VOLUME 3 | NUMBER 1 | SPRING 2007

Competition Policy International

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Reprinted in *Competition Policy International* (print ISSN 1554-0189, online ISSN 1554-6853), Spring 2007, Vol. 3, No. 1. *Competition Policy International* is a free publication. To order or download additional copies, visit eSapience.org.

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Wilko Bolt

Efficient payment systems are essential components of well-functioning economies and financial markets, facilitating the exchange of goods, services, and assets. The speed and ease with which payments can be processed and executed will in general affect economic activities, output, and price levels. Therefore it is important that payment systems satisfy some basic principles of economic efficiency. The payment landscape is changing rapidly, with the fast growth of credit and debit card payment systems in many developed economies as perhaps one of the most striking examples. Data from a 2004 paper by Zinman show that in the United States alone, in 2002, consumers used their debit and credit cards in 33.4 billion transactions to charge around USD 2.3 trillion in total.[1] Furthermore, data from Krueger's 2001 paper and the Bank for International Settlements (BIS) illustrate that in ten industrial countries the use of debit and credit cards rose from over nine billion transactions in 1987 to about 51 billion transactions in 2002.[2] In particular, in the Netherlands, the enormous upswing in the usage of debit cards has been the main driver for the rapid developments in non-cash payments. Debit card payments in the Netherlands exceed-

1 J. Zinman, Why Use Debit Instead of Credit? Consumer Choice in a Trillion Dollar Market (Federal Reserve Bank of New York, Staff Report No. 191, 2004).

2 M. Kreuger, Interchange Fees in the Line of Fire (2001) (unpublished, Institute for Prospective Technological Studies, Seville, Spain) (on file with author).

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ed EUR 56 billion in 2004 (more than 12 percent of GDP) with a volume of around 1.25 billion debit card transactions (50 times higher than in 1990), and they are still growing rapidly.

Payment systems and payment services are not free. They impose considerable resource costs on society. To illustrate, Humphrey, Pulley, and Vesala have estimated that in 1995, the United States spent three percent of its GDP just to make payments.[3] For the Netherlands, Brits and Winder calculate that the social costs involved with all point of sale (POS) payments amount to 0.65 percent of Dutch GDP in 2002.[4] Similarly, the Belgian National Bank recently estimated that the total social cost of various POS payment instruments (cash, debit cards, credit cards, and stored-value cards) amounts to 0.75 percent of Belgian GDP in 2003, of which 0.6 percent involves the use of cash.[5] Hence, there is much to be gained in designing payment systems efficiently.

The analysis of pricing structures and competitiveness in payment markets warrants special attention. The widely observed shift from the use of cash toward electronic modes of payment has undoubtedly led to an increase in the overall efficiency of (retail) payment systems. Still, non-transparent—and possibly inefficient—pricing arrangements and market power potential of card schemes in the card payment markets have attracted controversy and triggered antitrust scrutiny. Recently, a federal antitrust lawsuit brought by U.S. retailers against Visa and MasterCard regarding their debit card pricing practices resulted in an out-of-court settlement involving compensation payments of some USD 3 billion. In addition, the European Commission has devoted considerable attention to interchange fees and the rules set by the members of credit card associations.[6] In Germany recently, a lively debate has come to the fore on the adoption of a multilateral interchange fee for all debit card payments. Further, in the Netherlands, retailers expressed their dissatisfaction with some parts of the Dutch payment system, especially drawing attention to current pricing and acquiring arrangements for debit card services. Many of the Dutch retailers' complaints involved alleged monopolistic behavior by Interpay—the central routing switch in the nationwide debit card network—in terms of pricing policies, transparency, and delivered quality of services. Clearly, pricing issues are central to the analysis of card payment services.

3 D. Humphrey et al., *The Check's in the Mail: Why the United States Lags in the Adoption of Cost-Saving Electronic Payments*, 17 J. Fin. Services Res. 17-39 (2000).

4 H. Brits & C. Winder, *Payments Are No Free Lunch*, 3(2) Occasional Stud. (2005).

5 Belgian National Bank, Costs, Advantages and Disadvantages of Different Payment Methods (2005).

6 Press Release, European Commission, Commission Plans to Clear Certain Visa Provisions, Challenge Others (Oct. 16, 2000).

