CHAPTER 4

The economics
of means of payment

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Means of payment act as vehicles for trade and, as such, are crucial to the mechanics of our modern economies. To drive this point home, just imagine a world that has no means of payment commonly accepted by all economic agents: in a world like this, any buyer or seller would face substantial costs. By giving all economic agents access to standardised means of payment that are widely accepted and sufficiently secure, we break down these barriers, allowing trade to flow much more freely.

Even though means of payment perform such a vital function, most people know little about the role they play in the economy. This chapter purports to shed light on the relationships between means of payment and the economic sphere. It begins by explaining the links between means of payment and economic activity, focusing on the costs to society of various means of payment. It goes on to address the specifics of the retail payments market, listing the factors that drive demand for means of payment and providing details on how the market is structured. Lastly, it describes the market's shortcomings, which justify intervention by public authorities to ensure that the sector functions properly.

1. Means of payment and economic activity

1.1. Means of payment and consumer behaviour

Means of payment perform multiple functions, meeting a range of needs for economic agents, from facilitating one-off payments face-to-face to settling regular bills via remote transactions. Research has shown that some of these functions have a direct impact on consumer behaviour. For instance, US studies identified a link between households' propensity to consume and their use of means of payment that give access to a line of credit (Bounie, 2009). Durkin, in his 2000 report, attributed the increase in credit card ownership among US households

to the fact that these cards had gradually replaced the former consumer loans granted by retailers: based on the US Federal Reserve "Survey of consumer finances", 16% of households polled had a credit card in 1970, but by 1998 the percentage had climbed to 68%, of which 55% had credit lines carried forward from month to month, versus just 37% thirty years earlier.

Even without such credit facilities, French research showed that certain aspects of the means of payment used affect the timing of households' consumption expenditure. Households with deferred debit cards tend to smooth their consumption over the month, while those holding immediate debit cards concentrate their spending in the days after their wages are paid (Bounie, 2009).

1.2. Means of payment and growth in economic activity

Beyond these microeconomic considerations, some empirical studies show that the adoption of electronic means of payment boosts growth. Based on a sample of 12 European countries, Humphrey et al. (2006) found that payment sector-related costs borne by banks fell 24% between 1987 and 1999. The authors attribute this decline to the increased use of electronic payments and the fact that bank counters were being replaced by ATMs. By extrapolating the results obtained for the 1987-1999 period, they estimated that, if all paper-based means of payment were discontinued and all individual bank counters replaced by ATMs, the resulting annual savings would approach one percentage point of GDP. In a 2013 report published by the ECB, Hasan et al. obtained similar results, confirming the positive correlation between the take-up of electronic payment and growth in economic activity. In their model, the correlation is strongest for payment cards: they estimate that a 1.2% rise in payment card use in Europe would increase GDP by 0.07%.

These results directly relate to the question of how much the various means of payment cost society in general, and the banking

sector in particular. The upturn in growth as electronic payment methods are increasingly adopted in place of the formerly prevalent paper-based instruments stems from efficiency gains. One benefit of the new electronic payment methods is that they facilitate fully automated "straight-through" processing of payments, limiting the need for human intervention. A 2003 study by Berger illustrates this point by putting an exact figure on the operating cost cuts achieved at the main US clearing house when it modernised its technical infrastructure: in the space of ten years, its unit cost per trade was divided by almost eight, falling from USD 0.869 to USD 0.176 between 1990 and 2000.

1.3. The cost of means of payment

Studies on the cost of means of payment are few and far between, as it is difficult to obtain reliable information on the costs borne by the various users of means of payment and payment service providers. There has, however, been a resurgence of interest in this topic since the early 2000s.

Based on a survey carried out by De Nederlandsche Bank (the Dutch central bank) among banking sector players and retailers, Brits and Winder (2005) estimated the cost of proximity payments to Dutch society (defined as the sum of the internal costs of all parties in the payment chain) at EUR 2.9 billion in 2002, i.e. 0.65% of the Netherlands' GDP. They identified cash as the costliest means of payment for society, even though it showed the lowest average cost per transaction. This rather contradictory finding reflects the substantial fixed costs associated with electronic payments which, given their low level of use (at the time of the survey, they accounted for only 14.5% of transactions), could not be amortised over the period considered. Based on variable costs alone, however, electronic payments were found to be less costly to society than cash payments, especially because the values of the underlying transactions are high. Based on Brits' and Winder's calculations, if 21% of cash payments were replaced by debit card or electronic money

payments, the resulting savings would total EUR 106 million.[1] The Banque Nationale de Belgique (2005) obtained similar results from a survey carried out in 2003 across the financial sector and points of sale: if 11% of cash payments were replaced by payments using debit cards or "Proton" digital wallets, the cost to society would fall by EUR 58 million.[2] This represents a saving equal to 2.9% of the overall cost to Belgian society of proximity payment methods, estimated in 2003 at EUR 2.03 billion (0.74% of GDP).

