



The role of interchange fees in ATM networks

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Abstract

We develop a model to study the deployment of shared ATMs when an interchange system compensates banks for processing non-customers' withdrawals. The interchange fee is chosen cooperatively by banks. We show that a high interchange fee softens competition on the market for deposits but increases competition to process withdrawals. As the former effect dominates the latter, profits are increasing with the interchange fee up to some level. This confirms the presumption that the interchange system can be used as a collusive device by banks. We show that the cooperatively chosen interchange fee does not decrease when the number of banks gets higher or when deployment costs decrease. These results are consistent with the empirical evidence concerning interchange fees. The model also predicts that the size of the shared ATM network exceeds the socially optimal level when the number of banks is large enough.

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1. Introduction

In many countries, banks share their automated teller machines (ATMs) in regional or national networks: a cardholder of a bank can use an ATM of another bank of the network and make a “foreign withdrawal”. The cardholder's bank pays an interchange fee to the ATM-owning bank to compensate it for the costs of deploying the ATM and providing the service. In general, this fee is set collectively by the network members. A network switch, typically owned by banks, acts as a central device and permits clearing.

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Several observations have been made about interchange fees.¹ First, evidence suggests that they involve a substantial mark-up over the average cost of providing ATM services. In Australia, Great Britain and the USA, the mark-up is close to 100%. Second, interchange fees have remained largely unchanged over the last two decades despite the fall of deployment and communication costs and the entry of new banks into the ATM market.

Economists and antitrust authorities consider the joint determination of prices with suspicion. They argue that the cooperative setting of interchange fees explains why they remain sticky above the average cost of providing ATM services (see [Balto, 2000](#)). On the other hand, other economists suggest that interchange fees are necessary to guarantee the universal access to ATMs and are mainly a transfer payment to equilibrate the costs and benefits between the cardholders' banks and the ATM owners (see [Cruickshank report, 2000](#)).

This paper studies the role of interchange fees in ATM networks and addresses the following questions: Why are interchange fees so much higher than the average cost of ATM services? What is the effect of the cooperative choice of interchange fees on banking pricing? Is there over- or under-provision of ATMs compared to the social optimum?

To answer these questions we set up a model in which banks set the interchange fee cooperatively but choose the ATM deployment and the prices non-cooperatively. Consumers pay a unique account fee to their bank to obtain both basic banking services and the unlimited access to the shared ATM network. Banks compete à la Bertrand on the deposit market. We show that banks collude on high interchange fees in order to reduce competition for deposits. The consequence is that the size of the shared network is above the socially optimal level if there are sufficiently many banks. The properties of the interchange fee jointly set by banks fit the empirical evidence: the fee exceeds the marginal cost of processing a withdrawal and it does not decrease when the number of banks grows or when deployment costs fall.

Let us get an intuition for the results. As there is no ATM usage fees, the shared network is a public good for cardholders. Banks do not deploy ATMs to attract deposits, but rather to process withdrawals and receive interchange fees. When the interchange fee exceeds the marginal cost of processing a withdrawal, each bank is willing to process the withdrawals of competitors' cardholders and to reduce its own depositors' foreign withdrawals. Hence, there must be a positive mark-up of the interchange fee over the processing marginal cost to give banks incentives to deploy ATMs.

Nevertheless, the interchange fee is not only a transfer payment, but also a collusive device. To understand why, observe that there are two effects when banks raise the interchange fee. On the one hand, the competition for processing withdrawals is strengthened, more ATMs are opened and banks' deployment costs increase. On the other hand, each bank is less willing to accept depositors because the foreign withdrawals they make induce high interchange outflows. Consequently the competition for deposits is relaxed, account fees increase and banks' revenues rise with the interchange fee. We show that as long as the account fee is below depositors' reservation price, the effect on revenues dominates the effect on costs so that banks' profits are increasing with the interchange fee. Nevertheless, they are not indefinitely increasing. Depositors' reservation price gets higher with the size of the ATM network, but less and less as the network is expanding. When the interchange fee becomes very high, the account fee is bounded from above by the reservation price and does not rise enough to cover the additional costs of ATM deployment: profits begin to decrease with the interchange fee.

¹ See Reserve Bank of Australia and Australian Competition and Consumer Commission (2000), Cruickshank report (2000) and McAndrews (2003).

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