But what economic principles should guide such payment pricing? Indeed, appropriate pricing arrangements for payment instruments are a complex matter, since payment networks give rise to strong usage and network externalities. Until recently, no structural theoretical analysis of price determination in (electronic) payment networks was available. The situation has changed just over the last years by observing that the payment industry is a two-sided market, stressing the fact that in setting the prices for payment instruments, banks need to get both consumers and retailers on board by pricing both sides of the market in an effective way.[7] The theoretic analysis of two-sided markets has increased our understanding of payment pricing, social welfare of payment systems, network competition, and antitrust issues.

APPROPRIATE PRICING ARRANGEMENTS FOR PAYMENT INSTRUMENTS ARE A COMPLEX MATTER, SINCE PAYMENT NETWORKS GIVE RISE TO STRONG USAGE AND NETWORK EXTERNALITIES.

This paper adds to the surging literature on payment economics—a term first coined by Edward Greene during a 2004 conference, hosted by the Federal Reserve Bank of Kansas City, on the economics of payments—and attempts to bridge the gap between observed Dutch payment patterns on the one hand, and empirical and theoretic models based on two-sided logic on the other hand. Specifically, in Section II our analysis provides a rationale for why Dutch debit card prices are completely skewed towards retailers, in the sense that the price markup for retailers is much higher than for consumers. In Section III, we will analyze the effects of transaction-based pricing on the adoption of card payments, and the role that antitrust authorities may play. Section IV attempts to quantify possible payment scale economies arising from payment transaction growth and consolidation of processing centers. For competition authorities, though, huge scale benefits may be at odds with competitiveness when increased consolidation efforts reduce the number of players in the payment processing market. Section V concludes the analysis, but we turn first, in Section I, to a simple model of two-sided markets to set the stage.

I. A Simple Two-Sided Market Model for Debit Cards

This section describes a model of a monopolistic platform that supplies network services. This simple model is a fairly good representation of the Dutch debit card market, where there is only one nationwide debit card network with only

7 The recent general literature on two-sided markets began around 2002 with seminal papers by Jean-Charles Rochet and Jean Tirole and early versions of an important related paper by Mark Armstrong. *See* J.-C. Rochet & J. Tirole, *Cooperation Among Competitors: The Economics of Payment Card Associations*, 33 RAND J. ECON. 549-70 (2002); J.-C. Rochet & J. Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990-1029 (2003); and, M. Armstrong, Competition in Two-Sided Markets (2005) (mimeo, University College London) (on file with author).

one processor. Moreover, in the Netherlands there is hardly any competition from credit cards and checks at the point of sale: it is only cash or debit cards.

The model features potential gains from trade which are created by transactions between two different groups of end-users, whom we will call buyers (subscript b) and sellers (subscript s). Such transactions are mediated and processed by the monopoly platform. To provide these (network) services, the platform charges buyers and sellers positive transaction fees, denoted by t_b and t_s, with the total price labeled $t_T = t_b + t_s$. The pricing structure denotes the allocation of the total price t_T over t_b and t_s. For simplicity, we abstract from any fixed periodic fees for end-users to connect to the platform. In performing its tasks, the platform incurs joint marginal costs $c > 0$ per transaction. There are no fixed costs.

Buyers and sellers that transact on the platform enjoy positive benefits of usage. We assume that buyers and sellers are heterogeneous in the benefits they receive from a transaction, i.e. $b_i \in [\underline{b}_i, \infty]$, $\underline{b}_i > 0$, $i = b,s$. The probability density function of these benefits is labeled $h_i(\cdot)$, with cumulative density $H_i(\cdot)$, $i = b,s$. To illustrate, in case of a debit card transaction, a buyer (or consumer) who wants to buy a good or service from a seller (or retailer) at price p, prefers to use his debit card whenever he gets positive benefits from using the card relative to other payment instruments, say cash. A transaction using the debit card takes place if, at the same time, the seller prefers accepting the debit card payment to accepting cash.

