

A Central Bank's Role In Cashless Payments

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ABSTRACT

The smooth functioning of payment systems is relevant for both the efficiency of the financial sector as well as the implementation of monetary policy operations. Therefore, payment systems are often provided by central banks. The characteristics of individual payment systems, such as increasing economies of scale, favour the development of a monopolistic situation. Therefore, we consider the role of a central bank acting as a monopolist and discuss possible welfare effects. Against the background of huge systemic risks, a central bank acting as an operator of an individual payment system is supposed to be the optimal solution. We illustrate our findings in the light of the role of the Bundesbank which has traditionally been operating its own payment systems.

Keywords: Central Bank; Payment Systems; Monopoly; TARGET2

INTRODUCTION

The smooth functioning of payment systems is of great importance, both for the efficiency of the financial sector as well as for the implementation of monetary policy operations. With respect to monetary policy, only the availability and the confidence of the market participants in the payment system can ensure the transmission of a monetary policy stance via the money market to the economy. For an overview of the most important monetary transmission channels, see, for instance, Mishkin (1995).

In the paper at hand, we discuss the role of a central bank in cashless payments. Because of the cost structure and network effects, the market for individual payments is rather less competitive. In most countries, there is only one system that has by far the largest market share. In such a case, a market solution may not be efficient as the monopolist could use its market power to maximize profits. Furthermore, the private sector security mechanisms do not necessarily ensure the availability of the system since a default of the private operator would still be possible. The participation of a central bank as a provider of payment systems could decrease the risk in at least three ways. First, the creditworthiness of a central bank is always beyond question. Consequently, there is no need for additional safeguard measures to reduce the credit risk of the operator. Second, by acting in the public interest, the technical security, stability, and availability of the systems is ensured. Third, an allocation efficient solution is achievable since profit maximization is usually not the primary interest of a central bank. The role of a central bank as a payment system operator, however, can be controversially discussed. A central bank acting as a monopolist could still induce costs in terms of suboptimal economic performance. Besides, reputational effects could also arise from operating a payment system. For instance, imbalances in the TARGET2 system are nowadays discussed in the public; see, for example, Sinn and Wollmershaeuser (2011) or Bindseil and Koenig (2011).

We illustrate the potential benefits of a central bank acting as an operator of an individual payment system in the light of the role of the Bundesbank, which defines cashless payments as a core business area. This is due to the fact that it is part of its statutory mandate to provide for the smooth settlement of payments as set out in Bundesbank (2005, 2009).

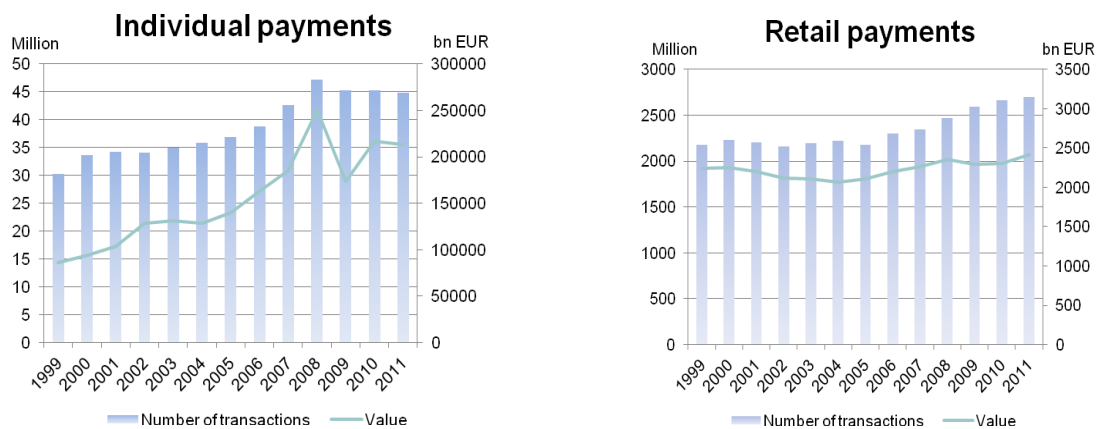
Taking into account that the nature of a central bank minimizes the insolvency risk of the provider, this solution can be considered as the first-best one. Besides, a central bank has a strong incentive to further develop the infrastructure in order to improve the transmission of monetary policy operations. Thus, the argument that a public solution could hamper innovations is at least neglected in the German case.

