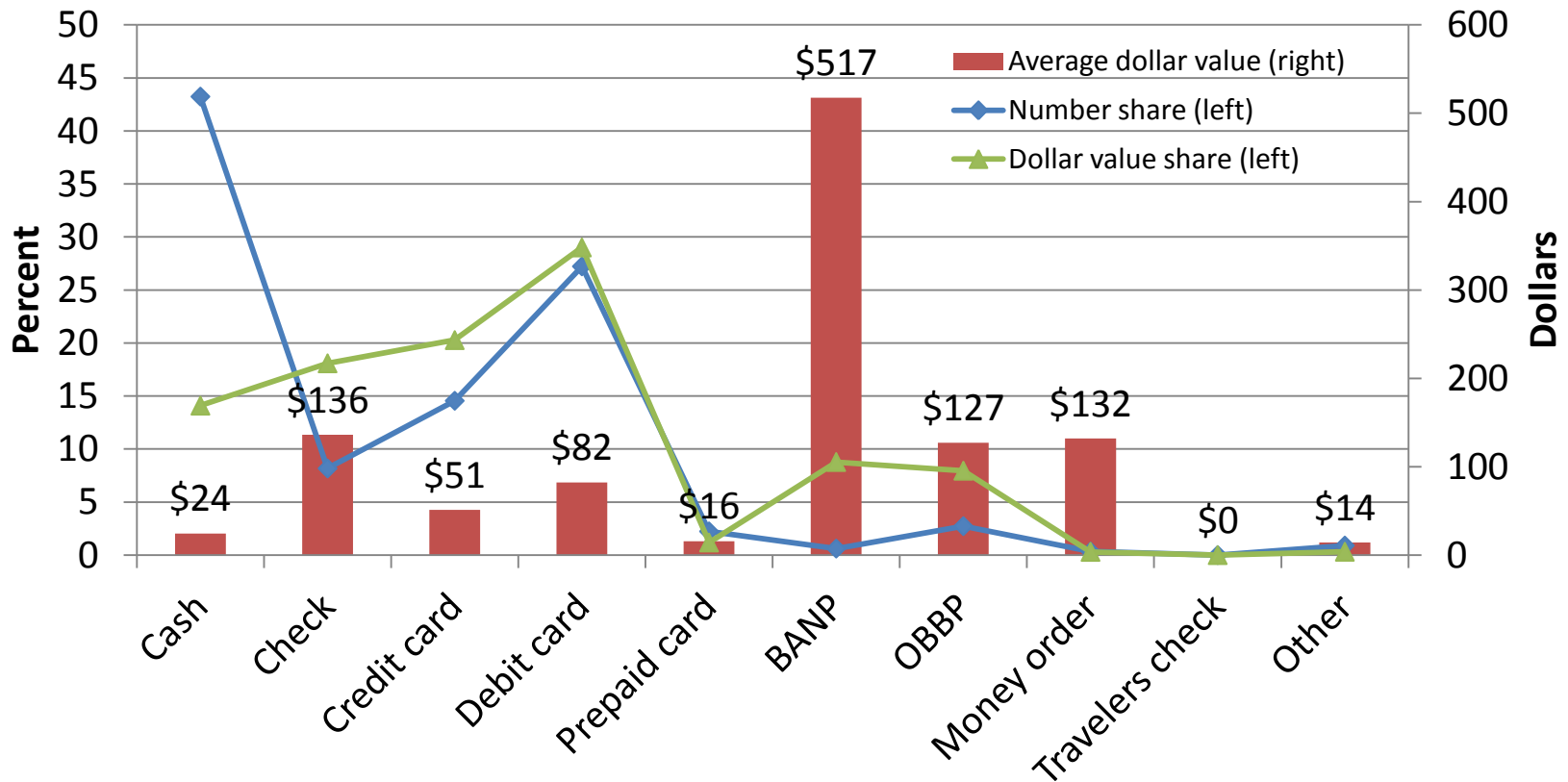


Source: 2010 SCPC and DCPC

# Survey/Diary payment values

*The number and dollar value of payments vary widely by instrument*

## Shares and average dollar values of payments by instrument

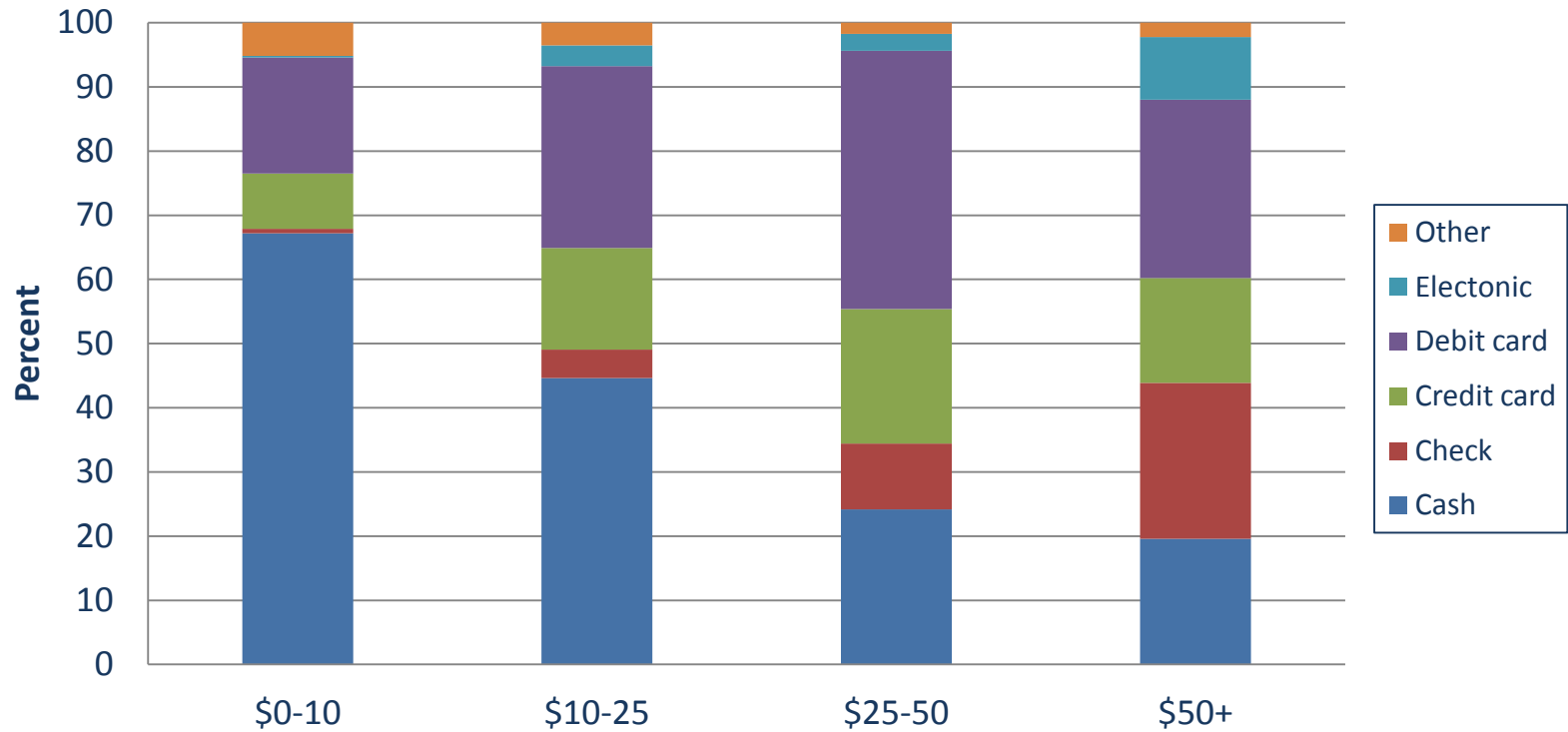


Source: 2010 DCPC

# Number of payments by value

*Consumer use of payment instruments varies by the value of transaction*

### Shares of number of payments by transaction dollar values



Source: 2010 DCPC

# Economic research – selected topics

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Credit card rewards and transfers

