

INSTITUTIONAL BARRIERS TO ELECTRONIC COMMERCE:
AN HISTORICAL PERSPECTIVE

Karen Clay and Robert P. Strauss

Abbreviated Title: Institutional Barriers to Electronic Commerce

Karen Clay, H. John Heinz III School of Public Policy and Management,
Carnegie Mellon University, Pittsburgh, Pennsylvania 15213-3890,
412-268-4197, kclay@andrew.cmu.edu

Robert Strauss, H. John Heinz III School of Public Policy and Management,
Carnegie Mellon University, Pittsburgh, Pennsylvania 15213-3890,
412-268-4798, rs9f@andrew.cmu.edu

ABSTRACT

Although electronic commerce is currently a relatively small fraction of overall sales, the dollar amounts are significant and growing rapidly. Future growth, however, is likely to be limited by two factors – technical barriers and issues of trust and risk. Technical barriers such as delivery, bandwidth, and standardization are already beginning to erode. Problems of trust and risk require as yet undeveloped institutional solutions. The paper explores the possible form of these institutions by drawing lessons from institutions that emerged historically to address opportunism in remote commerce. Once such institutions emerge, remote commerce will begin to have real tax implications for states. The paper describes the institutional changes that will have to occur to address the tax shortfall once it becomes fiscally and therefore politically noticeable.

INTRODUCTION

Remarkably little has been written on institutional emergence, institutional change, and the relationship between private and public institutions (Ingram and Clay 2000). The reasons lie in part with the stability of Western economies, especially post-World War II. Institutions tend to emerge or undergo significant change during times of economic or political change. Stability has limited the need for and thus observed change.

During the 1990s, the rise of the Internet initiated a period of significant economic change. The most dramatic changes occurred in capital markets with the rise of the Internet bubble. (See Jaffee and Freeman in this issue on German venture capital markets.) Less dramatic, but more economically enduring changes occurred in the markets for goods and other services as consumers and businesses began to transact using the Internet. The dollar amounts involved are significant and growing rapidly (Census 2001 and Emarketer 2001).

Future growth, however, is likely to be limited by two factors – technical barriers and the relative absence of institutions to control opportunism. Technical barriers include bandwidth and delivery for business to consumer (B2C) electronic commerce and a lack of common standards across vendors and exchanges for business to business (B2B) electronic commerce. Opportunism is an issue on several fronts. Sellers may deliver goods and services of lower quality than were contracted for or not deliver the goods and services at all. They also

may misuse or accidentally permit misuse of information related to the sale.

Buyers may not pay by engaging in credit card fraud or by accepting credit and then not repaying it.

Problems of opportunism and the relative absence of institutions to address opportunism suggest that we are likely to see new institutions emerge. To understand the types of institutions that are likely to emerge, we draw on results from game theory and a case study of the early days of mail order. The analysis suggests that private, reputation-based institutions are likely to emerge. There may be a role for the State, however, in ensuring that the information necessary for such institutions to operate is available.

If, or more likely when, such private institutions emerge, the resulting increase in electronic commerce will have significant tax implications for the State, specifically for state and local government. The public institutions that govern budgets will have to change. The only question is how these changes will be manifest. We outline alternative institutional approaches.

In sum, we examine the emergence of private institutions, the resulting change in public institutions, and the relationship between private and public institutions. Unlike most studies, we are not doing an *ex post* analysis of these changes. Rather, we are making admittedly ambitious *ex ante* predictions based on a detailed understanding of the current environment and the types of institutions that emerged historically to address similar issues. The paper is

organized as follows. Section two examines the underlying problems of opportunism in electronic commerce. Sections three and four examine the institutions that addressed opportunism in remote commerce in the pre-Internet era. Section five examines current barriers to the expansion of electronic commerce and some institutional solutions. Section six discusses the tax problems that will arise from further expansion of electronic commerce and the institutional changes that will have to occur to address the problem. Section seven concludes.

OPPORTUNISM

In most types of transactions, either the buyer or the seller can act opportunistically. Buyers can act opportunistically by not paying for goods or services that they receive. In some contexts, they may also be able to engage in other behavior that imposes costs on sellers such as canceling orders. Sellers can act opportunistically by sending the wrong quality or quantity of goods, not sending the goods in the specified time frame, or by charging a higher price than initially agreed upon. Sellers can also act opportunistically by misusing or permitting misuse of transaction-related data such as personal or credit information.¹

In the absence of institutions that mitigate these risks of opportunism, we would not expect buyers and sellers to engage in remote commerce at all. That is, a buyer and seller who only plan to interact once in an environment with no legal

infrastructure or other institutions would have no incentive to transact. If the opportunity arose, each would attempt to cheat the other.

Two different types of institutions – private order institutions and public legal institutions – can mitigate buyers' and sellers' incentives to act opportunistically. Private order institutions create incentives for participants to behave honestly by linking current behavior to future payoffs to current behavior. For instance, if a buyer and a seller plan to transact repeatedly and both players derive value from the transactions, the threat of discontinuing the relationship may be sufficient to guarantee that both parties behave honestly. Alternatively, if a group of buyers plan to transact with a group of sellers repeatedly and all players derive value from the transactions, the threat of group punishment of a cheater may be sufficient to guarantee that all parties behave honestly. Note that multilateral repeated interaction may be sufficient to guarantee honesty, even if individual buyers and sellers do not interact sufficiently often to guarantee honesty. In the limit, as long as players can observe one another's past behavior it may be possible to support cooperation even if a buyer and seller never plan to interact again. It is important to note that under private order institutions the participants in trade, not the state, impose sanctions on cheaters.

Under public legal institutions, the state establishes the rules governing behavior, determines whether violations of the rules have occurred through the courts, and if necessary enforces the courts' decisions using law enforcement

personnel. Using public legal institutions has a cost, so buyers and sellers who have been cheated may not always bother to bring a case. Alternatively, the parties may choose to settle 'in the shadow of the law' before the case is filed, before the case reaches the court, or before the court reaches a decision. One important difference between public legal institutions and private order institutions is that public legal institutions can at least in theory support single transactions between buyers and sellers who have no knowledge of one another's past behavior.

In practice, studies indicate that both types of institutions are often important in the contemporary business environment. For instance, Macauley's landmark study (Macauley 1963) indicated that businessmen were often reluctant to use the legal system. Their preference for private dispute resolution arose because of informal norms in the business community specifying that disputes should be resolved privately. The greater flexibility and lower cost of private dispute resolution led businessmen to prefer dealing with other businessmen who followed that norm, creating an incentive for individuals to adhere to the norm. More recently, Thomas Palay's study of railroad carriers and freight shippers, Robert Ellickson's study of cattle ranchers, and Lisa Bernstein's study of New York Diamond dealers all support Macauley's main themes. For small, fairly homogenous groups, private order institutions may play a much more significant

role than public legal institutions in ensuring that parties deal honestly with one another (Palay 1985, Ellickson 1991, and Bernstein 1992).