The remainder of the paper is organized as follows: In the second section, we briefly discuss the market structure in Germany as well as the Bundesbank’s role in cashless payments. Thereafter, we demonstrate how a monopolistic provider of an individual payment system can exploit its position but give also some reasons why a central bank as a provider might be the optimal solution. The final section concludes.

MARKET STRUCTURE AND THE ROLE OF THE BUNDESBANK

In general, two kinds of payments can be distinguished, as described in Bundesbank (2009) or Duemmler et al. (2010). The so-called retail payments are characterized by a high number of transactions, but the average amount is rather low. Retail payments comprise primarily credit transfers, direct debits, and checks. Such payments are generally not time-critical and can thus be settled on a net basis. That means that they are processed, for instance, once a day and only the prorated amount is charged from the participating banks. Unlike retail payments, individual payments are characterized by high average values. Individual payments arise primarily from interbank transactions, but also comprise urgent customer payments. Consequently, they have to be continuously settled; i.e., on an order-by-order basis. Therefore, individual payments are usually processed in real-time gross settlement (RTGS) payment systems. Individual payments are of great importance for the entire banking system since a failure can also hamper the monetary policy transmission.

Figure 1 shows the number of transactions as well as the total values of both kinds of payments.



Source: Bundesbank, Annual Reports, 1999 to 2011

Figure 1: Individual and Retail Payments via the Bundesbank’s Payment Systems

In Germany, it is part of the central bank’s mandate to provide for the smooth settlement of payments. This mandate can already be derived from Section 3 of the Bundesbank Act. It has been further emphasized by Article 127 (2) of the consolidated version of the Treaty on the Functioning of the European Union according to which the European System of Central Banks (ESCB) shall “promote the smooth operation of payment systems”. This goal has also been added to Article 22 of the Statute of the European System of Central Banks and of the European Central Bank (ECB).

The Bundesbank defines cashless payments as a core business area. Among other things, the German central bank has been operating its own payment systems both for individual payments and retail payments. While the individual payment systems have traditionally been of great interest due to their relevance for an efficient implementation of monetary policy, the Bundesbank only plays a complementary role in retail payments (see, for instance, Bundesbank, 2005).

Retail payment systems are less affected by monetary policy needs compared to individual payment systems as their direct influence to the money market is limited. Technical progress and liquidity considerations play a smaller role compared to small transaction fees. Due to the three-pillar banking system in Germany, several retail payment systems exist in parallel. It also seems that a public engagement is not necessary from a risk perspective since systemic risks for the economy are rather unlikely. In the event of a failure, banks could switch to the individual payment system.

In contrast, individual payments are tightly related to monetary policy operations. For instance, the monetary policy operations impact the money market through the supply and absorption of high powered money. An efficient money market implies that central bank money can be quickly and safely transferred between the commercial banking and the central banking system. Besides, the systems have a relatively short product life cycle. The main reasons for the frequent system modifications are technological progress, the European integration, and related monetary policy and prudential requirements. Thus, the Bundesbank's systems, *Elektronische Abrechnung Frankfurt* (EAF) and *Elektronischer Schalter* (ELS), established in 1990 and 1992, respectively, have been replaced by the RTGSplus system in 2001 which has been replaced by TARGET2 in 2007. The acronym TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer. Each national central bank in the Eurosystem allows commercial banks to transfer money that is held on account with that central bank. In the case that the remittee is located in another country; i.e., the account is not held with the same central bank as the account of the remitter, such a transaction would contribute to intra-euro area claims.

