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Why Don't Consumers Use Electronic Banking Products? Towards a Theory of Obstacles, Incentives, and Opportunities

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Executive Summary

This paper proposes a framework for describing why consumers use electronic banking products such as electronic bill payment, credit cards, debit cards, stored value, and e-cash. The paper surveys the literature; reports on the results of several studies, and develops a framework for evaluating consumer electronic banking usage. The framework includes three primary factors that explain consumer electronic banking usage: (1) household wealth, (2) personal preferences (e.g., convenience, budgeting, control, incentives, involvement, security), and (3) transaction-specific factors (e.g., dollar size, variability of dollar amount, offline versus online location, etc.). A number of ad hoc theories could be created to explain payment instrument successes on a case by case basis. However, the author proposes that this general decision-making framework is a superior tool for management and public policy analysis because of its simplicity, ability to explain a range of outcomes, and ability to develop testable forecasts.

The paper suggests that consumers make rational decisions regarding the use of alternative payment instruments, rather than being "irrationally" resistant to change. Including a broader list of financial and non-financial factors, beyond just cost and convenience, explains the "irrationality" that is sometimes attributed to consumers. In terms of the potential substitution of electronic payments for checks and cash, this framework has two potentially notable implications. It should be noted that these implications are based on theory and consequently should not be construed to represent conclusive findings.

(1) For bill payment, this framework suggests that checks and some electronic bill payment services are not currently perceived to be close substitutes by a significant fraction of consumers and for a significant portion of bill types. New services that increase consumers' leverage for error resolution, offer improved convenience, and offer greater control over the timing of payment will be critical in motivating product adoption. In many ways, these initiatives can be thought of as replicating some of the functionality and attributes commonly associated with credit cards (e.g., easy sign-up, access to convenient customer service, protection against errors, broad acceptance, ability to defer some payments to the future, etc.).

(2) For point of sale transactions, the framework suggests that debit and credit cards are becoming closer substitutes for cash and checks as the availability of these payment options at the point of sale increases. Meanwhile, debit cards are becoming closer substitutes for credit cards based on the attributes financial institutions are bundling with them. The framework also raises the question of whether smart cards are substitutes for credit and debit cards, or whether smart cards in some cases are substitutes for the credit and debit electronic authorization networks. To the degree that this framework's assumptions accurately depict current market developments, one might expect electronic check conversion to become a niche solution while online trading communities may build the business case for some emerging payment systems that have not gained momentum in the past.

This decision-making framework is consistent with new product adoption models that suggest that some consumer segments will adopt products more quickly and that adoption will grow over time. However, this framework also suggests that product and service enhancements will be critical in reaching more mainstream use of electronic banking products. This paper asserts that to the degree that electronic payments carry features similar to those of checks and credit cards, consumers will migrate towards electronic payments. Consequently, the future migration towards electronic banking products will be more dependent on establishing business cases for innovations than in overcoming consumer reluctance. Some payment providers are already bundling more attractive features with these innovations (e.g., debit cards most significantly, as well as electronic bill payment and consumer-to-consumer payment innovations) and increasing the communications programs that support them. Anecdotal evidence provides some support, though not scientifically proven yet, that these efforts are leading to increased consumer usage of electronic banking products.

Nonetheless, absent significant investment, potentially by new competitors who do not require revenues from these investments in the short-term, the paper predicts that the migration towards electronic banking will continue at a modest rate. These changes will occur but will be driven by the efforts of financial institutions and merchants to differentiate themselves more than from responding to consumers' demands for these innovations. The paper predicts that these advances will occur in narrow industry segments where benefits can be realized by some combination of consumers, merchants, and/or payment providers. The paper goes on to note opportunities for the migration to electronic payments relating to: (1) offering greater control, budgeting, recourse, convenience, and incentives; (2) rethinking communications practices; and (3) developing public policy in a manner that promotes private sector solutions.

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"Although it has been long agreed that traditional economic theory 'assumes' rational behavior, at one time there was considerable disagreement over the meaning of "rational." To many, the word suggested an outdated psychology, lightning-fast calculation, hedonistic motivation, and other presumably unrealistic behavior. As economic theory became more clearly and precisely formulated, controversy over the meaning of the assumptions diminished greatly…Strong and even violent differences developed, however, at a different level. Critics claim that households and even firms do not maximize, at least not consistently, that preferences are not well ordered, and that the theory is not useful in explaining behavior."