BUSINESS TO CONSUMER TRANSACTIONS, 1880-1995

Sears

Richard Sears and his customers faced problems of trust and risk in the late 1880s when he first began to sell mail order watches.² Sears could demand payment in full before shipping the watch. Customers were, however, likely to be concerned that Sears would take their money and not send anything or send a watch of lower than expected quality. Conversely, Sears could send the watch on credit.³ He then faced the risk that the customer would not pay the full amount. To address these issues, Sears established a policy of sending goods in return for partial payment. If the customer was not happy, he could return the good with no questions asked and receive his money back. If the customer was happy, he would repay the credit over time.

The decision to act opportunistically depends on the relative magnitude of the gains from cheating today and the gains from honest behavior today plus the stream of benefits from future interaction. Relative to receiving full payment, partial payment decreased Sears' gain from cheating today. It also increased his gain from honesty by increasing the benefits from future interaction with that customer and any new customers obtained through referral. Partial payment did not guarantee that Sears would behave honestly. The diminished incentive to

cheat together with Sears' low prices was, however, enough to attract the first customers and allow Sears to establish a good reputation. Once established, tremendous growth ensured that the sum of present and future profits were greater than the gains to cheating today.

Relative to receiving the good on credit, partial payment also decreased a customer's gain from cheating today. The stream of future benefits from interacting with Sears depended on two things. Sears had to offer a compelling value proposition relative to the alternatives. Otherwise, the customer had an incentive to make a partial payment to get the good, refuse to pay the balance and go elsewhere for future purchases. Sears and his competitors offered rural customers greater selection, higher quality, and lower prices than were available from local merchants. Sears also had to prevent individuals from being able to make purchases if they had cheated Sears in the past. Otherwise, even if the value proposition was compelling, individuals could cheat and then make a subsequent purchase under a new name or at a new address.

Sears carefully monitored the amount of credit that customers received, and cut off customers who did not pay. In a rural community, establishing a new name or address would have been difficult. Packages had to be signed for at the post office, and post office personnel knew virtually everyone in town. Further, postmasters were obligated to help prevent postal fraud. Thus, for the vast

majority of customers, the benefits to future interaction with Sears were greater than the gains to cheating today.

A number of features of this early environment that would later change – the cost of becoming a remote merchant, the delay between placement and receipt of an order, the cost of data transmission and the incidence of credit fraud. After the initial phase in which stores like Sears and Montgomery Ward grew from nothing to be large merchants, the cost of becoming a remote merchant was high.⁵ Remote merchants had to print catalogs, maintain warehouses, provide credit and establish a reputation for honesty. Suppose that customers believed that dealing with small remote merchants was riskier, in the sense that those merchants were more likely to not send goods, to not send goods of appropriate quality, or to not accept returns. Then customers were likely to deal with them only if they offered a specialty product or had significantly better terms than the major catalog companies. Further, customers may have been more likely to accept credit and not pay, because the gains to future interaction were lower. Thus, reputation together with economies of scale and scope acted as effective barriers to new remote sellers.

The delay between a customer sending an order and receiving the goods was measured in weeks, limiting the scope for remote commerce. The fact that data was maintained in handwritten ledgers and later using typewriters made data transmission quite costly. As a result, privacy was not much of a problem. Finally,

the incidence of credit fraud was low, because the costs of getting information were sizeable, the probability of being caught was high, and the gains were typically small.

Credit Cards

A major change occurred in the second half of the twentieth century with the development of universal credit cards. The founders of Diners Club, the first universal card, observed that salesmen in New York ate out nearly every night. Their innovation was to recognize that rather than having each restaurant offer accounts to all of their regular customers and having each customer maintain accounts at all of the restaurants in which they regularly ate, it was efficient for both salesmen and restaurants to deal with a single credit entity. And so, in 1949 the first universal credit card was born.⁶

Although merchant to customer credit continued to be important, within a decade, the number of individuals and merchants who used or accepted universal cards increased enormously. Figure 1 shows the explosion of consumer use of revolving credit, most of which is credit card credit.

FIGURE 1 ABOUT HERE

Expansion in consumer confidence in credit cards and therefore their use was enhanced by passage of the federal Truth in Lending Act legislation in 1970. The act's objective was to "assure a meaningful disclosure of credit terms so that the consumer will be able to compare more readily the various credit terms

available to him and avoid the uninformed use of credit, and to protect the consumer against inaccurate and unfair credit billing and credit card practices.” Among other things, the act limited cardholder liability for charges on lost or stolen cards to \$50 under most conditions.⁸ Merchants who had accepted the lost or stolen cards bore the remainder of the losses together with credit card issuers. Congress believed that such an act was necessary because of two factors. First, individual consumers had limited bargaining power relative to the issuing banks. Second, market forces were unlikely to be important because it was so difficult for consumers to compare offers.

With the rise of credit cards, the number of remote merchants increased, and the delay, cost of data transmission, and the cost of fraud fell. The risk and expense of offering credit had acted as a barrier to entry. With the reduction of this barrier, more individuals and firms found it profitable to establish themselves as remote merchants. The time from placement of an order to the arrival of the goods had shortened with the rise of telephones, trucks, airplanes and computers. These changes made remote commerce more attractive than it had been. Using emerging computer technology, remote merchants and credit cards began to collect personal data and to share it with major credit agencies and other merchants.

The change in the cost of fraud is attributable to three factors – the cost of obtaining the information necessary to commit fraud, the probability of being

caught, and the gains to fraud. Waiters, clerks, and anyone else with access to credit cards could copy down numbers or falsify slips. And numbers obtained from face to face or remote transactions were regularly bought and sold on the street. The emergence of markets in stolen credit cards was a reflection of a deeper change in the costs and benefits of credit card fraud (Mandell 1990, pp. 64-69).

Remote merchants were larger, so clerks no longer had the personal knowledge of customers and their order patterns necessary to spot suspicious activity. At least initially, it was nearly impossible to determine whether a card was valid or stolen within a reasonable period of time. At the same time, urbanization made it less likely that the person behind the counter would know the person picking up the package or notice if a false change of address card had been submitted.