A study published by the ECB in 2012 (Schmiedel et al.) broadened the scope of research, analysing the cost of means of payment in 13 European countries.[3] Based on four separate questionnaires for, respectively, central banks, the banking sector (banks and clearing houses), companies in direct contact with consumers[4] and cash transport companies, the study estimates the social and private cost of the most frequently used means of payment in Europe, i.e. payment cards, credit transfers, direct debits, cheques and cash. It found that cash was the least costly means of payment for society, with a unit cost of EUR 0.42 per transaction, followed by debit cards with a unit cost of EUR 0.70. The authors attribute this finding to the maturity of the cash segment, in which significant economies of scale could be achieved relative to the payment card segment, where the roll-out of payment terminals and ATMs remained limited in some countries covered by the study. The unit costs of direct debits and credit transfers were estimated at EUR 1.27 and EUR 1.92, respectively. Lastly, the means of payment showing the highest costs to society were cheques, with a unit cost of EUR 3.55, and credit cards, with a unit cost of EUR 2.39. The overall cost of means of payment was found to be 0.96% of GDP, of which 51% borne by the banking sector and 46% by retailers. Cash was found to represent almost half of these costs, highlighting its prevalence as a means of payment in the countries covered and the fact that the study's results are difficult to extrapolate

1 Based on a scenario whereby 500 million payments in cash with an average unit value of EUR 3 are replaced by payments using digital wallets, and 1 billion payments in cash with an average value of EUR 20 are replaced by debit card payments.

2 Assuming that 750 million payments in cash are replaced by 250 million payments with an average value of EUR 5 using Proton digital wallets and 500 million payments with an average value of EUR 20 using debit cards.

3 Denmark, Estonia, Ireland, Greece, Spain, Italy, Latvia, Hungary, the Netherlands, Portugal, Romania, Finland and Sweden.

4 Professional and mass-market retailers, telecom companies, real estate players, public utilities (electricity, water, gas and transport companies).

across the European Union as a whole. The sample used for the study represents only 30% of the cashless payment sector and 45% of the cash payment sector in Europe.

1.4. Means of payment and economic development

When it comes to assessing how the take-up of innovative payment methods affects growth in developing countries, economic research is rather thin on the ground. This is because these countries generally lack the infrastructure needed to put the new solutions in place and, more importantly, they have a much lower percentage of households with bank accounts than developed nations.

The positive impact that migrants' money transfers have on the development of the financial sectors in the countries on the receiving end of the remittances would be stronger if the transfers were made via official channels, i.e. financial institutions. When money transfers take the official route, the institutions involved can obtain more information on the recipient families and can encourage them to open a current account or even take out a loan backed by the remittance flows they receive (Rocher and Pelletier, 2008). The formalisation of money transfers would thus help to promote financial inclusion among the poorest households in developing countries.

Another factor often cited as being conducive to bank account take-up in these countries, especially in Sub-Saharan Africa, is the rising use of mobile phones to make deposits and withdrawals using non-bank networks.[5] In fact, the mobile penetration rate is particularly high in Sub-Saharan Africa, which, in 2016, had 420 million unique mobile subscribers and 730 million connections, according to GSMA, the global association for mobile network operators. For instance, in 2004, South Africa became the first country to authorise a "mobile money" service (linking a digital wallet to a mobile phone number so that transactions can be conducted using phone numbers).

Given the large pool of potential users, a wealth of pilot schemes were launched following the resounding success of the M-Pesa solution in Kenya, now used by more than 50% of the country's adult population. In 2014, nearly 16% of Sub-Saharan Africa's adult population were using mobile phones to pay bills or send money, versus less than 5% in the rest of the world (Sy, 2014).

Given the lack of research on the macroeconomic effects of these new payment services, we can only rely on inference. For example, as empirical studies have shown a positive correlation between the expansion of financial services and economic growth (Sahay et al., 2015), we can reasonably assume that the development of new payment services – which substantially broaden the financial services available in these regions and increase financial inclusion – has the potential to boost economic activity (CPMI and World Bank, 2016). This assumption should be treated with caution, however, because the case for a linear relationship between financial services development and economic growth remains much debated (Cecchetti and Kharroubi, 2012).

2. Determinants of the use of means of payment

Economic literature tells us that all means of payment are not created equal in terms of their contribution to growth and cost to society. The challenge is therefore to find out which factors influence economic agents when choosing how to pay for a purchase. Put simply, we must identify the factors that cause people to hold and use a means of payment.

In an article published in 2006, Bounie and François present a review of the theoretical and empirical literature on this subject. Apart from demographic and socio-cultural factors – such as education, income and age – they identified three key determinants of the use of means of payment: their cost and the charges associated with their use, the value

5 Usually made up of mobile money dealers and partner points of sale.

of the goods or service being purchased, and users' confidence in their security.

