

# Consumer Cash Usage and Management: A Cross-Country Comparison with Diary Survey Data

John Bagnall   David Bounie   Kim P. Huynh   Anneke Kosse  
Tobias Schmidt   Scott Schuh   Helmut Stix

Economics of Payments VII - Boston  
3 April 2014

*The views expressed are solely those of the authors and not those of the Bank of Canada, De Nederlandsche Bank, the Deutsche Bundesbank, the Federal Reserve Bank of Boston or the Federal Reserve System, the Oesterreichische Nationalbank, the Reserve Bank of Australia, the Groupement des Cartes Bancaires or the Eurosystem.*

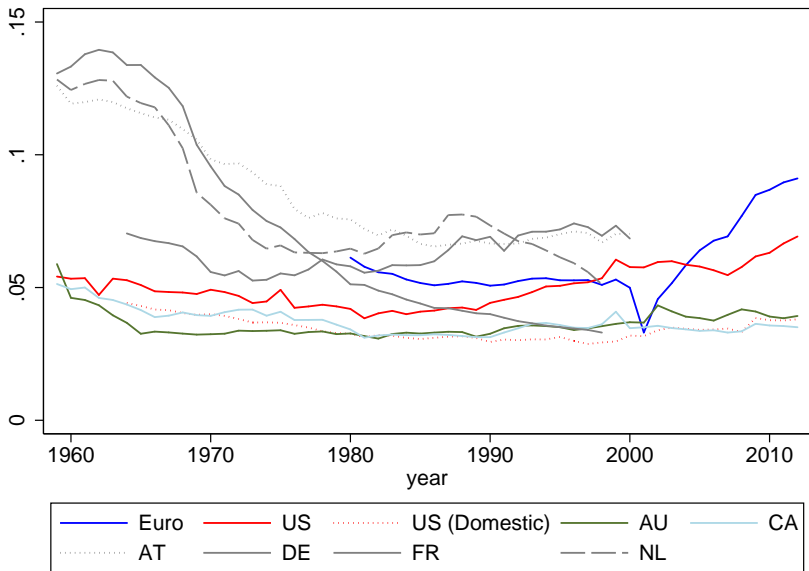
## Motivation

Increasingly many different ways to pay i.e. mobile and digital currencies.

Is cash still being used?

- Hard to measure cash transactions and holdings due to anonymity.
- Payment diaries are an effective method to measure cash/non-cash payments.
  - Representative surveys among private households.
  - Detailed information on amount, payment instrument, type of purchase.
- Harmonized cross-country comparison for seven countries:
  - 1 Australia (AU),
  - 2 Austria (AT),
  - 3 Canada (CA),
  - 4 France (FR),
  - 5 Germany (DE),
  - 6 the Netherlands (NL) and
  - 7 the United States (US).

# Ratios of Currency in Circulation/Nominal GDP



## Our contribution

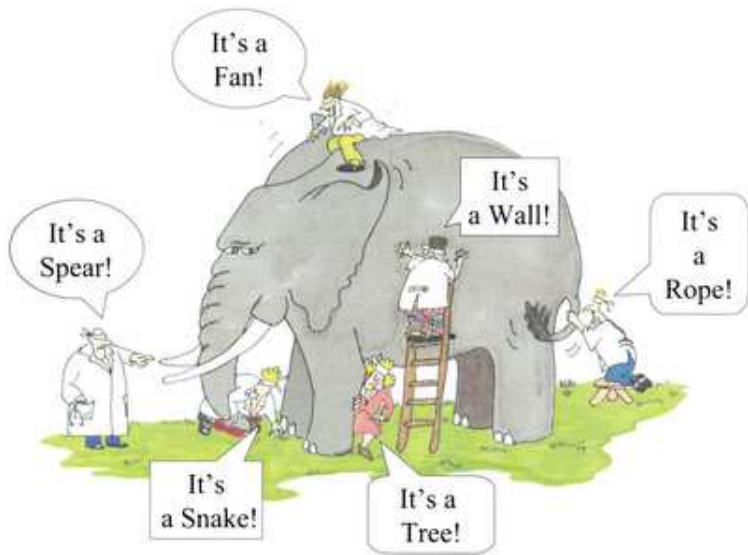
- Harmonization of measurement.  
Reached consensus amongst seven countries and provided protocols for future payment diaries.
- Present some empirical facts about cash.
- Econometric estimation of payment choice.
- First step in establishing international co-operation with other central banks.