The model logic is simple. Only buyers with benefits b_b larger than incurred fees t_b will transact on the platform. Formally, the fraction of buyers connecting to the platform is given by:

$$q_b = D_b(t_b) = Pr(b_b \geq t_b) = 1 - H_b(t_b). \tag{1}$$

Analogously, the fraction of sellers which connects to the platform is equal to:

$$q_s = D_s(t_s) = Pr(b_s \geq t_s) = 1 - H_s(t_s). \tag{2}$$

Assuming independence between b_b and b_s, the total expected fraction of transactions processed by the platform amounts to:

$$q = D(t_b,t_s) = D_b(t_b)\, D_s(t_s). \tag{3}$$

Further, assume that the monopoly platform operates in a price region such that the price elasticities of quasi demand, $\varepsilon_i(t)$, $i = b,s$, exceed 1 for both sides of the market. Finally, for simplicity the total number of transactions is exogenously fixed, both on and off the platform, at N. So the total demand for platform services on the platform is given by $ND(t_b,t_s)$. A profit maximizing monopolistic platform operator will maximize:

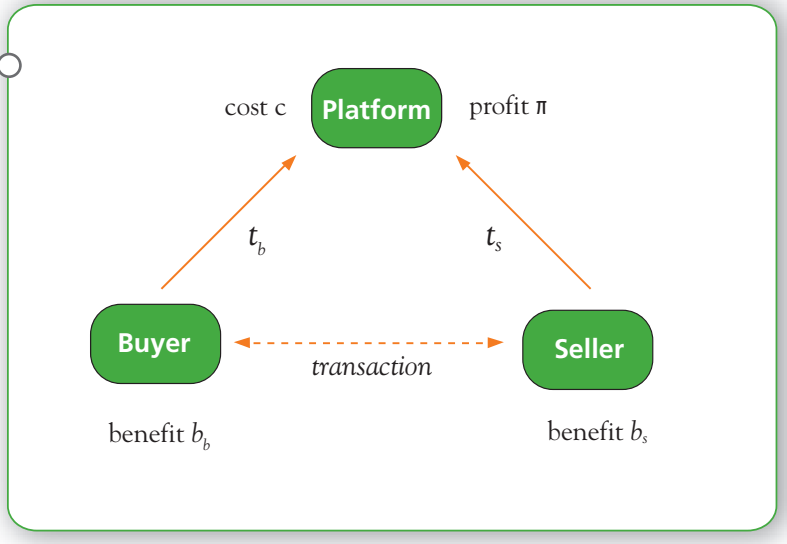
$$\pi(t_b,t_s,c) = N(t_b + t_s - c)\, D(t_b,t_s). \tag{4}$$

The two-sidedness is clear. Cardholders attach value to their payment card only to the extent that these are accepted by the retailers that they visit for shopping; in turn, affiliated retailers benefit from a widespread diffusion of cards among consumers. By setting its transaction fees, the monopolistic payment network must make sure that both sides of the market get on board. In particular, under two-sidedness, the platform chooses a total price for their payment services and also chooses an optimal pricing structure. As Evans states in a 2003 paper, in two-sided industries the product may not exist at all if the business does not get the pricing structure right.[8]

Figure 1 schematically depicts the model.

Figure 1

The monopoly platform



II. Skewed Pricing of Dutch Debit Card Payments

Over the last decade the Netherlands has shown a huge increase in the usage of debit cards. In 1990, the Netherlands started with one debit card transaction per person per year, but rose to 77 in 2004, a 33 percent annual growth rate. In 2005 its volume totaled 1.25 billion transactions and its value EUR 56 billion. Consumer participation is complete, with virtually all consumers over age 18 carrying a debit card. Usage density on the retailers' side is lower, with about 56 percent of all Dutch retailers accepting debit card payments. However, virtually all large retailers accept debit cards.