2.1. Foundation model: the cost-based approach

As the starting point for their review, Bounie and François take the work done by Baumol (1952) on cash holding. In this seminal work, Baumol devises a simplified model in which a representative agent regularly spends a total amount of money over a given period. For this expenditure, the agent can opt to take out a loan or make cash withdrawals at regular intervals over the period concerned. In both cases, the agent has the same opportunity cost, i.e. the interest rate, plus brokerage commission on cash withdrawals. Assuming that the agent acts rationally, seeking to minimise their costs, the model implies that their cash holding will be proportional to their expenditure level.[6]

In order to extend Baumol's analysis to other means of payment, the associated opportunity costs must be identified. This is difficult to do, however, because means of payment are very often paid for in the form of flat-rate fees covering more than one means of payment at a time. Humphrey et al. (2001) based their work on a pay-as-you-go policy adopted in Norway at the end of the 1980s, so as to estimate the direct impact of a means of payment's pricing on its users' payment behaviour. Their results corroborate the intuitive view that a payment instrument's price has a direct impact on its level of use. They found that price elasticity is statistically significant and negative for cheques and bank cards. In other words, demand for these two means of payment falls if the associated charges increase. The authors also found that point-of-sale card payments had largely replaced payments by cheque (strong cross price elasticity) over the period considered.[7]

6 The cash holding that minimises the agent's costs is equal to the square root of the total expenditure, i.e. $C = \sqrt{(2bT/i)}$. With $C =$ unit withdrawal amount; $T =$ total amount of expenditure; $b =$ fixed brokerage fees; and $i =$ interest rate.

7 The data used in the study covers the period from 1989 to 1995.

Box 1: Cashless means of payment – a rival for cash?

Many specific research studies have explored how a change in the price of one means of payment affects demand for others. Most of them focus on the correlation between the roll-out of payment terminals and ATMs – which reduces transaction costs for card payments – and demand for cash.

To examine how the modernisation of means of payment affects demand for cash, Drehmann et al. (2002) analysed annual data for 18 OECD countries from 1980 to 1998. Their findings show that the deployment of payment terminals had a negative impact on demand for low-value banknotes, while that of ATMs had the opposite effect. Cabró-Valverde and Fernández arrived at the same conclusion in their 2009 study. Based on data for Spanish banks from 1997 to 2004, they found that the negative impact of the roll-out of payment terminals on demand for cash was stronger than the positive impact of the deployment of ATMs over the same period.

A study published the same year by Columba expressed this relationship in figures. According to the author's calculations, based on money supply data in 95 Italian provinces following the introduction of the euro, a 1% increase in the number of payment terminals results in a 0.36% decrease in demand for cash. Overall, the roll-out of payment terminals and ATMs was found to increase the M1 monetary aggregate and change its composition, with a reduction in monetary assets held in the form of cash holdings and an increase in those in the form of demand deposits.

This substitution effect had already been pointed out in 1996 in a study by Porter and Judson. Based on a sample of 14 countries, the two authors identified a positive correlation between the velocity of money circulation and the number of cashless payments made per capita, supporting the assumption that widespread use of cashless payments reduces cash holding and increases the velocity of money circulation.

Box 2: Means of payment used at the point of sale by purchase amount in Europe

(% of the number of transactions)
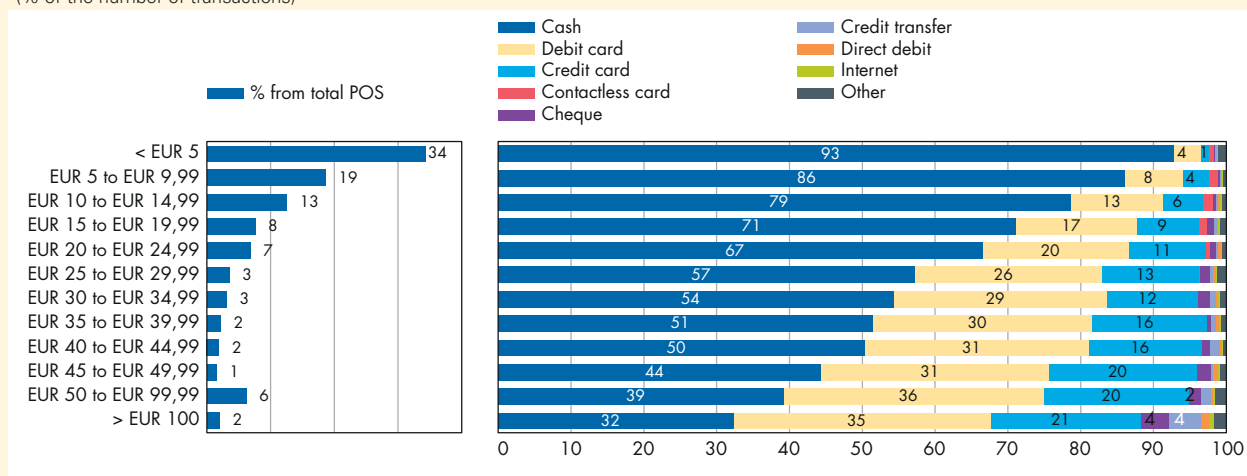
Source: European Central Bank

The study on the use of payment instruments by European consumers, conducted in 2016 under the aegis of the European Central Bank, highlights the preferred uses of the different payment instruments. Thus, while cash is predominantly used for the payment of small amounts (93% of payments under EUR 5), it accounts for the lion's share of intermediate payments, up to about EUR 40. Above EUR 45, payment cards become the main means of payment at points of sale.

