

Retail Payments: Overview, Empirical Results, and Unanswered Questions

Norges Bank Payment Conference
November, 2008

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Setting in Which Payments Occur

Retail payments occur almost entirely within a country's banking system. Consequently:

Banks are (effectively) monopoly suppliers of payment services.

Banks have monopoly access to central bank settlement.

Different characteristics of safety, convenience, acceptability, etc., limit competition between types of retail transactions:

Point of sale: cash, cards, checks

Bill payment: checks, giro, ACH

Payment Production Function

Payment technology for the same instrument is very similar in different countries

Same machines/procedures are used:

- To process checks;

- To accept/process cards;

- To initiate/process giro/ACH transactions.

Users desire similar payment characteristics across countries:

- Safety

- Convenience

- Acceptability

- Etc.

With such similarity in technology and characteristics, why have we seen important differences in payment instrument use across countries?

Payment Instrument Use Across Countries (2005)

	Annual Transactions Per Person:				
	Cash/GDP	Check	Card	Giro/ACH	Total Non-Cash
U.S.	2.6	112	145	43	300
U.K.	3.5	32	104	95	231
Canada	3.7	42	156	46	244
Euro Area	7.3	16	46	92	154
Japan	16.7	1	39	11	51

Cash: Europe uses twice as much cash as the U.S.
Japan uses twice as much as Europe.

Check: U.S. historical focus on checks for point-of-sale and bill payments.
Credit cards developed in the U.S.

Giro/ACH: Europe historical focus on giro for bill payments.

Cross-Country Differences in Payment Composition

Cash:

Why doesn't Japan use checks and debit cards in place of cash?

Reason: Japan is a very safe country.

Japan does not need to rely on non-cash instruments for point-of-sale payments.

However, electronic methods have replaced cash for bill payments since this is more convenient for the payor and the biller.

Cross-Country Differences in Payment Composition

Giro and Checks:

Why is the giro used in Europe but checks in the U.S.?

Before 1900 in Europe, banks served the wealthy and merchants—not the common person. The postal giro filled the void, was national in scope, and evolved into a national bill payment network (first using paper, later electronics). Bank giros came later (for deposits).

Banks served all parties in the U.S. Postal banks were authorized but never developed. With low chartering requirements, thousands of small banks were established but nationwide banking was not allowed (even today 10% is limit to deposit concentration).

Transferring value by check is safer and more convenient than cash in U.S.(especially for bill payments). Shifting to cards required the development of electronics and agreement among thousands of banks. Same for ACH, but development is slow.

Within-Country Changes in Payment Composition

Per transaction pricing of consumer payments is “rare”. Only Norway has it.

Indirect pricing is the rule via:

Fixed monthly account fees

Minimum balance requirements

No or low interest paid on deposits

Delayed availability of deposits

Debiting accounts prior to value date

Standard models of

Demand = f (own price, substitutes, income)

are replaced by

Survey-based data on characteristics of users and payment instruments.

Older approach:

Spread between market rates and interest paid on different accounts = f (account-specific characteristics)

Used to estimate implicit cost to depositors of non-priced banking services.

Within-Country Changes in Payment Composition

Newer approaches use payment instrument and user characteristics to infer demand.

Payment characteristics (safety, convenience, etc.) are much more important than user characteristics (age, income, education).

Conclude:

Estimating how payment characteristics affect payment growth and substitution will be research focus going forward. Payment characteristics are “price-equivalents”.

Per transaction pricing is important but speeds up adoption by only 20%.

Payment Costs

Two ways to look at payment costs.

1. What are the approximate private and social costs of the different payment instruments?

Useful for assessing current efficiency of a county's retail payment system.

Required to assess the need (or not) for regulator/government intervention to improve efficiency by lowering overall user payment costs.

2. Have reductions in bank payment costs been passed on to users over time?

Requires estimates of how payments costs have changed.

Pass-through of cost reductions (if any) to users is a bank competition issue.

Payment Costs

1. Private/Social Costs of Different Payment Instruments.

Numerous studies now exist that estimate and rank the relative per transaction cost of different payment instruments (US, Australia, Finland, Spain, Norway).

Rankings are sensitive to assumptions made regarding

Average value of a transaction
Time value of users

Ability to include “all” costs
Ad hoc estimates of benefits

Main controversy: Cost/benefits of cash vs. credit cards.