8 D. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. ON REG. 325-382 (2003).

Dutch debit card pricing is completely skewed to the retailers' side. On average, in 2004 retailers paid t_s = EUR 0.05 per debit card transaction, while t_b = EUR 0.0 for consumers. And although Dutch merchants are allowed to quote different prices for cash versus card payments, this right to surcharge is rarely exercised, probably because of transaction costs. Recently, Dutch retailers expressed their dissatisfaction with the current pricing strategy of Interpay, perceiving the high retailer fee as a form of abuse of market power. Indeed, the skewed nature of prices in the debit card industry triggered antitrust scrutiny and led to an in-depth investigation by the Netherlands Competition Authority (NMa). As a result, Interpay was penalized for EUR 30 million and the participating commercial banks were fined some EUR 17 million. However, questions were raised as to whether the NMa fully took notice of the two-sided nature of the debit card market and its economic consequences. Indeed, in 2005 the penalty for Interpay was fully withdrawn (as well as a reduction of EUR 3 million for commercial banks) by taking the position that further research is necessary to fully determine whether merchant discounts are indeed excessive for Dutch debit cards.

In their 2003 paper, Bolt and Tieman show that under constant elasticity of demand, the side of the market that is sufficiently more elastic is kept to a minimum fee, while the other side pays a relatively high fee.[9] Mathematically, this result is characterized by a corner solution. The economic intuition underlying our skewed pricing result is that the most elastic side of the market is effectively subsidized by the other side, so as to boost the demand for services supplied by the platform. Indeed, every agent on the high elasticity, low price side of the market will connect to the platform. Because it benefits from full participation on one side, the other side is therefore also encouraged to join. However, since this side is more price-inelastic, the platform is able to extract higher prices. In particular, assuming that buyers are more elastic than sellers, the authors show that profit-maximizing fees are equal to:[10]

$$t_b^M = \underline{b}_b \text{ and } t_s^M = \frac{(c - \underline{b}_b)\varepsilon_s}{\varepsilon_s - 1}. \qquad (5)$$

Recent empirical analysis has shown that consumers are quite sensitive to price changes of payment services.[11] At the same time, retailers often complain that due to competitive pressures they are forced to facilitate debit card services. Retailers cannot afford to say no to their customers. At the same time, they do not see many payment alternatives. Hence, retailers may be assumed to be much

9 W. Bolt & A.F. Tieman, Pricing Debit Card Payment Services: an IO Approach (International Monetary Fund, Working Paper No. 202, 2003).

10 *Id.*

11 *See, e.g.*, D. Humphrey et al., *Realizing the Gains from Electronic Payments*, 33 J. Money, Credit, & Banking 216-34 (2001).

less price-elastic in their demand for debit card services than consumers. And this might explain why the pricing structure in the Dutch debit card market is so heavily skewed towards the retailers' side of the market, as predicted by the above skewed pricing result.

These results potentially have important bearings on antitrust issues. In antitrust analysis, high markups raise concerns of abuse of market power. However, traditional antitrust logic should be reconsidered in two-sided markets.[12] The fact that benefits and costs arise jointly on the two sides of the market effectively means that there is no direct economic relation between price and cost on either side of the market. It is generally not possible to examine price effects on one side of a market in isolation, i.e., without considering the resulting feedback effects from the other side. In particular, with skewed pricing strategies that may hold in a social optimum as well, one will always observe a non-negligible gap between the consumers' and retailers' price. Retailers might mistakenly perceive the resulting markup on their side of the market as a consequence of abuse of market power by the payment platform.

RETAILERS MIGHT MISTAKENLY PERCEIVE THE RESULTING MARKUP ON THEIR SIDE OF THE MARKET AS A CONSEQUENCE OF ABUSE OF MARKET POWER BY THE PAYMENT PLATFORM.

III. The Effect of Transaction Pricing on Card Payment Use

The production of electronic payments by banks often cost from one-third to one-half as much as paper-based equivalents or cash[13] Banks and merchants are interested in shifting users to electronic payments to save costs, as are some government policymakers who seek to improve the cost efficiency of their nation's payment system. Historically, banks have recouped their payment costs through:

(1) interest earned on payment float (from delaying availability of funds credited to accounts and debiting accounts prior to bill payment value dates);

(2) maintaining a spread between market rates and the rate paid on deposits; and

(3) charging flat monthly fees or imposing balance requirements.