Universal credit cards made it possible for thief to rack up charges much more quickly, because he could hit a large number of physical or remote stores within short period of time. The result was a high overall incidence of credit card fraud. In 1973, fraud represented 1.15 percent of sales. The highest incidence of fraud was in airline travel cards, gas cards, and mail order. The first two reflected the fact that airlines did not issue lists of stolen cards, and gas attendants rarely checked cards. The last, mail order, did not require a card at all, only a name and valid card number.

In response to consumer and merchant concerns, credit card companies worked to lower the incidence of fraud using a combination of education and technology. Education campaigns instructed merchants on how to identify fraudulent transactions. Similar campaigns aimed at consumers focused on the risks of giving out credit card information over the phone and what to do if a card was stolen. On the technology side, credit card companies began to offer telephone verification for large transactions and, when it became available, real time automated verification for most amounts. The net result was a fall in overall credit card fraud from 0.52 percent of sales in 1980 to 0.18 percent of sales in 1992 to 0.06 percent of sales in 1998.

In sum, merchants and consumers encountered problems of trust and risk in remote commerce before the advent of the Internet. Merchant opportunism was largely controlled through reputation and the extension of credit to consumers, which acted as a bond of good behavior. The need to establish a reputation and in the early days the need to offer credit created barriers to smaller merchants entering remote commerce. Merchant opportunism with respect to data received relatively little attention from consumers. Consumer opportunism in the form of credit fraud was initially controlled by limits on the amount of credit offered by a company, clerks' knowledge of customers, and tight-knit local communities. With the rise of universal credit cards and other societal changes, fraud became increasingly problematic for merchants. Through education and

technology, merchants, consumers, and credit card companies were able to drive credit card fraud to very low levels.

BUSINESS TO BUSINESS TRANSACTIONS, 1880-1995

In business to business remote transactions, the problems of opportunism are similar to the problems in business to consumer remote transactions. The fact that business to business relationships tend to be longer term than business to consumer relationships and in many cases offer greater value to both parties, however, lowers the incentives for opportunism.

Even with potentially more limited incentives for opportunism, the complexity of most business to business transactions, together with the incompleteness of the contracts that govern them, makes it likely that disputes will arise. Historically, two types of private institutions have evolved to address this issue. The first type of institution, decentralized institutions, is typically associated with small, usually ethnically homogeneous groups of traders who both buy and sell.¹⁰ Individuals governed by these institutions usually have a fairly clear, common understanding about what prevailing business norms state and what they mean in practice. Thus dispute resolution can occur through informal investigation and settlement. Because these communities often punish cheaters through ostracism, it is critical that information about transgressions is transmitted. To maintain a common understanding of norms and transmit information efficiently, groups must remain small and fairly homogeneous.

The second type of private institution, centralized institutions, is usually associated with larger or more heterogeneous groups of traders for whom decentralized institutions would not be successful. Characterized by written rules, formal forums for dispute resolution, and efficient means for information dissemination, these institutions offer businesses or individual traders a framework for conducting trade in the absence of or as an alternative to public legal institutions.¹¹ In the United States, many centralized, private institutions emerged at the end of the nineteenth century in the form of trade associations. Since there was often little agreement as to what the norms were or what they meant in practice, one of the earliest actions of these trade associations was to codify and to attempt to standardize merchant norms.

For disputes that could not be settled through private institutions, the courts took on the function of enforcing prevailing merchant norms. Local and regional differences, however, proved frustrating for business and the legal system, eventually leading the American Bar Association to make uniformity a high priority. One of the outcomes of this movement was the Uniform Commercial Code, which at least in theory codified existing United States business norms.¹² The establishment of more uniform laws and the ability to bring disputes to the courts as a last resort mitigated risk and allowed the development of trust.

Paper contracts with physical signatures have played a key role in the resolution of disputes in all three types of institutions. Parties may or many not choose to rely on the contracts to reach a negotiated settlement, but the contracts do provide a means of tracking agreed upon price, quantity, and other dimensions of the transaction. EDI contracts have many of the same features as paper contracts. The fact that EDI is conducted over secure, private networks ensures that any transmission problems derive from the two parties and not third parties. At the time EDI is established, contingencies for dealing with transmission problems and other data security issues are spelled out in a contract between the two parties. So in practice, EDI contracts have the same status as paper contracts. In sum, businesses also encountered problems of trust and risk in business to business remote commerce before the advent of the Internet. Since most buyers and sellers did not interact particularly frequently, private institutions arose in many segments of the United States economy. By providing rules and enforcement of rules tailored to a specific business community, these institutions allowed businesses to trust one another and trade to expand. Public legal institutions also supported trade, serving as a default forum for dispute resolution. With the rise of the Uniform Commercial Code, businesses faced a more certain legal environment. Prior to the Internet, the biggest recent change was the adoption of EDI over value added networks. Governed by private contracts and

conducted over secure networks, EDI represented a fairly small change relative to the previous, paper-based paradigm.

CURRENT BARRIERS TO ELECTRONIC COMMERCE

Technical Barriers

As we mentioned in the introduction, bandwidth and transportation are key technical barriers to the expansion of B2C. Early predictions that catalog vendors would significantly reduce the number of paper catalogs they produce or cease publishing them altogether have been unfounded.¹³ The reason is fairly simple – looking at most online catalogs is tedious at low bandwidth. Currently only 10 percent of households have broadband (always on, ISDN, DSL, or cable). This number is not expected to rise rapidly in the near term. For instance by 2003, only 33-37 percent of households are predicted to have broadband (Cisco 2001).

Within the transportation arena, there are a number of separate technological problems that have to be resolved before 24-hour delivery can become a reality. The first piece is reducing the time from order to truck. The next piece is delivery from truck to house. Route density is the primary issue here, because density is what will enable twice-daily or more frequent delivery for most households. Once the truck reaches the house, the other key – and as yet unresolved problem – is that of secure unattended delivery. Households in which all adults work are the households most likely to use remote commerce, yet they

are precisely those for whom delivery is the most problematic. For some households, packages can be left on the front porch, or in urban areas, with a doorman. For remaining households, there are two options: creation of a secure delivery site, such as a drop box or garage with keypad, or extended delivery hours to ensure that someone will be home.¹⁴

In the next decade, these technical barriers will be resolved. Using online catalogs will become more attractive, as households obtain faster connections, and online vendors create better catalogs. And 24-hour delivery will become a reality as more deliveries lead to greater density which in turn leads to more deliveries. Similarly, larger numbers of package deliveries will make it more attractive for either households or delivery companies to invest in secure package delivery or extended delivery hours.