At the aggregate level, the study shows that cash is used in 79% of point-of-sale transactions and accounts for 54% of amounts traded in the euro area. In France, which ranks among the countries whose consumers have the least recourse to cash, these shares stand at 68% and 28% respectively.

2.2. Purchase value of the underlying goods or services

Another determinant of the holding and use of means of payment is the purchase value of the underlying goods or services. In their review of economic literature, Bounie and François present the theoretical model developed by Whitesell (1989), in which economic agents can opt to hold their assets in the form of cash or place them in an interest-bearing deposit account. The deposit account can be used for cash withdrawals or payments by card or cheque. While holding cash only incurs an opportunity cost linked to the interest rate, the use of cards and cheques involves fixed and variable costs for each transaction, such

as the fees charged for using these means of payment and the time spent entering the PIN when paying for purchases by card. Economic agents must therefore choose between the opportunity cost associated with cash and the transaction costs incurred by the other means of payment. On this basis, the use of cash should be restricted to low-value purchases, for which the opportunity cost is lower than the fixed costs associated with cashless means of payment (Bounie and François, 2006).

This analysis is confirmed by a survey conducted in 2016 by the Eurosystem, which measured the impact of purchase value on the choice of the means of payment used at the point of sale.

These results were confirmed by similar studies conducted in other currency areas:

– In the United States, a study by Klee in 2004 based on more than 10 million transactions conducted across 99 US food stores between September and November 2001, found that almost 93% of purchases under USD 5 were paid for in cash (Klee, 2008). The percentage dropped to 82% for purchases of between USD 5 and USD 10. At the other end of the scale, only 15% of purchases exceeding USD 150 were paid for in cash. Based on this data, Klee estimated that a 10% increase in purchase value reduces the probability of payment in cash by 11%;

– In Canada, in a 2011 study analysing the results of a survey commissioned by the Bank of Canada, Arango et al. obtained very similar results: cash was used in 72.8% of purchases under CAD 15 but only 16.7% of purchases over CAD 50. Beyond the fixed costs associated with cashless payments, the authors attribute this correlation to the limited acceptance of cash alternatives for low-value purchases. They also found that the loyalty schemes operated by banks have a strong influence on the means of payment chosen by users, since, in practice, these schemes reduce the variable cost associated with the use of a given means of payment.

2.3. Users' confidence in means of payment

Lastly, the holding and use of means of payment can be directly affected by the user's perception of how secure they are. Although this is a more recent area of research, most of the work done confirms that there is indeed a link. An empirical study by Kosse in 2010, based on a survey of 2,000 Dutch households, shows that consumers who deem cash unsafe as a means of payment are 16% less likely to use it to pay for purchases. Similarly, consumers are 19% more likely to use cards to pay for their purchases if they consider cash to be unsafe, but 17% less likely to use cards if they consider them vulnerable to fraud.

Consumers' confidence in the security of some means of payment can even have a direct impact on the development of new sectors. In a 2004 study, Bounie and Bourreau conclude that the low level of security of online card payment systems at the beginning of the 2000s made consumers more risk-averse and undermined the development of e-commerce. In other words, users' belief that they were at greater risk of having their bank card number stolen when conducting online transactions had a negative impact on online shopping.

3. Economic structure of the retail payments market

Studies on the factors that prompt consumers to hold and use means of payment show that a payment method's pricing is a key consideration for economic agents when deciding whether or not to use it.

3.1. The retail payments market: a two-sided market

The retail payments market is characterised by indirect network effects between buyers and sellers: the number of buyers that adopt a means of payment will largely depend on the number of sellers that accept it. This is particularly true for cashless proximity payments, which require merchants to have specific devices (payment terminals in the case of cards). This type of market, known as a two-sided market (Rochet and Tirole, 2005), is characterised by the fact that supply and demand on one side is determined by supply and demand on the other. As a result, transaction volumes depend not only on the overall fees charged to users, but also on how the fees are split between the two sides of the market. The two sides of the market are linked through a platform, which applies asymmetric pricing policies to reflect the specificities of the two categories of user. As explained in economic literature, the side of the market that has more power to attract the other side – i.e. the side with the strongest price elasticity – usually pays less (Verdier, 2009).

A good example of this principle is the asymmetric pricing adopted when card schemes were first developed, with the 1950 launch of the first payment card, issued by Diners Club. In its first few years in operation, this card scheme charged consumers who subscribed to it an annual fee of USD 18, while participating merchants paid 7% commission on each transaction. This asymmetric price structure meant that Diners Club generated nearly 75% of its revenues from participating merchants in its early years (Evans, 2003). Such asymmetric pricing can still be seen today – albeit with a gentler bias – in the strategies implemented by most card schemes. For example, the pricing policy adopted by American Express is geared towards attracting and retaining consumers with high purchasing power by offering very attractive fees and reward schemes. The card scheme can then use its customer base to attract merchants that are seeking affluent customers and willing to pay higher subscription fees to reach them (Verdier, 2009).