12 For a discussion of the main fallacies that can arise from using conventional wisdom from one-sided markets in two-sided industries, *see, e.g.,* J. WRIGHT, ONE-SIDED LOGIC IN TWO-SIDED MARKETS (AEI-Brookings Joint Center for Regulatory Studies, Working Paper No. 10, 2003). For antitrust implications of pricing in two-sided markets, *see, e.g.,* Evans, *supra* note 8.

13 *See, e.g.,* D. Humphrey et al., *Benefits from a Changing Payment Technology in European Banking*, 30 J. BANKING & FIN. 1631-52 (2006).

In contrast to business users, consumers face very few payment services that are priced on a per transaction basis and so have little incentive to choose the lowest cost instrument either at the point of sale or for bill payments.

Banks are well aware that transaction pricing can speed up the shift to electronic payments, but are reluctant to lose deposit market share by being the first (and perhaps only) bank to implement explicit prices differentiated according to underlying costs. While this problem is mitigated if most (or all) banks implement pricing at about the same time, antitrust authorities are unlikely to view such coordination as being in the public interest, unless the social benefits from pricing are significant and the result is a compensating reduction in payment float, a higher interest rate paid on deposits, or a reduction in flat fees or balance requirements. Indeed, float reduction was the trade-off when banks coordinated the timing of when they would implement pricing in Norway (there was no coordination in the prices to be charged and initially some were zero).

In my 2005 paper joint with Humphrey and Uittenbogaard, we use the experience of Norway (which directly priced its payment services to consumers) and the Netherlands (which did not) over the time period 1990 to 2004 to try to determine what the incremental effect of transaction pricing may be on the adoption of debit cards versus withdrawing cash from an ATM, and on the adoption of electronic giro transactions (credit transfers and direct debits) over paper giros.[14] Specifically, we compare payment instrument use per person in Norway in response to the prices being charged, the availability of terminals, and the level of real consumption with the experience of the Netherlands, which also adopted electronic payments but did not price. Figure 2 shows debit card usage and ATM usage in Norway and the Netherlands from 1990 to 2004, along with its deployment of terminals. Figure 3 depicts the per-transaction Norwegian prices for debit card transactions and ATM withdrawals.

Differences between Norway and the Netherlands are used to try to explain per capita use of debit cards, ATM cash withdrawals, and electronic and paper giro payments. The main influences on payment use and composition are differences in the number of EFTPOS and ATM terminals per million population, the prices being charged in Norway (positive) and the Netherlands (zero), and differences in the level of real per capita consumption. In a two-sided context, EFTPOS terminal availability is a proxy for acceptance of debit cards by retailers, since their prices are not known. Our four-equation country difference model spanned 15 years—the limit of the available data. The model is estimated in a systems equation framework using levels data and robustness as illustrated by estimating models in a first difference and error correction framework.

14 Bolt et al., The Effect of Transaction Pricing on the Adoption of Electronic Payments: A Cross-Country Comparison (De Nederlandsche Bank, Working Paper No. 71, 2005).

Figure 2

Debit card usage and ATM withdrawals in Norway (orange line) and the Netherlands (green line), 1990-2004