Cash demand and credit card debt

Credit scoring and debit cards

Account-to-account payments

# Credit card transfers\*

The structure of the U.S. credit card market leads to transfers among consumers

	Total (\$ Billions)			Per household (\$)		
	$I_L$	$I_H$	Total	$I_L$	$I_H$	Average
<b>Total</b>	-7.8	7.8	0	-83	361	0
Cash users	-5.6	0.8	-4.8	-69	52	-50
All credit card users	-2.2	7.0	4.8	-162	1058	240
Convenience users	2.2	7.2	9.4	331	1567	833
Revolvers	-4.4	-0.1	-4.5	-647	-63	-511
Cash users & Revolvers	-10	0.6	-9.4	-114	38	-89

- Low-income households (<\$100,000) subsidize high-income households
- Cash households subsidize card households
- Card revolvers subsidize card convenience users
- Further research on income, debt and credit card use is needed

\* Scott Schuh, Joanna Stavins and Oz Shy, "Who Gains and Who Loses from Credit Card Payments? Theory and Calibrations," Federal Reserve Bank of Boston *Public Policy Discussion Paper* 10-4, 2010 (revised version forthcoming)

# “Reverse Robin Hood” effect?

*Credit card transfers are most disparate for highest income households*

Annual Income	Transfers received	
	Total (\$ Billions)	Per household (\$)
Under \$20,000	-1.5	-63
\$20,000--49,999	-3.4	-89
\$50,000--79,999	-2.2	-96
\$80,000--99,999	-0.5	-56
\$100,000--119,999	-0.6	-89
\$120,000--149,999	0.1	10
<b>Over \$150,000</b>	<b>8.2</b>	<b>823</b>

\* Scott Schuh, Joanna Stavins and Oz Shy, “Who Gains and Who Loses from Credit Card Payments? Theory and Calibrations,” Federal Reserve Bank of Boston *Public Policy Discussion Paper* 10-4, 2010 (revised version forthcoming)

# Consumers' demand for cash\*

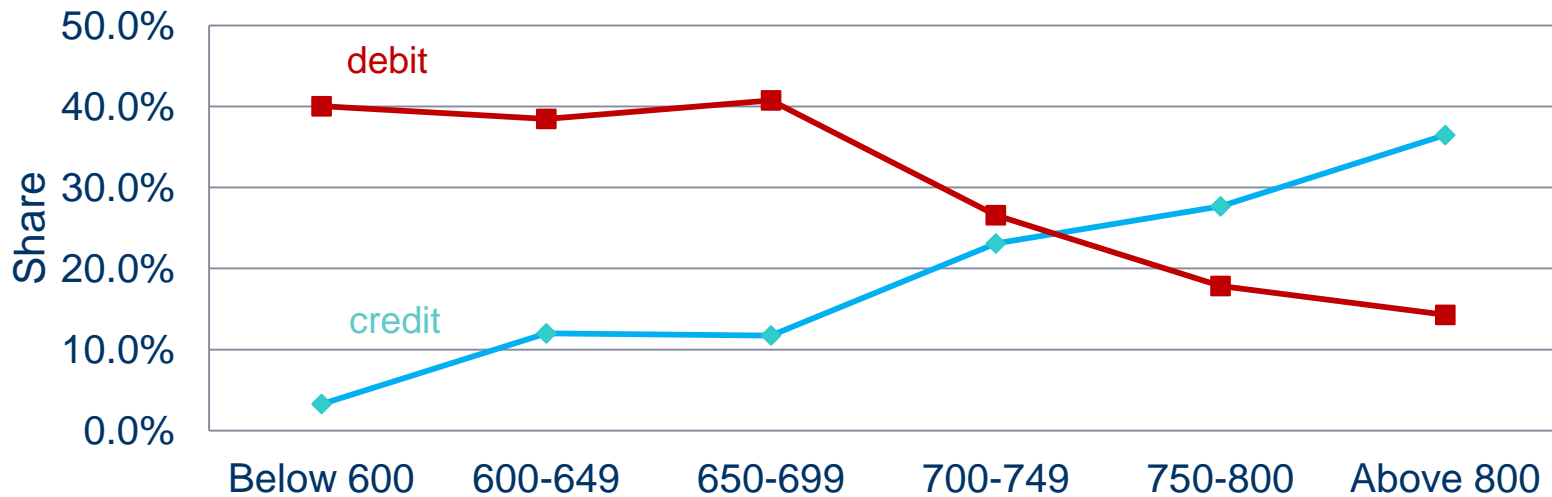
## *How do interest rates affect consumer demand for cash?*