The chief technical barrier for B2B is a lack of common standards across vendors and exchanges. The individuals who started many of the B2Bs drew on their own industry experience in a particular segment. During the initial rush to establish exchanges, these entrepreneurs had no standards to draw on for how these exchanges should operate. As a result, interfaces, catalogs, and document management systems were at least partially home grown. For managers interested in doing B2B procurement, this represented an unattractive outcome. Given the sunk costs in training and systems integration involved with joining each B2B

exchange and the uncertainty about future standards, many managers adopted a wait and see attitude.

These technical barriers are already beginning to erode. Industry-wide exchanges such as Covisnt either have or will establish standards that will reduce both the human and the systems integrations costs associated with B2B. Private networks are becoming increasingly popular, as large businesses begin B2B with existing suppliers. The large company sets the standards and then helps suppliers become compliant. Establishing a private exchange solves the standards problem for the parent company, although doing so pushes the standards problem down to the level of the suppliers. Companies that have significant experience with exchanges are increasingly acting as consultants to new exchanges. One result is that sets of client exchanges tend to have similar, if not identical, interfaces, catalogs, and document management systems. Thus, within the next decade, we expect that a small number of standards or possibly even a single standard will emerge for B2B, making it more attractive for both buyers and suppliers to begin transacting online.

Trust and Risk

Four things have changed with the rise of the Internet to make remote commerce between businesses and individuals riskier. First, the fixed and marginal costs of becoming a remote merchant have fallen dramatically with the rise of the Internet. For many goods, economies of scale remain important on and

off-line. Indeed, in commodity markets such as books, music, and computer equipment, we have seen a fairly rapid consolidation of web-based vendors, driven largely by economies of scale. For specialty sellers, however, the web has made it possible for them to reach large audiences much more cheaply than has been possible in the past. Expensive paper catalogs are not necessary, and problems of inventory management are diminished, because web-based catalogs can show actual holdings. Thus, large numbers of sellers have been able to use the web to initiate or expand remote sales. In the limit, the rise of marketplaces such as Ebay has made it feasible for individuals and small businesses to sell to one another quite profitably.

If the propensity for opportunistic behavior is correlated with size, then the rise of large numbers of small vendors has implications for the incidence of fraud. Fraud does seem to have risen; most of it associated with smaller vendors. Some partial solutions have arisen to address this problem. Examples include the rise of Bizrate, Gomez, Deja, and other organizations that pool customer experiences, making reputation more important for small firms than it otherwise might be. Ebay, the largest single marketplace for small vendors, explicitly incorporates reputation. Buyers can view feedback from previous buyers on their experience with a seller and vice versa. Even with these mechanisms, however, fraud remains persistent, in part because many buyers do not check sellers' reputations prior to purchase.¹⁵

Second, the fall in data transmission costs means that the risks associated with transmitting personal information through the Internet (and through conventional channels) are more significant than they were in the pre-Internet era. The problem is that intentional and unintentional security breaches can now expose individuals' personal and credit information to thousands of people. Most major merchants have implemented security to prevent third party interception of information in transit or from the site. Another significant threat is often internal. Without adequate controls, employees can access or sell personal and credit card information stored on site (DiLonardo 2000). Frequent news reports of security breaches have lead consumers to infer that the risks of using the Internet are high.¹⁶

Related to this is the fact that customers are much more concerned about merchant opportunism with respect to data than previously (Buskin 2000). Heightened awareness seems in part a result of the fact that the process is more transparent – entering personal data on a web page can almost immediately result in high levels of junk email. Fears are compounded by the possibility of meta-databases that can offer unprecedented levels of detail about customer behavior (Federal Trade Commission 2000b, p. 21).¹⁸ These fears have had a real economic impact on the Internet channel.¹⁹ One study estimated foregone sales in the Internet channel of \$2.8 billion in 1999. Without intervention, this could rise to

\$18 billion in 2002, nearly half of projected sales of \$40 billion (Federal Trade Commission 2000b, p. 2).

Third, technology has made it more efficient to deliver some goods in digital rather than physical form. Examples include words, pictures, video, software and music. This change exposes a problem for merchants of these goods. As remote commerce with credit cards migrated from paper to telephone orders, merchants no longer had physical signatures. The signature on delivery, however, prevented customers from accepting delivery and then claiming that the goods were never delivered. If goods are delivered in digital form, there is no longer a signature. So, customers can and do regularly accept digital goods and then claim that they were never ordered or delivered.

Fourth, the probability of catching fraud on the Internet is low relative to the pre-Internet era. In telephone-based mail order, the customer representative may be able to make some determination, however imperfect, of the likely validity of the order. And written mail order has a much longer lag time and therefore a higher likelihood of discovery.

For business to business transactions, three things have changed with the rise of the Internet. First, the issues of opportunism are essentially the same as they were in the B2C context. Many smaller buyers and suppliers are either coming into existence or becoming known with the rise of the Internet. If

propensity for opportunism is correlated with size, then fraud can be a significant risk.

Second, the fall in data transmission costs means that the risks associated with transmitting sensitive information over the Internet are more significant than they were in the pre-Internet era. Businesses are particularly concerned about two issues – data security in public exchanges and data security of contracts entered into over the Internet. In public exchanges, businesses are concerned that competitors might be able to access data legally or illegally that would enable them to infer prices or other strategically sensitive information. Exchanges are mitigating this issue through additional security. For contracts entered into over the Internet, there is the possibility – however remote – that the buyer's and seller's copies of the contract will not be identical. This could happen if the contract were altered in transit either accidentally or intentionally or if one of the parties changed their copy in the hopes of gaining some advantage. Both problems are being addressed today through a combination of encryption, trusted third party storage of contracts, and encrypted storage of important information on company sites. Although action has been taken to reduce these risks, data security issues are by no means resolved.

Third, if a Kansas firm purchases something from an Illinois firm through a server located in California, and there is a problem with the transaction, it is unclear what the default legal contract is. Viewed from a historical perspective,

this is nothing new. Prior to the passage of the UCC and even subsequent to its passage, there have been differences in state law. Some of the uncertainty has traditionally been addressed through boilerplate purchase contracts. The remainder has been addressed through norms or in the case of remote contingencies, left unaddressed. With the advent of EDI, firms began to negotiate complicated contracts with partners to address potential contingencies associated with the new medium and clarify the default legal contract. Because they have neither the relative legal clarity of paper-based contracts nor the security of a comprehensive legal contract with their trading partner, however, businesses remain apprehensive about Internet-based transactions.

Institutional Solutions to Problems of Trust and Risk

Transactional opportunism is at heart an old problem. Sears solved the problem through a bond – sending the good with only partial payment – and reputation. Today the same kind of bond is not feasible, because retailers no longer extend credit directly to customers. One possibility is that consumers will quickly learn to deal only with established, brand name businesses on the Internet. Another possibility is that transactional opportunism will be addressed through enhanced reputation mechanisms together with a different type of bond.