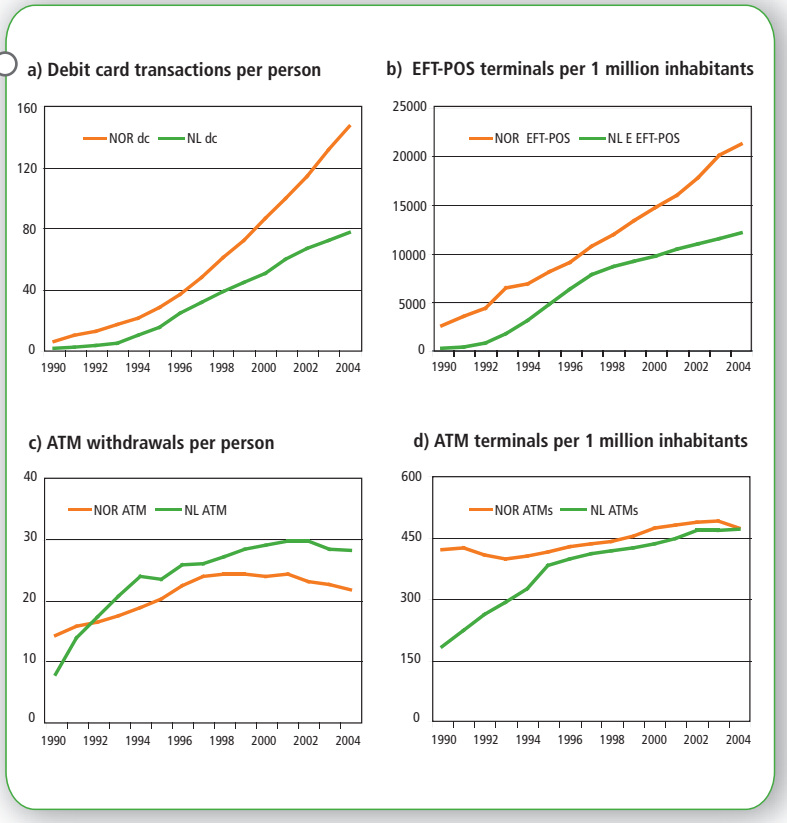


Figure 3

Norwegian prices (in euro) per debit card transaction (orange line) and ATM withdrawal (green line

The effects of pricing differ depending on which instruments are being considered. Overall, pricing has a smaller effect on shifting consumers from ATM cash withdrawals to debit card use than it does in shifting use from paper to electronic giro transactions. The reason for this difference seems to be that there are non-price benefits associated with debit card use (e.g., convenience, security) that consumers value such that the availability of terminals needed for debit card transactions has a stronger effect on debit card use than prices—as evidenced by the fact that the debit card price elasticity is smaller than the terminal elasticity. Debit cards also substitute for costly checks and the high price on these instruments in Norway was associated with their virtual elimination. (Although the same thing happened in the Netherlands, which did not price.) While terminal availability appears to have a stronger effect on debit card use than does pricing, the shift to cards can be sped up when pricing is combined with terminal availability. Using our estimated elasticities and the actual changes in prices and terminals, the predicted relative rise of debit card use over ATMs was eight percent from terminal effects alone but rose to 10.4 percent with pricing, an increase of over 20 percent.

The effect of pricing on electronic giro use was greater than it was for debit cards since the electronic giro price elasticity is larger and the percent change in price experienced was greater. Reasons for this difference are the above-mentioned non-price convenience and security attributes of debit cards along with the fact that for one-third of our time period the absolute price of a debit card transaction was higher than the weighted average price of an ATM cash withdrawal. In contrast, the price of an electronic giro was always absolutely lower than the paper giro price. Even though the relative prices of debit cards and electronic giros were both falling over the entire period, the higher absolute price of a debit card transaction versus an ATM would be expected to dull the overall price response being measured for the entire period since there is no strong reason to believe that the price response is symmetric (and symmetry was not imposed in our model) since the non-price attributes of debit cards and ATMs are different. Thus, if pricing is implemented, it will likely be more successful if the absolute price of the less expensive instrument is always absolutely lower per transaction than the price of the more expensive instrument.

THE SOCIAL BENEFITS OF ELECTRONIC PAYMENTS ARE QUITE LARGE AND MAY CONVINCE ANTITRUST AUTHORITIES TO ALLOW THE COORDINATION OF THE TIMING OF THE IMPLEMENTATION OF PRICING TO SPEED UP THIS TRANSITION.

As both Norway and the Netherlands are well on their way to realizing the full potential gains from electronic payments, the issue of pricing or not pricing is seemingly more a policy topic for developed countries that are not as far along in the substitution process or for most developing countries that are just in the initial stages of thinking about how to improve the efficiency of their payments sys-

tem. The social benefits of electronic payments are quite large and may convince antitrust authorities to allow the coordination of the timing of the implementation of pricing (but not, of course, the prices to be charged) to speed up this transition. Pricing could become a reality even in countries that have largely shifted to electronic payments since, with low or falling interest rate margins, this may facilitate the recoupment of bank payment costs. At the same time, inefficient cross-subsidization practices would be removed.