Table 2: Survey Design Summary

	<b>AU</b>	<b>AT</b>	<b>CA</b>	<b>FR</b>	<b>DE</b>	<b>NL</b>	<b>US</b>
Year	2010	2011	2009	2011	2011	2011	2012
Month(s)	Oct-Nov	Oct-Nov	Nov	Oct-Nov	Sep-Nov	Sep	Oct
Mode			Online			Online	Online
	Paper	Paper	Paper	Paper	Paper	Phone	Paper
Sampling Age	18+	18+	18 - 75	18+	18+	18+	18+
Diary Length	<b>7</b>	<b>7</b>	<b>3</b>	<b>8</b>	<b>7</b>	<b>1</b>	<b>3</b>
Respondents	1,240	1,165	3,283	1,106	2,098	7,175	2,468
Transactions	18,110	12,970	15,832	10,759	19,601	11,877	13,942
Expend. Ratio	1.11	0.92	0.99	0.88	0.97	1.16	0.72

Notes: The diary length is the number of days that the respondents are asked to fill out the diary.

# Harmonization



# Harmonization

Design and purpose of payment diaries differ!

Some key harmonization of measurements:

- Focus on the point-of-sale, remote transactions (mail order, telephone, internet) and person-to-person payments.
- Exclude recurrent transactions (e.g. rents, utility bills).
- Define expenditure sectors (e.g. Gas/Groceries/Bars/Restaurants/etc.).
- Harmonize socio-demographics

**Fact #1:** The number and the value of transactions undertaken by respondents is similar across countries.

(i) Consumers conduct only a few payment transactions per day.

(ii) Most consumer expenditures are small in value.

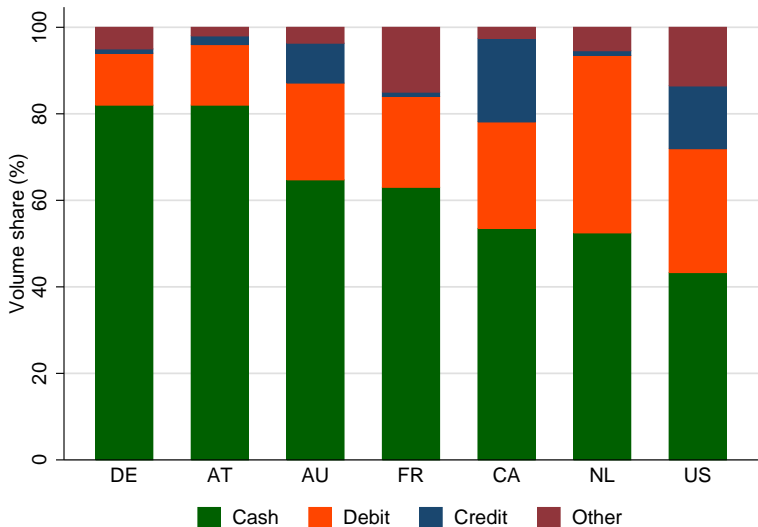
Table 3: Structure of Payments

	<b>AU</b>	<b>AT</b>	<b>CA</b>	<b>FR</b>	<b>DE</b>	<b>NL</b>	<b>US</b>
<b>Transactions PPD</b>							
median	1.9	1.4	1.3	1.3	1.3	1.0	1.3
<b>Distribution of transaction values</b>							
median	12.0	16.7	11.9	12.5	17.8	11.3	22.7

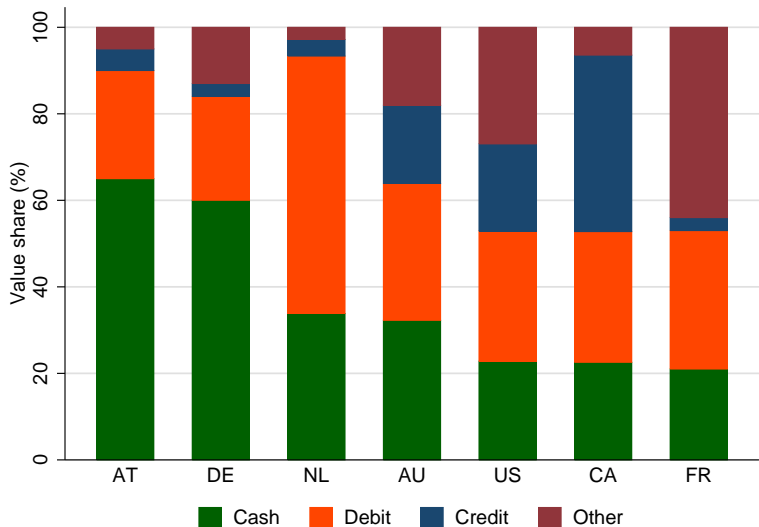
Notes: PPD is per-person-day and transactions values are in PPP-adjusted USD.