American Express and Diners Club are both specific in that they are "three-party" schemes (consumer, merchant and card scheme) in which the card-issuer has contractual relationships with both the consumer and the merchant and can impose its pricing policy directly on both sides of the market. This kind of approach is more delicate in a "four-party" card scheme (with direct links between four parties: consumer, merchant, issuer and acquirer, see Box 3 below), in which intermediaries (usually banks) are positioned between the card scheme and its end users. The distribution of costs in these schemes is more complex, because two levels of pricing must be taken into account: charges for services provided by card schemes to banking intermediaries and charges for services provided by intermediaries to users (Verdier, 2009). In order to weight their price structure, four-party schemes usually implement multilateral interchange fees to transfer revenues to the side of the market most reticent to subscribe to their services. These fees take the form of a payment by the merchant's bank to the cardholder's bank, with the aim that the latter will pass them on to the customer either by lowering the customer's card fee or by awarding reward points. In France, multilateral interchange fees feature in the three most widely used card schemes: Visa, Mastercard and Cartes bancaires (CB).

3.2. Determinants of the level of multilateral interchange fees

The merits of using multilateral interchange fees are addressed in countless research studies, which aim to determine whether the multilateral interchange fees adopted by card platforms genuinely contribute to the proper functioning of the retail payments market and whether they alter the conditions of competition between the players involved. The research available models interactions between the parties involved in four-party schemes, an exercise which proved particularly complex given the large number of parameters to be taken into account, from agents' preferences to the type of competitive interactions at play in the market considered (Verdier, 2009).

The starting point for these analytical works is the model developed by Baxter in 1983, based on the following scenario: a consumer wants to settle a transaction with a merchant and can opt to pay by card or in cash. While the merchant generates a net gain from the use of payment cards by its customers, the consumer loses money when he/she pays by card because his/her bank passes on to him/her the substantial costs that it incurs as the card issuer. This creates a situation where, although the overall gain generated for society by card payments (the sum of the consumer's and merchant's gains) are higher than the associated costs, the consumer will prefer to pay in cash. Baxter demonstrates that the introduction of interchange fees equal to the merchant's net gain, payable by the merchant's bank to the consumer's bank, corrects the usage externality exerted by the consumer on the merchant, thus restoring the social optimum (Verdier, 2011).

Box 3: Multilateral interchange fees: a case study

When a merchant accepts a payment by card, it must pay an initial fee to its bank, known as the "merchant fee". This is usually a percentage of the transaction amount: if the merchant fee is 1%, for a EUR 100 payment by card the merchant will receive only EUR 99. For the merchant's bank, this charge covers its costs, margin, fees payable to the four-party card scheme and the multilateral interchange fee payable to the cardholder's bank.

Unless the cardholder's bank has adopted pay-as-you-go pricing, the purchase amount (EUR 100) is debited from the holder's account. On receipt of the multilateral interchange fee, the cardholder's bank is at liberty to retain the amount on its books or pass it on to the customer, either by paying it directly into the customer's account or via a point-based reward system, whereby the cardholder can obtain free goods or services as part of a loyalty scheme.

In practice, there are considerable discrepancies between the interchange fees payable by the merchant's bank and those paid indirectly by the merchant itself. The discrepancies vary significantly between countries and even within the same country, depending on the type of card used and the merchant's size or business sector. Lastly, different interchange fees can be charged within the same card scheme depending on the various loyalty schemes in use. For example, premium cards usually give rise to higher interchange fees than standard cards, which have less benefits attached for users.
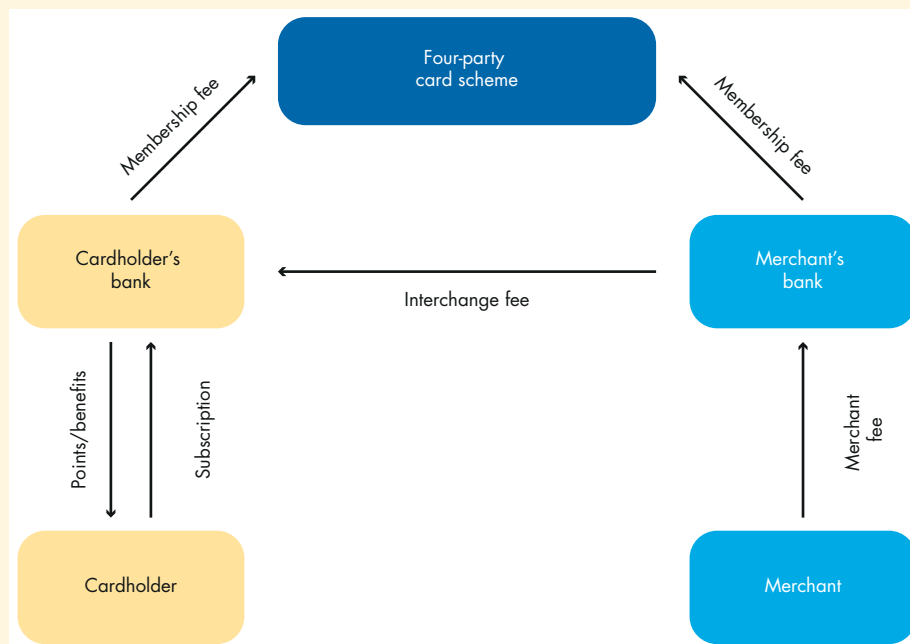
Source: Jean Tirole, "Réglementation des cartes de paiement: une application de l'analyse économique à la politique de la concurrence" (Payment card regulation and the use of economic analysis in antitrust policy), Banque & Stratégie no. 298, December 2011