IV. Measuring Payment Scale Economies

Debit cards have largely replaced checks in many European countries (with France and the United Kingdom being the exceptions) and they continue to replace cash for medium value transactions. However, debit card costs have hindered their use for the replacement of cash for small value payments. This has led banks and other suppliers to offer potentially lower cost stored value cards for small value transactions, a solution that required consumers and merchants, or just merchants, to adopt two different payment technologies. Consumer adoption and use of stored value cards seems stalled at a relatively low level of market penetration.[15] Although data are incomplete, stored value cards account for only EUR 1.2 billion in payments across eleven European countries in 2004. In contrast, the value of debit card transactions is estimated to be EUR 1,146 billion while the value of cash withdrawals (a proxy for cash use) was EUR 2,189 billion. Overall, card payments comprised 34 percent of the total, cash withdrawals accounted for 66 percent, while stored value payments were only 0.04 percent. As stored value payments are used to replace small value cash transactions, and thus would be expected to be a small portion of overall POS payments, their current small share is almost entirely due to their low level of market penetration.

An important drawback of stored value cards is that consumers may have to carry two cards to replace cash—a debit card plus a stored value card—and the latter requires filling at terminals while the former does not. While convenience is enhanced if both technologies are on a single card and if merchants have a single terminal that can handle both types of transactions, banks often charge an extra fee to handle a stored value transaction. In 2002, the average total (fixed plus variable) bank plus merchant cost of a cash transaction at the point of sale in the Netherlands was EUR 0.30 while a debit card transaction was EUR 0.49 and that of a stored value transaction was EUR 0.93.[16] The hope was that stored value transaction volume would rapidly expand and substantially lower average fixed costs since average variable costs for stored value transactions are the lowest of the three at EUR 0.033 per transaction versus EUR 0.176 for cash and EUR 0.197 for debit cards. This has not happened. Debit cards are the more

15 L. Van Hove, *Why electronic purses should be promoted*, 2 BANKING & INFO. TECH. 20-31 (2006).

16 *See* H. Brits & C. Winder, *supra* note 4, at Table 4.3.

mature product, already have a significant market penetration, and do not require consumers to access terminals to refill them. If debit card costs could be lowered sufficiently, they could further reduce cash use and replace stored value cards for small value transactions.

As the replacement of cash by debit cards for smaller value transactions is importantly influenced by unit costs and unit costs are largely dependent on transaction volume, the goal is to try to determine payment scale economies in the Netherlands and other European countries, especially for debit cards. Estimates of scale economies, when combined with expected transaction growth within a country or the consolidation of card processing operations across countries, permit future card unit costs to be approximated and the likelihood of debit cards replacing small value cash transactions assessed. Payment scale economies are considered to be the main economic driver behind the creation of a Single European Payments Area (SEPA), which entails the harmonization and standardization of retail payment instruments (especially payment cards, direct debits, and credit transfers) across the European Union. SEPA aims to improve the efficiency of cross-border payments and "to develop common instruments, standards, and infrastructures in order to foster substantial economies of scale."[17] The obvious question is whether it is possible to quantify these payment scale economies.

In my 2006 paper joint with Humphrey, we estimate payment scale economies with European data using a panel of payment and banking data for eleven European countries over 18 years.[18] Specifically, we relate bank operating (not total) costs to measurable physical characteristics of banking output associated with payment processing and service delivery levels and mix. In this manner we focus on those activities and expenses directly associated with the provision of payment services. Interest expenses paid to depositors and with a markup charged to borrowers are functionally separable from these activities. This approach allows us to determine how the level and mix of payment activities, along with the number of ATMs and bank branches, are directly associated with the size of a bank and its labor, capital, and materials operating cost from which scale economies may be approximated. In this regard our approach represents an alternative and more specific way to identify the likely effect on costs from technical change in banking. As POS and bill payment transactions are jointly processed in the deposit accounting function, while aspects of service delivery are jointly produced via branches and ATMs, these two activities can be considered functionally separable.