- Usually in monetary theory...
  - A 10% increase in checking account rate leads to a 0.9% *decrease* in cash holdings, as foregone interest on cash rises
- ...but for credit card revolvers
  - A 10% increase in checking account rate leads to a 0.4% *increase* in cash holdings because:
    - *Increase in foregone interest (0.9% decline) is counter-balanced by increase in the cost of using a credit card (1.3% increase)*

\* Tamás Briglevics and Scott Schuh, "U.S. Consumers' Demand for Cash in the Era of Electronic Payments," Federal Reserve Bank of Boston *Working Paper*, 2012 (forthcoming)

# FICO score and payment use\*

## Weighted average share of transactions

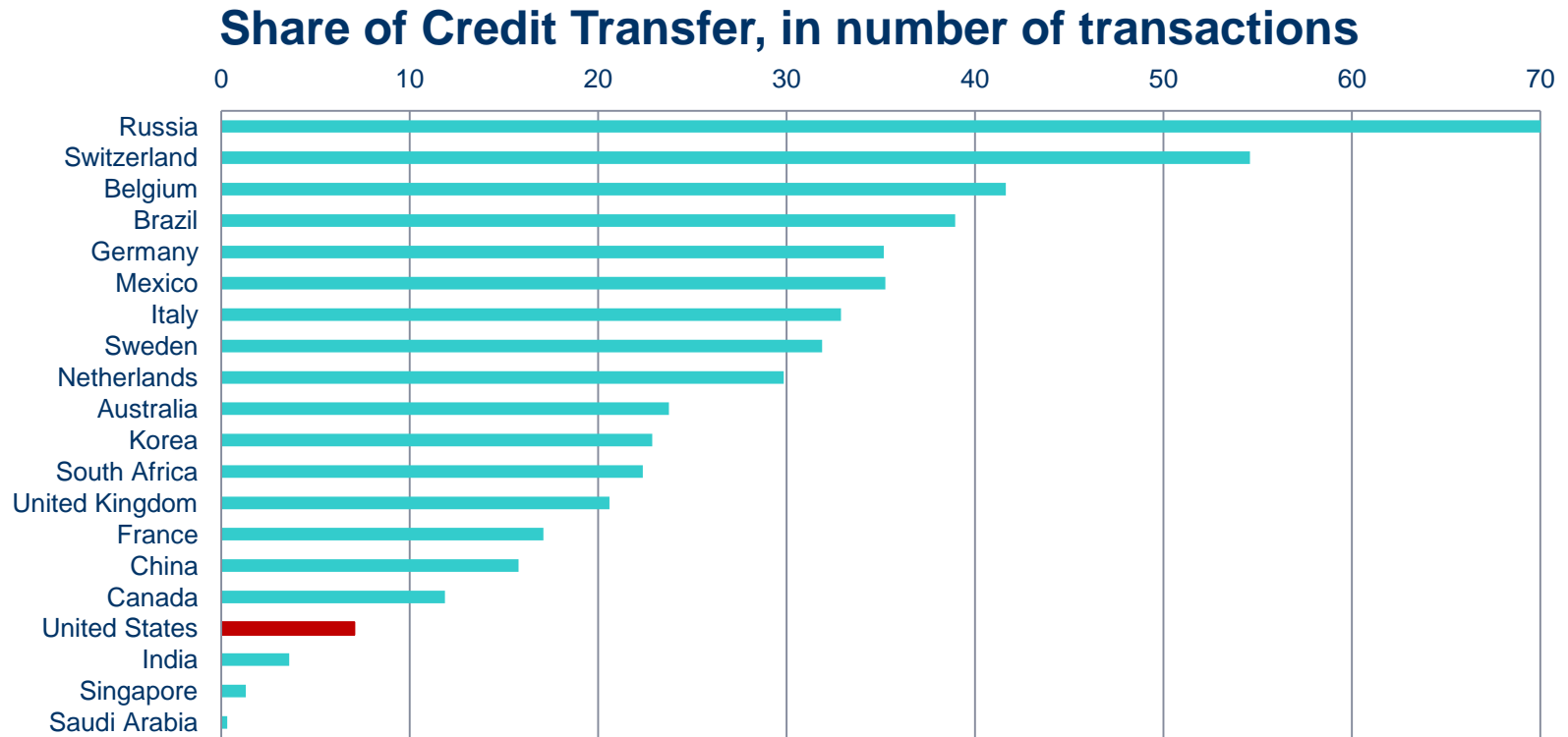


- Consumers with higher FICO score are **more likely to have a credit card** and **less likely to have a debit card**, controlling for demographic and financial variables
- Conditional on having a card, consumers with higher FICO score are **more likely to use a credit card** and **less likely to use a debit card**, controlling for demographic and financial variables