Although it served as a foundation for subsequent work, this first model is a victim of its simplicity. It assumes that the consumer's bank will pass on the full interchange fee received from the merchant's bank to its customer, whereas, in practice, this only happens in a situation of pure and perfect competition between banking intermediaries (Verdier, 2011). Moreover, it assumes that all consumers and merchants have the same costs and benefits when they use payment cards, which is not the case. These limitations explain why Baxter's model has been subject to many improvements since its publication, based on assumptions adopted by different authors. Rochet and Tirole, in their 2002 study, assume that merchants are homogenous in the gains they obtain from payment cards, whereas consumers are heterogeneous in their use of these cards. Wright (2003) takes a different approach, assuming that both sides of the market are heterogenous. These two premises produce different estimates of the ideal level of multilateral interchange fees that should be implemented by a payment platform, regardless of the platform's objective: social optimum, maximum volumes or maximum profit (Verdier, 2011).

In the three models described above, the authors assume that there is only one payment platform in the market, which thus has a monopoly and can set interchange fees freely. In most two-sided markets, however, a number of platforms compete with each other to attract new customers. Economic literature shows that the resulting price structure in these competitive markets is determined by the ability of users on both sides of the market to participate in several platforms at once. As a rule, if one side of the market can participate in several platforms,[8] the platforms compete more aggressively to attract users on the other side of the market, putting downward pressure on prices (Rochet and Tirole, 2003). A telling example of this mechanism, in the United States, is the impact on American Express merchant fees when cards with no annual fees were introduced. Visa and MasterCard began offering free cards in the early 1990s, which meant that for the first time Amex cardholders had a free alternative to use with merchants that did not accept Amex. As a result, a growing number of merchants turned away from cards issued by American Express, which had particularly high fees at the time. This forced American Express to lower its rates (Tirole, 2011).

3.3. Indifference test

Just as competition between payment platforms affects the pricing structure of two-sided markets, strategic interactions between merchants can result in multilateral interchange fees being higher than necessary to attain the socially optimal level (Verdier, 2011). Given the ubiquitous use of payment cards in developed countries, merchants that don't accept them risk losing customers and, hence, revenues. To avoid this situation, merchants are willing to shoulder costs that exceed the benefits they obtain from payment card transactions, thus financing excessive interchange fees.

In a study published in 2008, Rochet and Tirole propose a simple method to calculate the interchange fees set by a payment platform. Known as the indifference test, this method rests on the assumption that, because cards are attractive as means of payment, merchants are willing to pay high interchange fees ex ante, yet it is in their interest to refuse cards ex post when customers seek to use them at the checkout.

In the setup described by the two authors, a merchant is serving a tourist who can pay either in cash or by card. As the tourist, by definition, is not a regular customer, the merchant can insist on payment in cash without putting its reputation at risk. The merchant therefore accepts the tourist's payment by card only if the cost of doing so does not exceed the cost of payment in cash. Such a situation could only arise if the multilateral interchange fee set by the card scheme was calculated to render the merchant indifferent to the means

8   Referred to by Rochet and Tirole as "multi-homing", as opposed to "single-homing", where users join a single platform.

of payment chosen by the tourist. By comparing the interchange fee obtained using this method with the level required to maximise the overall profits of consumers and merchants, and with the socially optimal level (factoring in banking intermediaries' profits), Rochet and Tirole conclude that the interchange fee produced by the indifference test is only socially optimal if the issuing banks are in perfect competition with each other. Otherwise, the interchange fee resulting from the indifference test is generally below the socially optimal level.

4. Retail payments market and public intervention

The retail payments market is subject to market failures linked to information asymmetries and the presence of network externalities. Economic theory tells us that such situations warrant intervention by an external regulator, provided that the intervention is based on sound reasoning, weighing the disadvantages of solutions envisaged against their expected advantages.

4.1. The security of means of payment

The confidence that users of a means of payment have in the security of processes put in place by the financial intermediaries that look after their money is crucial to their acceptance of the means of payment concerned and, more broadly, to the successful conclusion of commercial transactions. However, users generally lack the technical knowledge and resources needed to assess the risk management procedures implemented by their payment service providers. This creates "information asymmetry" between users and their service providers, justifying intervention by public authorities to provide external assurance of the security of the various means of payment in use.

As stated in the previous chapter, this role is usually assigned to the central bank. With their independence and expertise, central

banks are well-placed to oversee the retail payments market. They aim to sustain users' confidence in money, while creating an economic environment conducive to trade. The oversight role assumed by central banks usually involves implementing standards and regulations governing the conditions in which payment operations are conducted, the assessment of risks to which sector players are exposed and the production of information likely to influence the market's development.