The reputation mechanisms that underlie private institutions require three things, if they are to provide participants with incentives not to act opportunistically. First, it must be straightforward to observe other players' past

behavior. In small groups, each member can often observe all other players' past behavior either directly or by asking another player. In larger groups, this is impossible. For reputation mechanisms to work, larger groups need a centralized authority that keeps records of past behavior. Some private sector firms such as Bizrate, Deja, Gomez and Ebay currently provide some information on some firms' past behavior. A trusted centralized site has, however, not yet emerged. We believe that such a site, whether sponsored by a nonprofit such as Consumers Union or a government agency, will emerge. To be effective, these ratings have to be readily available, ideally at the point of purchase. One possibility would be for merchants to implement this voluntarily. Another possibility is for ratings visibility to be a default browser-level option. Alternatively, the federal government could mandate the posting of ratings in much the same way that the Los Angeles department of public health mandates that restaurants post their health inspection letter and number grade in the front window, or states require the visible postings of gasoline prices by grade.

Second, it must be easy to determine whether violations of prevailing norms have taken place. For this to occur, the norms or rules must be clear, and the centralized authority must be able to verify the events surrounding a violation. A reading of comments available on commercial sites indicates that customers' expectations vary, suggesting that norms or rules have not emerged. Thus the trusted centralized site should establish rules, either by clearly posting existing

laws (to the extent that they are applicable) or by writing new rules. If for some reason this proves infeasible, the federal government may need to act. Once the rules are established, the trusted centralized site must have a mechanism for investigating alleged violations of the rules.

Third, it must be feasible to link past behavior to future payoff. If enough consumers observe merchants' reputations and then act on that information when choosing a merchant, the link between the past and the future may be sufficiently strong to guarantee honest behavior. One way to strengthen this link is for merchants to post bonds with a trusted third party and for merchants to pay penalties if they violate the rules. An advantage of this approach is that new merchants can establish themselves by signing up with a trusted third party and paying the bond. Otherwise new merchants may be caught in a cycle of having no reputation and therefore no customers.

If a trusted third party emerges, reputations are readily observable, and the link between past and future is strong, all merchants will have incentives to deal fairly with consumers. Federal intervention may prove useful on two fronts in facilitating the operation of a reputation-based institution. The federal government may help overcome the informational problem by mandating disclosure of a merchant's reputation on its website. It may also act as a trusted third party, if one does not emerge from the nonprofit sector. Thus the institution

may end up being a hybrid private-public institution, rather than a purely private one.

If the foregoing conditions are not met, not all merchants may have incentives to deal fairly with consumers. Given the uncertainty about the trustworthiness of most merchants and the high costs of pursuing complaints against merchants in the courts, the vast majority of consumers will simply choose to deal with large trusted merchants such as Amazon.com or Walmart.com. It is worth noting that federal intervention will not be effective in resolving this market failure unless it addresses the underlying informational problem.

Data opportunism has only become a significant issue in the last decade or so.²⁶ The term data opportunism includes a number of discrete issues including merchant tracking of customers within their site, third party tracking of customers within and across sites, the sale or exchange of customer information, without adequate notice or permission, and data security. The first step in mitigating this issue is for sites to prominently post comprehensive privacy policies. A survey in late 1999 by the Federal Trade Commission found that only 20 percent of all websites and 42 percent of the top 100 websites comply with the four fair information practice principles of notice, choice, access, and security (FTC 2000b, pp. 4, 12). Although these numbers represent an improvement over the previous year, compliance remains inadequate. If a merchant's privacy reputation

could be observed along with its transactional reputation, potential customers could act on this information. Hence, a reputation-based institution could offer merchants incentives to safeguard customer data.

Creating an institutional solution to credit card fraud is inherently more difficult, because criminals exploit the fact that they can temporarily acquire an individual's reputation to make purchases. Criminals then disappear, usually without a trace. Thus merchants must rely to a large degree on self-help. In Sears' day, making use of another customer's reputation was fairly difficult. Among other things, clerks' personal knowledge of customers served as a protection against fraud. Merchants today use sophisticated algorithms that flag suspicious transaction in much the same way to protect themselves.²⁹ Even with active screening, charge backs for Internet retailers are typically around 2 percent, about ten times the rate in physical transactions.³⁰ The problem is that these algorithms over screen, rejecting large numbers (20-40 percent) of valid transactions along with some fraudulent ones (Orr 2000). Thus, merchants are actively limiting B2C, because of problems with fraud.

As a number of commentators have noted, digital goods are ideally suited for sale over the Internet, because they can be copied and delivered over the Internet at close to zero marginal cost (Shapiro and Varian 1998, Bakos and Brynjolfsson 1999, 2000, and de Figueiredo 2000). These properties, however, also make them the most vulnerable to credit card fraud. At the moment, rates of

fraud are as high as 30 percent in these segments, particularly pornography and online gambling (Bicknell 1999 and *Card News* 2000). The problem is so severe that American Express no longer serves merchants whose primary business is the sale of pornography, and Visa and Mastercard are imposing ever-stiffer penalties on sites with high levels of charge backs, one indication of fraud (Hisey 2000). In the absence of effective anti-fraud measures, transaction costs for this segment prove to be prohibitive, leading to market failure. Alternatively, merchants may begin to require cash payments or delay transfer of the good for several days if a credit card is used, negating many of the benefits of the Internet for delivering these types of goods.

We expect many of the foregoing problems to be resolved. Opportunism can be dealt with through private or hybrid private-public institutions that use reputation to provide merchants with incentives to deal honestly with their customers. Although credit card fraud is an inherently difficult problem, merchant self-help measures appear to have lowered transactions costs for physical goods to reasonable levels. Transactions costs for digital goods are currently very high and appear to be restricting the sale of these goods. Data security may be addressed through more stringent measures at exchanges or through the current movement towards private exchanges. On the contract side, current movements towards more stringent security may be fruitful. And for high value contracts, paper or fax may remain the dominant mode of business. Finally,

public legal institutions in the form of amendments to the UCC and expanded case law may individually or jointly diminish the legal uncertainty of transacting over the Internet to acceptable levels.