- The relationship seems to be caused by supply-side factors related to credit supply

\* Fumiko Hayashi and Joanna Stavins, "Effects of Credit Scores on Consumer Payment Choice," Federal Reserve Bank of Boston Public Policy Discussion Paper 12-1, 2012.



# Account-to-account transfers\*



- U.S. is a late adopter of A2A transfer technologies
- Money transmitters (e.g. PayPal, Amazon Payments) and mobile payments are the driving forces behind the recent rise in A2A payments
- Multiple standards are used (e.g. clearXchange, Popmoney), limiting faster adoption

\* Oz Shy, "Account-to-Account Electronic Money Transfers: Recent Developments in the United States," *Review of Network Economics*, 11(1), 2012.

# Policy analysis – selected topics

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Durbin (Reg II) part 1 – changing and capping debit interchange fees:

- Bank pricing of debit cards and bank accounts
- Merchant incidence of interchange reform

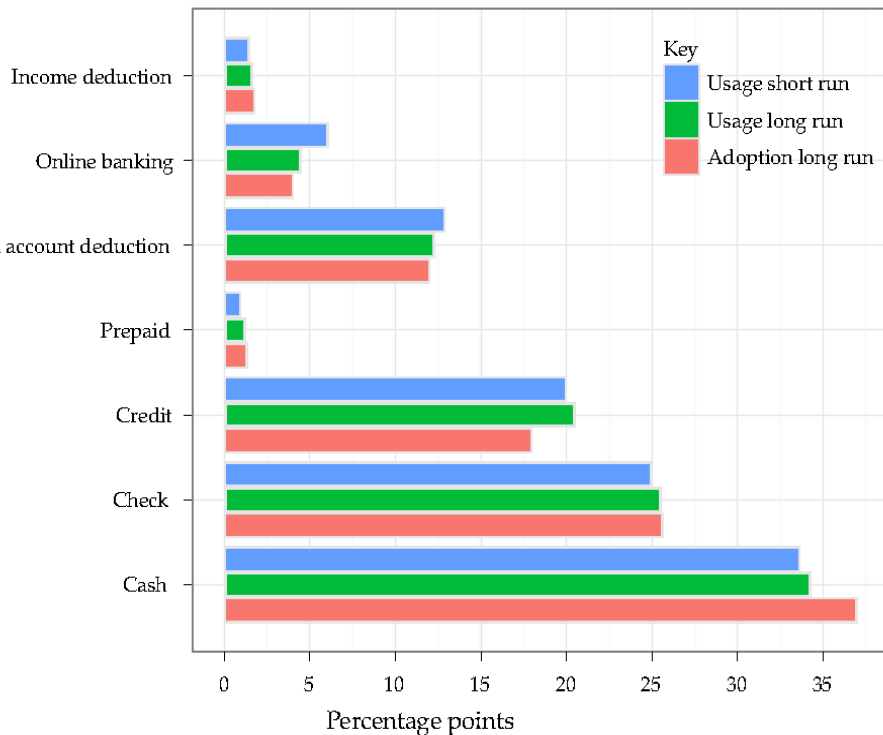
Durbin (Reg II) part 2 and DOJ Settlement – disclosing fees and steering consumers:

- Imperfect fee information
- Theory and evidence on steering

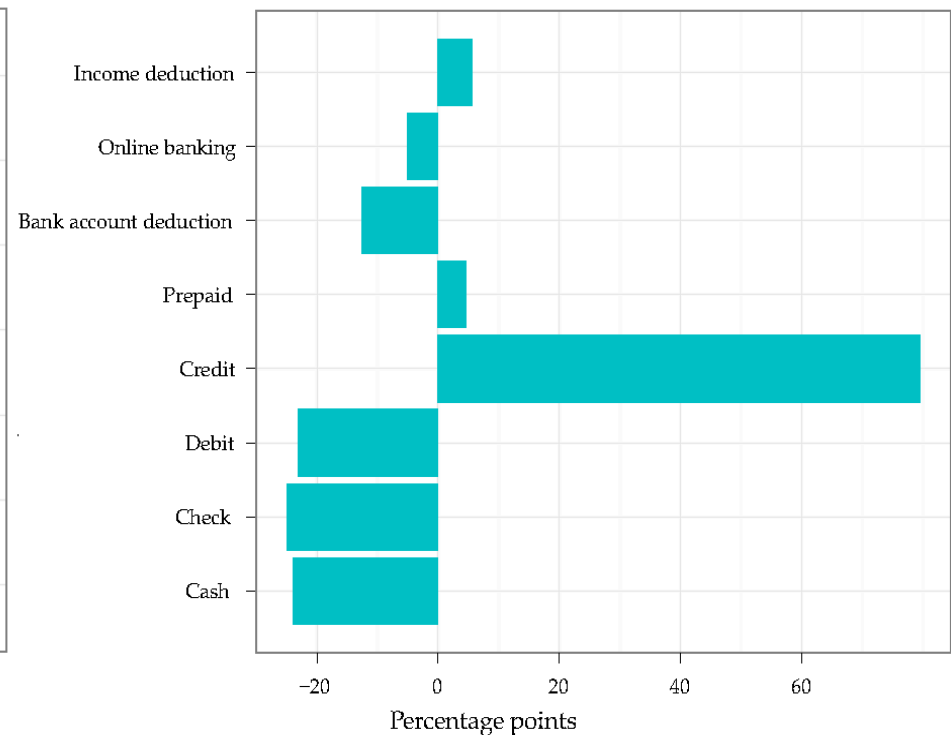
# Modeling payment substitution\*

*In response to Reg II, banks considered new/higher fees. How would consumers change their use of payment instruments in response to an increase in the cost of...*

... debit cards?



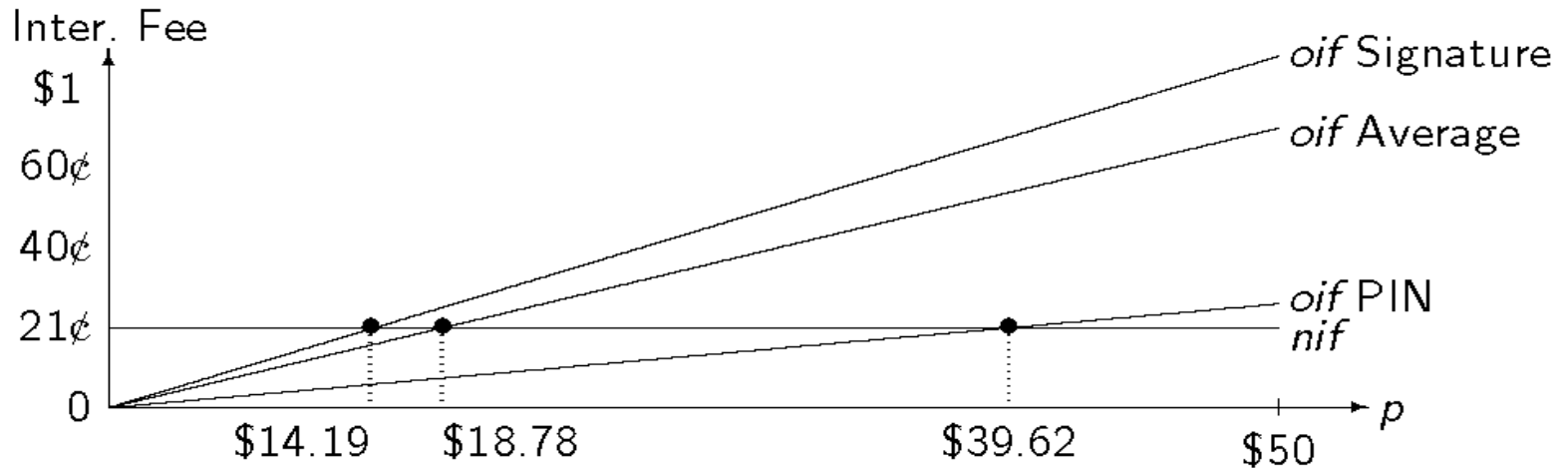
... bank accounts?