4.2. Fostering competition

Beyond the action taken by central banks, the proper functioning of the retail payments market is also underpinned by the prudential framework applicable to all payment service providers. At the beginning of the 2000s, however, Europe's lawmakers observed an unintended consequence of their restriction on authorisations to provide means of payment. By authorising only credit institutions compliant with stringent prudential requirements, given their wide business scope, they had made the payment market inaccessible to mid-sized players seeking to focus exclusively on this sector. It was not economically viable for these players to provide payment services, because by doing so, they would be subject to the regulatory requirements applicable to banks.

To remedy this situation, the EU Payment Services Directive (Directive 2007/64/EC or PSD1, see Chapter 3, Section 2) and Electronic Money Directive (Directive 2009/110/EC or EMD2) introduced two new categories of payment service provider alongside credit institutions. These new categories – payment institutions and electronic money institutions – are subject to lighter prudential regimes commensurate with the operational and financial risks to which their operations are exposed. As they provide specialised services restricted to payment instruments, the risks created by these new types of institution are narrower in scope than those inherent in the wider spectrum of credit institutions. It therefore

seems right for them to have appropriate regimes, for example in terms of regulatory capital. The new provisions included in the revised Payment Services Directive (PSD2) are consistent with this philosophy, as reflected in the new rules governing the activities of new categories of third party players that initiate payments from accounts held by payment service providers (PSP) or aggregate information relating to such accounts.

Beyond the desire to tailor prudential regimes to the risk profiles of the various players, Europe's public authorities also wanted to increase the transparency of fees charged by PSPs and make it easier for people to change payment account. Measures such as these reduce the market power of the historical PSPs (Vives, 2001), thus fostering competition in the European retail payments market.

In France, under two laws adopted five years apart, in 2008 and 2013,[9] all customers must be provided with an annual statement showing a breakdown of their deposit account management fees and, from October 2015, must be notified in their monthly statement of fees relating to irregularities and incidents. The Directive on payment accounts adopted on 23 July 2014 (Directive 2014/92/EU) extended these practices to the European Union as a whole. It stipulates that Member States must ensure that, at least once a year and free of charge, payment service providers issue statements to their customers showing all the fees incurred for services relating to their payment account.

The Directive also requires PSPs to provide services to facilitate banking mobility, in particular by transferring lists of customers' current standing orders and direct debit mandates to their new payment service providers. This service, which has been operational in France since 2009, was made compulsory at the national level by Law 2014-344 of 17 March 2014 on consumption. In this respect, work was done under the *Comité Français d'Organisation et de* *Normalisation Bancaires* (CFONB – French Banking Organisation and Standardisation Committee) to standardise the information exchanged between banks when a customer asks to transfer their account. This ensured that the conditions for the provision of banking mobility services were consistent across all French institutions. This service has been fully operational since 6 February 2017.[10]

4.3. Oversight of multilateral interchange fees

Measures taken by public authorities to promote competition in the retail payments market logically raised the issue of the optimal level of multilateral interchange fees charged by certain categories of participant, primarily participants in "four-party" card schemes.

An initial approach, rolled out in Australia and the United States, involved capping interchange fees on the basis of the card issuer's costs. In 2011, the US Federal Reserve, responsible under the Dodd-Frank Act for regulating interchange fees on debit cards to ensure that they are "reasonable and commensurate with the transactional cost incurred by the issuer" (Tirole, 2011), capped these fees at a fixed amount of 21 cents per transaction, plus a variable component equal to 5 basis points of the transaction value. Issuers are permitted to increase their fees by 1% if they put a fraud prevention framework in place. Lastly, the Federal Reserve granted an exemption to this rule to issuers whose assets amount to less than USD 10 billion.

The European Commission took a different approach, closely aligned with the indifference test. It aims to ensure that the costs borne by a merchant that accepts a card payment match the benefits of not having to take a cash payment (Tirole, 2011). It was on the basis of this principle that in 2007 the European Commission forced Mastercard to cap its average interchange fees on its "consumer" card at 0.20%. In 2010, Visa aligned its

9 Law *2008-3 of 3 January 2008* and Law 2013-672 of 26 July 2013.

10 For further information on the French banking mobility service, see: *https://particuliers. banque-france.fr/ votre-banque-et-vous/ le-service-de-la-mobilite-bancaire*

fees payable on cross-border transactions using its "consumer" cards with this rate. This same approach is central to EU Regulation 2015/751 of 29 April 2015 on interchange fees for payment transactions involving cards, which caps the fees on debit and credit cards linked to four-party schemes at respectively 0.2% and 0.3% per transaction. In the case of debit cards, payment service providers are free to impose merchant fees (including the interchange fee) calculated at a fixed rate of 5 cents per transaction, to which they can add a variable component, provided that the sum of all fees charged over a one-year period does not exceed 0.2% of the sum of transactions conducted at the national level within the same card scheme.