THE COMING EXPLOSION OF B2C AND B2B, IMPLICATIONS FOR THE
STATES

Bella Hess and Quill

With the removal of barriers to B2C and B2B and the consequent expansion in sales through this channel, tax issues will become increasingly important. As a result of two landmark United States Supreme Court decisions, *National Bella Hess* in 1967 and *Quill* in 1992, remote sellers without a physical presence in a state are not currently obligated to collect and remit compensating use taxes. The Court's rationale in both cases rested on the complexity and therefore high costs of compliance by remote vendors given the very large number of taxing units in the United States. Destination individual and businesses are legally responsible for paying use taxes to their state of residence. State oversight and direct collection of use taxes from households have, however, relied largely on voluntary reporting.³¹ The current conflict over retail sales over the Internet is an extension of historical conflict between the state and local sector and remote mail order vendors who have been able to avoid use tax collection responsibilities. The stakes have become higher in the post-Internet era, however, as the dollar amounts of remote commerce increased.

Whether or not sales and use tax collections are being significantly eroded by the diversion of transactions from traditional commercial channels to the Internet is a hotly debated issue. Cline and Neubig (1999) in a paper for AOL concluded on the basis of an examination of 1998 data that diversion and therefore revenue loss would be rather modest. Duncan (1999) subsequently complained that 1998 was hardly relevant to what might happen in 2003. Bruce and Fox (2001), utilizing Forrester Research, Inc. estimates of B2B and B2C activity growth, concluded that the loss of sales and use tax collections resulting from diversion could be substantial. The loss comes at a time when the sales and use tax base continues a secular decline as consumers substitute out of taxed commodities to untaxed commodities. As a result of this secular decline and the diversion of taxable sales to the Internet, Bruce and Fox estimate that states will have to raise their 2011 sales and use tax rates anywhere from 0.46 to 0.94 percentage points in order to maintain sales and use tax collections (Bruce and Fox 2001, p. 14). Interestingly, at least 75 percent of the incremental revenue loss due to diversion results from B2B tax base loss rather than B2C tax base loss. This reflects the fact that business has more rapidly adopted electronic commerce (Bruce and Fox 2000, Table 2) than typical consumers. Table 1 displays the Bruce-Fox (2000) direct sales and use tax loss estimates, and shows the importance of B2B.

TABLE 1 ABOUT HERE

Two Institutional Solutions

Some institutional change will have to occur, either to adjust to lower sales and use tax revenues or to address the concerns raised by the Court in *Bella Hess* and *Quill*. The high-tech industry, political commentators and elected federal, state and local officials have not overlooked the implications of an explosion of B2C and B2B for the American federal system. Most attention has focused on the fiscal implications to state and local governments of B2C replacing face to face or traditional commerce, and state and local sales and use tax collections decelerating or atrophying. The Internet Tax Freedom Act, enacted by Congress in October 1998 and renewed as the Internet Tax NonDiscrimination Act of 2001 on November 28, 2001, successfully froze existing state and local taxes on Internet access, and placed a moratorium on new taxes through October 2003.

While the no-tax movement was largely successful in forestalling the imposition of new or broader transactions taxes to the Internet, there arose, almost simultaneously, discussions among the state and local sector, various segments of the business community and some academics, including one of this paper's authors, about the dimensionality of some sort of grand political trade that might resolve at least some of the emerging tax issues. The idea of a grand political trade contained the following major elements:

- radical simplification of extant state and local sales and use taxes in return for

- political support from the business community to expand their duty to collect and remit use taxes with the effect of overturning *Bella Hess* and *Quill*.

This grand political trade was debated in two forums during 1997-2000: the National Tax Association's Project on the Taxation of Telecommunications and Electronic Commerce(1997-9), and the Advisory Commission on Electronic Commerce (1998-2000). The range of issues which might effect the above grand political trade includes not only the adoption of uniform administrative rules in such areas as estimated payment, penalty interest rates, uniform registration forms and rules, uniform definitions of casual sales, uniform definitions of timeliness of payments, vendor's discount for turning over use taxes to the destination state, adoption of "ship-to address" or credit card mailing address for determination of state of destination, but also:

- the elimination of all local sales and use taxes and adoption of one tax rate per state, and
- acceptance of uniform definitions of commodities and commodity exemptions.

Given that there are better than 15 states whose local government budgets depend 20 percent or more on *local* sales and use taxes, the elimination of local authority to impose sales and use taxes will entail a major upheaval in state-local fiscal relations (Strauss 1997, Table 16). Overall, better than 7,900 local governments utilize some for of sales and use tax to finance their services.

The NTA project issued its report on September 8, 1999. While there was not agreement among the participants on the final form of a simplified sales and use tax, or an agreement on the particular mechanism (see discussion below) that would implement this reformed sales and use tax, there was a thorough discussion of the options available in solving virtually all of problems arising from the development of a simplified sales and use tax.

The Advisory Commission had a tumultuous start with several government members suing the others in federal court about the propriety of AOL and Netscape each having representation on the Commission after AOL purchased Netscape. Then there was controversy over the naming of its executive director whose spouse was a lobbyist for technology interests, controversy over \$20,000 per person donations to be seated next to Commission Members at private dinners, and finally controversy over the issuance of a Final Report that was not agreed to by the supermajority required in the federal legislation which created the Commission.

Subsequent to the dissolution of the Advisory Commission, several government groups (the National Conference of State Legislatures, National Governor's Conference, and Federation of Tax Administrators) decided to meet to work out the details of a model statute which each state might adopt as a means for the state and local sector to demonstrate both its good faith and its resolve to move forward to collect use tax once the Moratorium expires. Currently 39 states

are involved in the cooperative development of a uniform, standardized sales and use tax.³² Importantly, Kansas, Michigan, North Carolina and Wisconsin are running a pilot to test current technology viz. a viz. real-time sales and use tax calculations, collection and reporting services. The industry participants in this project are esalestax.com, Inc. Pitney Bowes (Vertex, Inc is a subcontractor), Taxware International (Hewlett-Packard and Pitney Bowes are subcontractors to Taxware). The basic idea being tested is to construct a trusted third party, or Certified Service Provider (CSP), to contract with merchants and vendors to perform their sales tax functions. The CSP's functions include tax application, sales and use tax exemption administration, computation, filing, and remittance to the pilot states. The CSP is reimbursed by the pilot state for its services, not by the merchant or vendor. Moreover, pilot activities cover not only remote sales over the Internet, but also phone, mail order, and face to face sales as well. As of March, 2001, 19 states have introduced model sales and use tax legislation based on the work product of the 39 states.

While there is much state and local legislative activity surrounding the development of the model sales and use tax statute and the presumption that widespread adoption would create a multi-state compact, there remains a variety of vexing compliance questions about the ultimate efficacy of such an approach. Hellerstein(2000), among others, points to the uneven state adoption of the Uniform Division of Income for Tax Purposes Act, some 40 years since first

proposed, and the observed heterogeneity in state provisions in such important areas as the nature of the apportionment formula as grounds for pessimism about such a purely cooperative approach. It is worthwhile to remember that the Supreme Court asserted in *Moorman in 1978* that Congress possesses the power to legislate uniform state tax rules among the states (Hellerstein 2000, pp. 1309-10).