\* Sergei Koulayev, Marc Rysman, Scott Schuh and Joanna Stavins, "Explaining adoption and use of payment instruments by U.S. consumers," Federal Reserve Bank of Boston working paper (forthcoming)

# Incidence of debit interchange reform\*

Cap on debit interchange helps most merchants except small-value stores



	New Interchange (¢)	Old Interchange (¢)	Change (¢)
Grocery, pharmacy	29	37	-8
Gas station, conv. store	24	26	-2
Gen. merchandise, websites	37	56	-19
Other retail	34	50	-16
Restaurants, bars	28	36	-8
<b>Fast food &amp; beverage</b>	17	11	<b>6</b>

\* Oz Shy, "Who Gains and Who Loses from the 2011 Debit Card Interchange Fee Reform?", Federal Reserve Bank of Boston *Public Policy Discussion Paper*, 2012 (forthcoming).

# Payment card information\*

*Policies enacted in 2011 give merchants new freedoms to share cost information and offer consumers discounts based on choice of payment instrument (steering)*

## DOJ Settlement with Visa/MC:

- V/MC must disclose fees to merchant
- Merchants may disclose fees to consumer
- Will merchants get and use fee info?

## DOJ Settlement and Regulation II:

- Merchants may steer consumer choice of payment by giving:
  - Discount on retail price
  - Free merchandise
- Merchants may NOT surcharge

Are these signs coming to U.S.?



\*Scott Schuh, Oz Shy, Joanna Stavins, and Bob Triest, "An Economic Analysis of the 2010 Proposed Settlement between the DOJ and Credit Card Networks," *Journal of Competition Law and Economics*, 8(1), 2012.

# U.S. merchant signs before 2011 policies

Dear valued customers:

You might be aware that we pay substantial fees to the credit card companies for each customer credit/debit card transaction. These fees can be as much as .25 cents per transaction plus 4% of the sale. Most businesses increase their prices to offset these fees. Other small businesses have moved to "cash only" system. \_\_\_\_\_ has avoided these changes thus far.

**We feel it is important to continue to bring you competitive prices and stellar customer service. However, please consider paying with cash when you can.**

Thank you for your continuing support

## Get 1% back!

Use your debit card and receive 1% of your purchase back to be used on your next debit purchase.

© 2009 WDA Systems S.A. 2010

**IKEA®**

### PLEASE NOTE:

Driver pays

# 6%

on all charge cards.

— Thank You —

# Steering at the point-of-sale?\*

*Cash/debit discounts result in foregone revenue from buyers who would have used cash/debit even without the discount*

## **Biggest profitable discount by merchant type**

Assuming all credit card users would switch to debit cards

Merchant type	Merchant fees		Debit share	
	0¢ + 2%	10¢ + 3%	volume	value
Grocery, pharmacy	0.5%	0.9%	65%	70%
Gas station, convenience store	0.4%	0.9%	64%	59%
Gen. merchandise, websites	0.7%	1.3%	53%	46%
Other retail	0.6%	1.1%	59%	31%
Restaurants, bars	0.3%	0.8%	66%	63%
Fast food & beverage	-0.3%	0.5%	65%	61%

- Even in the extreme case, where all credit card users switch to debit for an arbitrarily small discount, only discounts of less than 1.3% (M3) can be profitable
- In our simulations, the costs of providing discounts outweigh savings from diminished credit card use

\* Tamás Briglevics and Oz Shy, "Steering Consumer Payment Choice," unpublished working paper, 2012



## More information

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To download this presentation, the SCPC data, our research papers, or more information about the

**Consumer Payments Research Center**  
Federal Reserve Bank of Boston

please visit our web site:

<http://www.bos.frb.org/economic/cprc/index.htm>