Some assumptions give: cash $>$ credit cards. Others give: cash $<$ credit cards.

Main result: paper-based instruments cost much more than electronic alternatives.

Payment Costs

1. Private/Social Costs of Different Payment Instruments.

Average marginal (plus some fixed) cost ranking highest to lowest (US):

Merchants: credit card > debit card > check > **cash**

Banks: credit card > debit card > cash > **check**

Consumer: cash > check > debit card > **credit card**

Ave "Social": cash > credit card > check > **debit card**

\$1.49 \$1.16 \$1.07 \$.90

Other assumptions result in cash being less expensive than credit cards overall.

Some benefits (not shown) attributed to credit cards are funded by consumer cash and check users via cross-subsidization due to interchange fee/reward programs.

Payment Costs

2. Changes in Payment Costs Over Time.

Technology and scale effects seem to be the main reason why the ratio of bank operating cost to total assets has fallen by 34% over 18 years in Europe.

Two main technology cost changes:

1. Shift from paper to cheaper electronic payments;
2. Shift from branches to cheaper ATMs for cash acquisition.

Two main scale economy effects:

1. Scale economies for electronic payments (.39 to .27);
2. Scale economies in ATM networks (.30).

Driver of Payment Costs: Technology

Percent Changes: 11 European Countries 1987-2004

	Operating Cost (2004, Mil PPP)	OC/TA	Point of Sale	Bill Payment	ATMs	Branches
France	\$82,850	.02%	78%	185%	280%	1.4%
Germany	77,247	-40	501	115	601	14
U.K.	63,972	-52	117	214	160	-25
Italy	50,204	-29	121	117	809	133
Netherlands	34,157	-33	330	128	1,593	-50
Spain	32,120	-50	714	390	858	22
Belgium	12,070	-23	136	98	802	-48
Sweden	5,637	-38	685	8	70	-33
Denmark	4,112	-39	206	333	522	-38
Finland	2,783	-59	1,057	136	11	-46
Norway	2,160	-60	757	67	70	-38
All Countries Together:		-34%	140%	151%	434%	9.8%

Driver of Payment Costs: Scale

	Cash	Debit Card	Stored Value
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Netherlands, 2002			
Average Total Cost	€ .300	€ .489	€ .931
Incremental Cost	.112	.190	.033
Implied Scale Economies	.37	.39	.04
Belgium, 2003			
Average Total Cost	€ .53	€ .55	€ .54
Incremental Cost	.133	.214	.084
Implied Scale Economies	.25	.39	.16
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Strong payment scale economies also measured using individual bank data and cross-country European data in econometric models.

Some Unanswered Questions

1. Direct Versus Indirect Pricing of Payment Services.

Are resources already allocated efficiently at banks using indirect pricing to affect payment user behavior?

If not, should authorities encourage banks to implement per transaction pricing as a substitute for

- no or low interest on deposits
- delayed availability of deposits,
- debiting prior to bill payment value dates or
- fixed account fees?

What are the revenue returns from these indirect fees?

Do they generally cover the underlying bank payment costs?

Some Unanswered Questions

2. Do Increased Merchant Sales Cover Credit Card Reward Programs?

Do credit card reward programs expand merchant sales (or prevent their decline)?

Do expanded sales offset bank card and terminal rental fees?

Has this changed as credit card use has become more widespread?

Are effects of reward programs and no surcharge rules symmetrical?

Some Unanswered Questions

3. Bank Competition in Providing Payment Services.

European banks saved \$32 billion due to the shift from paper-based payments to electronics and away from branches toward ATMs for cash acquisition.

How much of these savings have been passed on to depositors?

How have they been passed on?

Lower monthly fees?

Lower float revenues?

Higher interest paid on deposits?

Are any of these changes related to current indicators of banking market competition?

Some Unanswered Questions

4. Should Government Continue to Supply Cash for Illegal Activities?

Cash used in legal activities (e.g., point of sale) is falling in most developed countries.

Two public policy issues:

1. When will government revenues be used to redeem excess consumer cash?
2. Should governments supply large denomination notes used in illegal activities?

What is the trade-off between seigniorage and privacy benefits versus the cost of facilitating illegal activities plus the printing, distribution, and replacement costs of cash?

(4 more “questions” are in the paper)