Should Congress move forward to do so, the questions of the precise federal role and policy design arise. As McLure(1998) points out, a prominent role for the federal government inevitably runs afoul of state (and local) sovereignty concerns. On the other hand, without some sort of active federal role, it is difficult to envision how use tax compliance can be achieved. A new federal consumption tax with the proceeds shared back to replace extant sales and use taxes may appear straight-forward; however, it is likely that state sovereignty concerns would be vigorously expressed before Congress and make that option unattractive.

The problem of federal policy design involves whether the Congress should provide financial incentives to the states for state by state adoption of what the states agree on as a model statute, and/or provide financial incentives to private interests to achieve the desired goal of an enlarged private responsibility to collect and remit use taxes. Depending on how the enlarged federal role is expressed, there may or may not be new, important implications for other state taxes,

especially business net income taxes. An ongoing concern of the business community involves the potential expansion of the concept of nexus for other business taxes, primarily business activity, income and franchise taxes should the Supreme Court through a new decision or the federal government statutorily overturn *Bella Hess* and *Quill*.

There are a variety of other approaches that the federal government might legislatively pursue that could effect an enlarged private duty to collect use taxes without risking an expansion or alteration of nexus concepts for income and franchise taxes. These approaches generally involve conditioning the application of federal authority to require remote vendors to collect and remit use taxes on state adoption or participation in a reformed and simplified system. The question that then arises is the form of incentive the federal government might legislatively construct to encourage all states that currently impose a sales and use tax to adopt or participate in a reformed system. Given the extent of interdependencies originating between the federal government and the states, this does not seem like a difficult design problem. For example, all states benefit from the bilateral exchange of tax information between the IRS and their state revenue agencies. The federal government might condition further access to such information on the voluntary adoption by any state of a “qualified sales and use tax” which would allow the state to choose the one rate of tax to meet its fiscal needs, but in all other respects be identical among the states. Fiscal sovereignty would thus be

maintained along with simplification, albeit the elimination of local sales and use taxes. This sort of approach, however, does not ensure an information base available to the federal government, presumably the IRS, to ensure that remote collection of use taxes occurs.

Conditioning continued eligibility for the Federal Unemployment Tax Act credit on the positive agreement by any employer to participate in the collection and remittance of use taxes under a harmonized system addresses that problem; however, this financial incentive may not be sufficient to ensure employer/remote vendor compliance. Federal adoption of a high penalty tax, say a 15 percent excise, on all interstate transactions into states which have adopted a reformed and simplified sales and use tax regime unless the vendor demonstrably collects and remits the use tax to the destination state, would appear to provide sufficient incentives for private compliance, and also ensure state adoption of the reformed and simplified sales and use tax. To provide clarity and longevity to such an arrangement, the federal mechanism would be well advised to place the details of the reformed and simplified sales and use tax in the Internal Revenue Code.³³

PAST AS PROLOGUE?

Our historical review of the way 19th century retail commerce evolved reminds us that the states followed suit by modernizing their commercial law institutions to facilitate merchant and customer concerns about risk. Within the past six months, most of the states have adopted some form of digital signature

legislation whose purpose is to provide an improved level of assurance to remote vendors, primarily on the web, that their customers claims are accurate.

Outstanding in most states, however, is counterpart legislation that will protect customers on the web from various forms of vendor fraud. It is readily imaginable that state inaction to reduce the risks of B2C commerce for vendors and consumers, through the enactment of either a digital Universal Commercial Code, or a uniform adoption of UCITA, will put off the supposed explosion of B2C commerce, and forestall the adverse revenue consequences that pessimists expect. On the other hand, state action to solve the commercial law problems facing B2C may be a precursor to achieving some sort of political solution to either convincing Congress that federal legislation is necessary to overcome *Bella Hess* and *Quill*, or finding a cooperative solution that is truly workable.

What is clear to us is that meaningful solutions to the collection and remittance of remote use tax problem will require not only vast simplifications and harmonization of extant state sales taxes, which are long overdue, but also a likely role for either the federal government through a federal agency to determine whether each state's version of a reformed sales and use tax adheres to an agreed upon template, or some other credible third party agency which could prove effective to induce both private and public sector compliance with the model statute.

To date, the states have not recognized that the value to private economic forces from state adoption of uniform commercial laws governing both digital commerce and digital privacy that could then make the explosion in electronic commerce a reality could readily be harnessed to move forward the states use tax agenda.

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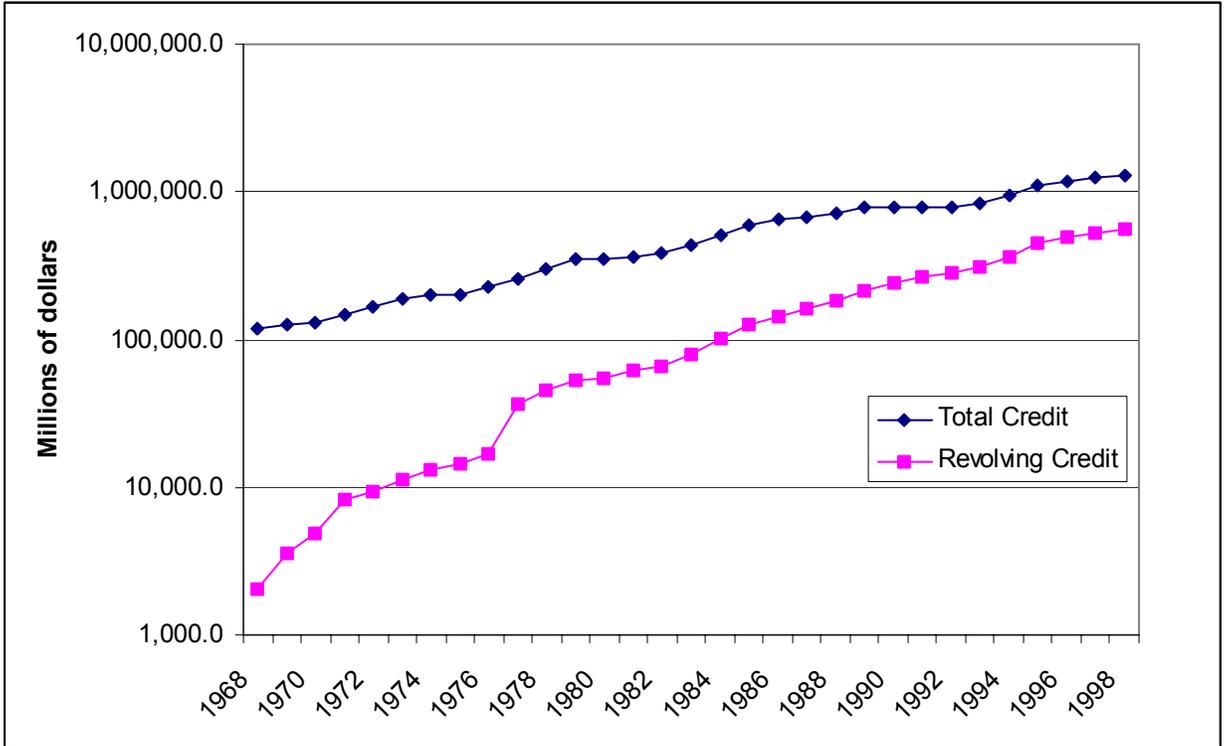
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Table 1: Bruce-Fox (2000) Estimates of State Sales and Use Tax Losses

