

Economic Naturalist Project
**The Replacement of Paper-Based Methods of Payment by
Credit Cards**

Phenomenon: Nowadays, when we go shopping (to Safeway or Fred Meyer, for instance) we no longer have to look for a quarter in our wallets or to ask someone for a pen to sign a check (although we could do that, too) in order for us to pay for the goods we buy. We now have credit cards, which make our lives much easier. The number of transactions made by credit cards has exploded in the recent years and their widespread use and practicality started replacing the use of paper-based forms of payment such as checks and bills. However, in spite of rapid technological progresses, this increase did not occur over night. At first, during the 1970s the market for Visa cards grew rather slowly, while during the late 1980s and 1990s it has technically exploded. This somewhat shy acceptance of the new system may be due to the familiarity with the paper-based payment methods, in addition to the fact that the marginal cost attributed to payments through checks and cash is smaller. Prospective credit card users also considered them risky, and thus they were rather uncertain about making their tangible cash vanish beneath the magnetic strip of the card. On the other hand, the benefits from credit card using are much greater since they do the same work checks do, but are more efficient, faster and cheaper. Almost every store (usually larger stores) accepts credit card from buyers and almost everywhere you go you can pay by using a credit card. Moreover, the credit card system enables consumers to purchase goods online, through e-commerce, which during the recent past has become extremely popular and widespread.

Question: Why has the demand for credit cards increased so much during the past two decades? What economic theory can be used in order to explain this transition from paper-based methods of payment to credit cards?

Analysis: The widespread use of credit cards and electronic means of payment appeared as a consequence of their large acceptability - a consumer prefers paying by credit card if he knows that the number of stores where he can use is large enough. Thus, credit card use is a network externality, since each individual's benefit from using credit cards depends on the number of consumers and establishments using and accepting credit cards. Moreover, it is a positive network externality, for the greater the number of people who use credit cards, the greater their intrinsic value for consumers. They work like the fax machine, cell phones or e-mail. If you are the only one who has one, it is useless since you cannot purchase anything with it. But, on the other hand, as the number of users increases, so will its intrinsic value to you, due to its great acceptability.

In fact, the credit card system is a little different from fax machines or e-mails. Through fax-machines and e-mails you get the same benefits whether you send or receive messages. It only depends on the number of machines or addresses. However, credit cards are different in this respect, since they bring about two types of benefits: to the buyers and to the sellers, separately. Thus, the buyer's benefit depends directly on how many stores or, generally speaking, establishments accept his credit card, and only indirectly on the number of other users. Conversely, the seller's benefits depend directly in the number of credit card users and indirectly on the number of other establishments using credit cards. Due to these facts, the demand for credit cards has increased so much that it has led to a new way of shopping: online shopping. This may be one of the consequences of electronic deposits and the high number of credit card owners, along with the high number of companies that accept them.

Reed College's board system is another network externality. All of us have student IDs (those who have not lost them yet), which have other practical utilities too, besides identification. Using them we can enter residence halls, borrow books from the library or, most importantly, we can purchase food from Commons. The latter is available due to the fact that Bon Appetit has a "machine" that allows electronic payments. If it hadn't had one, we couldn't have been able to buy food from Commons just by simply using our ID cards and if we hadn't had any magnetic cards, Bon Appetit's machine would have been useless.