## Share of Payment Instruments in Terms of Volume



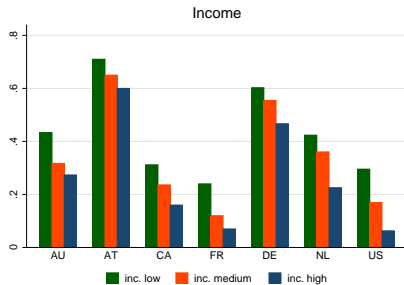
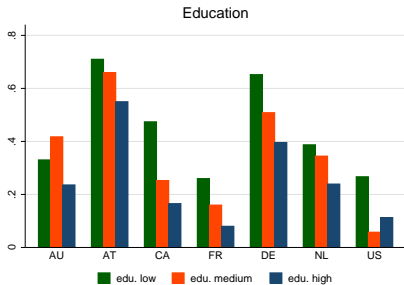
## Share of Payment Instruments in Terms of Value



Fact #2: The use of cash decreases with transaction size.



**Fact #3:** Cash (value share) usage decreases with education and income.



Notes: The figures depict the shares of cash (in value terms) in percent.

**Fact #4:** Higher usage of cash is associated with lower perceived card acceptance.

	<b>AT</b>	<b>CA</b>	<b>DE</b>
Below \$5	0.48	0.53	0.28
\$5-\$12	0.63	0.71	0.48
\$12-\$30	0.68	0.80	0.69
Above \$30	0.75	0.89	0.87
Overall	0.63	0.73	0.57

Notes: The table shows the share of transactions in a given transaction value quartile for which respondents answered that cards were accepted.

**Fact #5:** Cash (value share) varies across types of purchases and venues.

	Groceries	Gasoline	Semi Durables	Services	Restaurant Bars	Other
AU	0.40	0.30	0.21	0.29	<b>0.73</b>	0.21
AT	0.71	0.48	0.43	0.69	<b>0.93</b>	0.78
CA	0.28	0.29	0.12	0.11	<b>0.45</b>	0.24
FR	<b>0.25</b>	0.09	0.09	0.12	0.16	0.12
DE	0.68	0.34	0.26	0.56	<b>0.81</b>	0.42
NL	0.38	0.20	0.27	0.36	<b>0.56</b>	0.39
US	0.21	0.31	0.12	0.16	<b>0.47</b>	0.40

Notes: Sectoral harmonization across countries is only approximate.

**Fact #6:** Austria and Germany, relative to other countries, are cash-intensive with large cash balances and average withdrawal amounts.

	<b>AU</b>	<b>AT</b>	<b>CA</b>	<b>FR</b>	<b>DE</b>	<b>NL</b>	<b>US</b>
<b>Cash balances</b>							
In wallet (M)	59	<b>148</b>	64	70	<b>123</b>	51	74
<i>median M/e</i>	<i>0.69</i>	<i>3.36</i>	<i>1.01</i>	<i>1.30</i>	<i>2.61</i>	<i>1.00</i>	<i>0.62</i>
<b>Withdrawal amount</b>							
ATM (W)	138	<b>224</b>	86	90	<b>256</b>	102	103
<i>median W/M</i>	<i>2.33</i>	<i>1.42</i>	<i>1.67</i>	<i>1.72</i>	<i>2.11</i>	<i>2.50</i>	<i>2.31</i>

Notes: Nominal values are expressed in PPP-adjusted USD. e denotes daily expenditures from the diary.

# Summary of Results

## Why is cash still being used?

- 1 Small transaction values (convenience and speed).
- 2 Lower education and income (budgeting, anonymity)  $\Rightarrow$  higher cash use.
- 3 Lack of card acceptance (esp. for low value transactions).
- 4 Venue (related to card acceptance).
- 5 Cash management?

## Cross-country comparison:

- Striking similarities concerning the structure of transactions.
- Sizeable differences in non-cash expenditures: use of debit cards (NL), credit cards (CA, US) and cheques (FR).
- Facts hold up to conditional analysis.



## Going forward

- 1 Further ideas for harmonization – global payments survey?
- 2 Integrating consumer payment diaries with:
  - Merchant surveys.
  - Income and wealth surveys.
  - Bank or network data.
- 3 Structural models of cash and alternative method of payments.
- 4 High-frequency consumption and saving.
- 5 Two-sided markets and regulation.