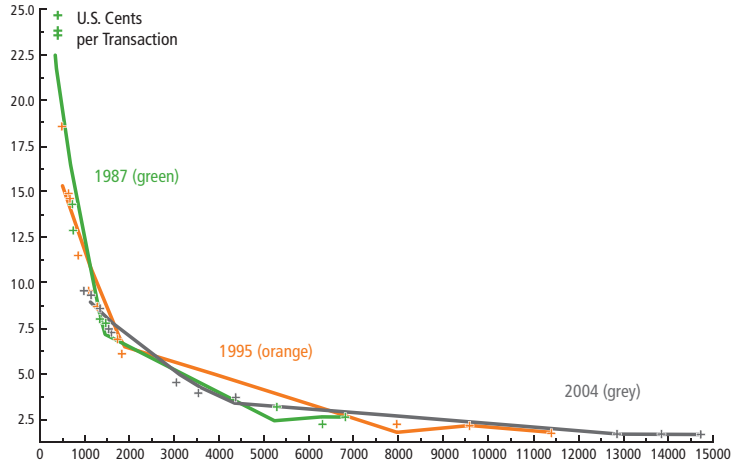
17 European Central Bank, Towards a Single Euro Payments Area, Fourth Progress Report (2006).

18 W. Bolt & D. Humphrey, Payment Scale Economies and the Replacement of Cash and Stored Value Cards (De Nederlandsche Bank, Working Paper No. 122, 2006).

Our results show that average scale economies for all payments across eleven countries using an estimated translog function is 0.27, indicating that substantial scale benefits would be expected as payment volume rises. Doubling of payment volume would only increase total costs by 27 percent. Not surprisingly, payment cards and bill payment instruments show bigger scale economies than ATMs and bank branches. Figure 4 shows how an approximation to unit payment cost varies by the total number of payment transactions. Although the curves in the figure are not identical to average cost curves, the slopes give a fair reflection of how payment unit costs change with payment volume.

Figure 4

Scale effects of European payment markets (smoothed data)



Translog: Predicted Unit Payment Costs vs. Payment Transaction Volume
(11 countries, PPP exchange rates, POS and bill payments)

These results provide preliminary scale economy information that may be helpful in outlining possible benefits from SEPA arising from the consolidation of electronic payment processing centers across the European Union. If this approach were pursued, the experience of the United States, which consolidates card processing across states, may serve as a useful example concerning the realized costs and benefits, as well as likely implementation issues of cross-border consolidation. However, for competition authorities increased consolidation and positive scale effects in payment processing may be at odds with the competitive potential of the market. It remains to be seen whether cost reductions arising from scale benefits are passed onto the end-users—in this case both consumers and retailers.

FOR COMPETITION AUTHORITIES INCREASED CONSOLIDATION AND POSITIVE SCALE EFFECTS IN PAYMENT PROCESSING MAY BE AT ODDS WITH THE COMPETITIVE POTENTIAL OF THE MARKET

V. Concluding Remarks

The Dutch retail payment market went through turbulent times during the last decade. The Netherlands observed a rapid shift from cash and paper-based payment instruments toward electronic payment instruments. Banks are well aware that transaction pricing can speed up the shift to low-cost electronic payments. But payment pricing is a complex matter, due to strong usage and network externalities. Recently, theoretic models of two-sided markets have provided useful insights in the complexity of the multi-player problems that payment activities pose, regarding efficient payment pricing, payment network competition, and antitrust consequences.

This paper showed how heavily skewed pricing of debit card payments can be rationalized in a simple two-sided model, and how the implementation of transaction-based pricing affects adoption rates of electronic payments. In addition, it briefly examined the impact of payment scale economies, which will be a main driver for the economic success of SEPA. At the same time, payment systems and payment arrangements feature a natural tension between cooperation and consolidation on the one hand and competitiveness on the other. This natural tension mixed with sharp two-sided ingredients, causes traditional one-sided economic logic to break down, and requires antitrust practitioners and competition authorities to look at the world with a drastically different view. ◀