Box 4: The French example: public authorities steered banks towards a reduction in the fixed portion of merchant fees on cards

The work done in 2015 by the national conference on payments (see Chapter 2, Box 7), which paved the way for the national retail payments strategy, included in the final report, with respect to low value payments, a proposal to "[…] examine a further reduction in the level of merchant fees in cases where the contract dictates that a minimum fee must be charged regardless of the transaction amount; in this respect, it seems appropriate for the contractual minimal service charge to be capped at EUR 5 cents, rather than EUR 10 cents, as has been the case to date".[1]
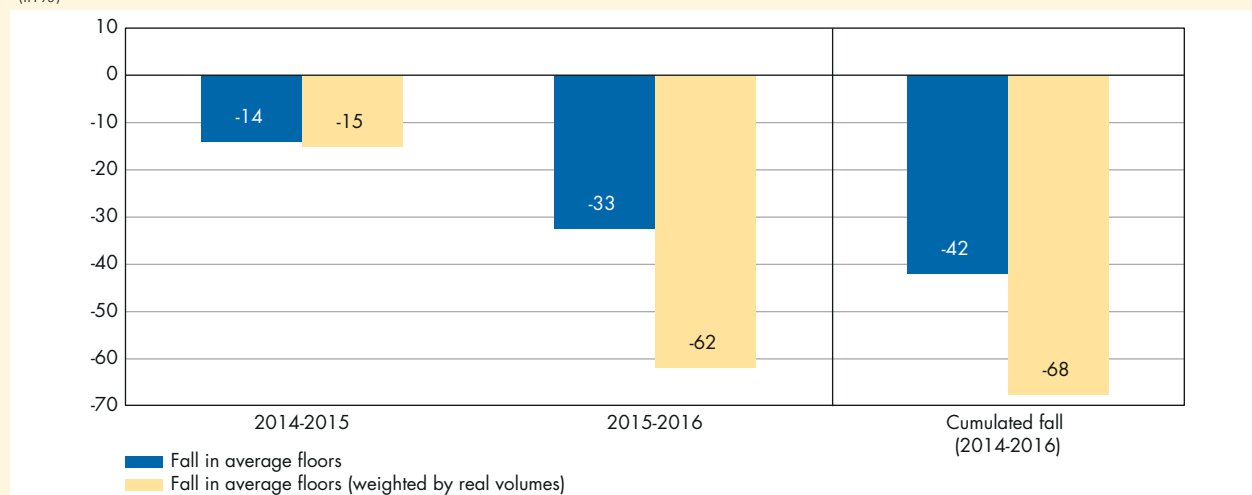
This proposal was included in the objectives set for the national retail payments strategy ("Reduce the minimum merchant fee, if there is one") and led to banks making a commitment via the French Banking Federation to support "[…] in cases where contractual provisions impose the charging of a minimum service charge, a significant reduction in this minimum amount".[2]

As part of its mission to implement the national retail payments strategy, in 2017 the National Cashless Payments Committee launched a quantified review of the commitment made by banks. The Banque de France collected data from banks on merchant fees affecting almost 1.5 million French companies.

The information collected showed that the commitments made by the banking community have been fulfilled: the average amount of contractual minimum merchant fees plummeted almost 42% between 2014 and 2016 (see Chart 1).

Change in minimum merchant fees (2014-2016)

(in%)

Fall in average floors
Fall in average floors (weighted by real volumes)

1 https://www.tresor.economie.gouv.fr/Ressources/File/413453
2 http://www.fbf.fr/fr/files/9X4HFM/Communique-FBF-Assises-des-moyens-paiement-02062015.pdf

Both these approaches have certain weaknesses. The first approach based on calculating the issuer's costs, which was adopted in Australia and the United States, among other countries, is, a priori, easier to apply than the approach based on measuring the benefits obtained by a heterogeneous population such as merchants. However, regulations based on this principle seem inconsistent with economic theory, which attaches greater importance to the relationship between the merchant and its bank (the payment "acquirer") than to the constraints on the issuer (Tirole, 2011). In comparison, interchange fee regulations based on the indifference test – as reflected in the European Commission's approach in drafting Regulation 2015/751 of 29 April 2015 – seem more in line with the relevant theoretical works. That said, based on Tirole's analysis (2011), such an approach based solely on the costs borne by the merchant has the drawback of producing a lower estimate for the interchange fee than would be socially desirable, since it overlooks the negative externalities for society of alternative means of payment (e.g. tax fraud in the case of cash) and the need for issuers to sustain the flexibility to promote innovation and, ultimately, the welfare of users.[11] On this latter point, it is interesting to note that the theoretical models developed to describe the functioning of two-sided markets rarely factor in the cost of preventing fraud (Verdier, 2006), even though many card schemes adapt their pricing policies to encourage members to invest more in enhancing the security of their applications.

11 With respect to this point, the European Commission took these theory-based objections into account in its impact assessment (European Commission, 2013) by including empirical considerations, whether relating to revenues generated by interchange fees in Europe or national agreements already signed in this area, in particular that between the French competition authorities and *Groupement des Cartes Bancaire*s in 2011.