Due to Diversion of B2C and B2B Sales

	1999	2000	2001	2002	2003
Total Business-to-Business	106.59	244.87	486.63	821.80	1297.80
Less Exempt Sales	-47.54	-105.05	-208.76	-369.81	-616.45
Less B2B on which sales/use tax collected	-34.07	-80.96	-164.77	-281.59	-444.24
Equals B2B Base Loss	24.98	58.87	113.09	170.40	237.11
Less substitution for other remote sales	-12.49	-29.43	-56.55	-85.20	-118.55
Equals Incremental B2B Base Loss	12.49	29.43	56.55	85.20	118.55
Approximate Revenue Loss from B2B	0.80	1.88	3.61	5.44	7.57
Total Business-to-Consumer	19.75	37.79	62.59	98.62	140.19
Less Exempt B2C	-8.32	-15.34	-23.53	-32.74	-41.78
Less B2C on which sales/use tax collected	-1.14	-2.60	-5.51	10.54	-20.57
Equals B2C Base Loss	10.29	19.85	33.55	55.34	77.85
Less substitution for other remote sales	-3.60	-6.95	-11.74	-19.37	-27.25
Equals Incremental B2C Base Loss	6.69	12.90	21.81	35.97	50.60
Approximate Revenue Loss from B2C	0.43	0.82	1.39	2.30	3.23
Approximate Incremental Revenue Loss	1.23	2.70	5.00	7.74	10.80

Figure 1: Consumer Credit (Logarithmic Scale)



Notes: TABLE B-75.—Consumer credit outstanding, 1950–99, Economic Report of the President, February, 2000 based on data from the Board of Governors of the Federal Reserve System. Data on revolving credit begin in 1968.

NOTES

¹ This section reviews some basic results from game theory. These results are discussed in more detail in Clay and Ingram (2000).

² This paragraph is based on Weil (1977).

³ Like other merchants of the period, the cost of the credit was included in the price of the good. This made accounting simpler and allowed merchants to avoid state banking and usury laws.

⁵ To the extent that Sears and Montgomery Ward legitimized remote selling in the minds of consumers, these firms may have lowered costs relative to what they would have been. Overall, however, costs appear to have been higher for these later entrants.

⁶ The discussion of the credit card industry draws on Mandell (1990).

⁸ “The Truth-in-Lending Act originated as part of former President Lyndon Johnson's Great Society plan providing “federal consumer protection.” One commentator explained that the passage of TILA was an effort to “level the playing field” between consumers and “large corporations.” Harrington (2001), p. 113. The other big innovation in 1970 was the introduction of standardized magnetic strips on credit cards.

¹⁰ For examples of this type of institution, see Greif (1989, 1994), Clay (1997a, 1997b), Macauley (1963), Ellickson (1991), and Reid (1980).

¹¹ For examples of this type of institution, see Greif, Milgrom, and Weingast (1994) and Bernstein (1992, 1996, 2001).

¹² Recent legal scholars have suggested that it did not actually codify existing business norms, since little empirical work was done on the content of the norms and the UCC contains some parts that ran counter to existing norms. See Bernstein (1996, 1999) and references cited therein.

¹³ “We saw some major consumer catalogers cut back their mailings and watched their sales dramatically decline.” (Cyr 2000).

¹⁴ We are assuming that most people will find it inconvenient to have large quantities of goods delivered to their workplace.

¹⁵ It is particularly problematic on Ebay, because many small vendors do not take credit cards. This forces customers to pay by check or some other cash equivalent payment system. Unless a customer explicitly chooses to use escrow, he has no recourse if the merchant acts opportunistically. For a list of Federal Trade Commission Internet Auction Fraud cases, see Federal Trade Commission (2000a). On international ecommerce readiness and the role of the state in fostering trust, see Oxley and Yeung (2001).

¹⁶ Weekly media reports of compromised data probably only represent a small fraction of the true incidence. See, for instance, Stoughton (2000) on recent breaches at Eve.com, Western Union, and AOL. Exactly consumers are afraid of is unclear given that liability is limited to \$50. It may be that costly outcomes such as identity theft are more common in the Internet channel than in physical channels. Note that data on the last 6 months indicates that credit card fraud is a relatively minor problem relative to Internet scams of various types and auction fraud.

¹⁸ The FTC survey indicates that more than half of all sites permit third party (e.g. Doubleclick) placement of cookies and less than half of those tell consumers that third parties may be placing cookies.

¹⁹ The overall impact is less clear in the sense that those same purchases may be occurring in the physical channel.

²⁶ Interestingly, the FTC survey showed that privacy seals have not been widely adopted overall, although 45 percent of the sites in the top 100 had them. Further, having a seal did not guarantee that the site complied with the four principles of fair information.

²⁹ Major credit card companies are also working to address fraud. For instance, American Express will begin offering disposable credit card numbers (Sapsford

2000). And customers may soon enter passwords that are routed directly to the bank to authenticate transactions or use digital signatures. Digital signatures (or equivalently fingerprints, retinal scans, or typing) still have unresolved data security issues.

³⁰ The Internet rate is similar to physical rates in 1973. One problem in the current environment is the differential across channels. A second problem is that remote sellers are often smaller now, and so more vulnerable to fraud. A third problem is that the penalties are higher now and card issuers are more likely to cut off merchants with high chargebacks (Anguin 2000 and Guernsey 2000).

³¹ Due and Mikesell(1994, p. 265) report that 17 state income tax forms contain a use tax reporting line.

³² For a description and timeline of the project, see <http://www.geocities.com/streamlined2000/>.

³³ See Strauss(2000) for a further discussion of these alternatives, and Hellerstein(2000) for a positive, constitutional review of these mechanisms.