CENTRAL BANK AS MONOPOLIST

Individual payments are characterized by increasing economies of scale due to the tough demands for technical standard and therefore high fixed costs. The relevance of economies of scales may foster the development of a monopoly even in the absence of a public provider. In addition, network effects have to be taken into account. Only if a critical participation rate is achieved, an individual bank would join the new system. For this reason, we briefly describe the potential welfare effects of a monopoly and discuss the role of a central bank.

We assume the returns R are given by

$$R(y) = p(y)y$$

where p denotes the price p of the respective good. Since the price p varies with the quantity offered by the monopolist, this will also be true for the return. Costs are given by a function $c(y)$. The monopolist is supposed to maximize its profit R by choosing the level of output according to the following optimization problem:

$$\max_y p(y)y - c(y)$$

From a monopolist's perspective, marginal return should equal marginal costs:

$$\begin{aligned} p(y)y \left[1 + \frac{\partial p}{\partial y} \frac{y}{p(y)} \right] &= c'(y) \\ \Leftrightarrow p(y)y \left[1 + \frac{1}{\varepsilon(y)} \right] &= c'(y) \end{aligned}$$

Consequently, a monopoly is supposed to be neither production nor allocation efficient; for a further description, see, for instance, Faere et al. (1985). This means that the monopolist can achieve an economical rent since the market entry is blocked; for instance, because of economies of scale and network externalities which are both of importance in the context of the payment system.

Nevertheless, dedicated itself to an overall objective, such as price level stability, a central bank is not focused on profit maximization. In principle, it is consequently conceivable that it chooses a supply level which is

equal to a competitive market solution or even beyond; i.e., subsidizing the system, if this seems adequate from a monetary policy perspective.

CONCLUSIONS

Since the development of a payment system is supposed to be rather costly and network effects, as well as economies of scale, are of great importance, the formation of a monopoly is very likely and also reasonable. Against this background, a pure market solution seems not to be efficient as there are incentives to set prices above average costs. As a standard textbook solution – see for instance Baumol and Blinder (2001) – the disadvantages of a monopoly could be hampered in two ways - the provider could be either a government monopoly or a private one that is subject to strict state regulations.

However, the potential welfare losses due to the pricing of a monopolist seem to be less relevant in comparison to the potential risk costs. As a result of the systemic importance of individual payment transactions and the associated risk of a systemic crisis, the constant availability and smooth functioning of the individual payment systems for monetary policy purposes should be guaranteed. A precondition is that the creditworthiness of the counterparty is undoubted.

For both reasons, a central bank playing a major role in the area of individual payments seems to be a favorable solution. Usually, profit maximization is not the primary goal of such an institution. This would allow an allocation efficient solution. Besides, the regulation of a private monopolist would not completely mitigate the risk of a default and result in market distortions. To achieve creditworthiness comparable to that of the central bank would imply the necessity of several lines of defense, such as a margin system. Nevertheless, this would be rather costly for the economy and would still bear systemic risks; i.e., the default of the provider leading to at least an increasing degree of uncertainty about the safety of the payments and therefore to temporary restrictions on the functioning of the money market as well as transmission effects related to it.

To sum up, the economic costs of a private sector solution seem too high since a failure of the provider would strongly affect the effectiveness of monetary policy and the overall financial system. The close connection to monetary policy and the solvency problem suggest that an independent central bank should participate in the individual payments systems. Operating the system itself enables a central bank to control the design of these systems taking into consideration risk, efficiency and neutrality in competition.

A possible caveat is that a public monopolist could slow down innovations which could result in opportunity costs for the economy. Due to the link to monetary policy, however, there is an incentive for innovations, because efficient payment systems are an important tool for an efficient monetary policy.

These considerations can be supported by our case study. The Bundesbank has been continually developing its individual payment systems. At the same time, the market position of the Bundesbank can be attacked at any time; i.e., the position can be classified as a morphological monopoly.

AUTHOR INFORMATION

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NOTE

The views expressed in this paper are those of the authors alone. Any remaining shortcomings are entirely the responsibility of the authors.

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