Gary S. Becker "Irrational Behavior and Economic Theory" (1962)

I. INTRODUCTION

Although the checkless society has been predicted for decades, checks remain the most frequently used non-cash payment method in the U.S. This is contrary to the experience of a number of other countries[1]. Despite the visibility of the question regarding why consumers do or do not adopt new payments technology, little is known systematically about the subject[2]. Given that efforts to motivate a shift away from checks have failed, some industry observers have even suggested that consumers are irrationally wedded to their checks[3]. As a result, financial services industry leaders are increasingly asking for better information and tools to improve decision-making amidst significant uncertainty regarding potential investments in electronic bill payment, debit cards, smart cards, stored value, e-cash, check imaging, and check conversion technologies[4].

The study of payment methods is of interest for several reasons. First, technology is enabling new payment methods to be introduced more easily and frequently. As a result, the very characteristics of what constitutes a payment instrument are changing over time. Second, recent research highlights the importance of the payment-related revenues to financial

[1] See Bank for International Settlements, Committee on Payment Systems (1999).
[2] See Hancock and Humphrey (1999).
[3] For instance, see Snel (1999a).
[4] For instance, see Barron (1999).

systems have extended the reach of one's wealth and creditworthiness, lowered costs, and improved access to customer information. These advances have benefited consumers and merchants alike. Nonetheless, the largest incremental improvements accruing directly to consumers have generally already been reaped. The question then is not "why don't consumers use electronic payments?" but rather "what are the attributes of desirable payments to consumers?"

B. PAYMENTS MARKET OVERVIEW

McKinsey and Company proposes a useful framework for thinking about payments. Table 1 outlines the flows of payments to and from consumers, business, and government, creating a three-by-three matrix of transaction flows that includes the approximate dollar and transaction flows between segments. The author also notes the examples of typical purchases within each category as well as the typical types of payment instruments used. The chart shows that consumers initiate more than 90% of all transactions. Table 2 provides an overview of the mix of different payment instruments across the U.S. economy. While credit, debit, and electronic bill payment products are increasing at significant rates, it should be noted that their relative volumes are much smaller than for cash and checks. See MacKie-Mason and White (1996) for a detailed comparison of the different attributes associated with each alternative payment instrument.

[9] See Bank Systems + Technology (2000).

institutions [5]. Consequently, payment providers will continue to look for ways to increase the value of payment products to customers, thereby enhancing potential revenue streams [6]. Likewise, companies will continue to look for ways to reduce the costs of payments (e.g., reduce the fees they pay to payment providers). For example, checks are being converted from paper into electronic items and cleared via the ACH at the point of sale [7]. Firms are also considering new ways to leverage different electronic payment networks to make payments electronically, for instance, using the ACH network to make debit transactions at the point of sale [8] or using ATM networks to make debit transactions for internet payments [9]. Ultimately, some combination of consumers, corporations, and financial service providers will determine the success of various payment instruments. These innovations will put increasing pressure on the structure of the rights, warranties, and incentives associated with different payment instruments. Therefore, in order to make better forecasts for business planning and enhance public policy decision-making, it is critical to better understand the factors influencing consumer choice among alternative payment options.

A. HISTORICAL PERSPECTIVE

The payments mechanism, like the electricity power grid, is an important piece of the foundation that supports an economy. Today's payment instruments have evolved from barter to commodity-based, to currency and coin, to card-based and, more recently, to electronic network-based systems. The introduction of commodity money reduced the costs and risks associated with trade. Coins and paper currency brought greater standardization, broader acceptance, and lower transaction costs than previous commodity-money or barter-based economies. Card-based

[5] See Radecki (1999) and Ernst and Young (1999).
[6] For instance, see Lafferty International (2000).
[7] See Janssen (1999).
[8] For instance, see Hood (1999).

TABLE 1
AGGREGATE TRANSACTION VALUES, VOLUMES, AND AVERAGE VALUES IN THE U.S.
Sources: McKinsey & Co, 1996 and author's calculations

TO FROM	CONSUMERS	BUSINESSES	GOVERNMENT
CONSUMERS	Gifts, Loans, etc. Cash and Check - $72 billion (0.3%) - 6.44 billion (1.0%) - $13.85/transaction	POS, bill payment, Cash, Check, Cards, ACH, - $5.36 trillion (24.9%) - 589.60 billion (91.0%) - $166.41/transaction	Taxes, User Fees, etc. Check, Credit Card - $1.10 trillion (5.1%) - Billion (0.5%) - $457.85/transaction
BUSINESSES	Salary, Expense, Check, ACH - $2.94 trillion (13.7%) - 6.04 billion (1.0%) - $292.74/transaction	Goods, services, transfers Check, ACH, Wire, Credit - $8.16 trillion (37.8%) - 32.22 billion (5.0%) - $241/transaction	Taxes, Licensing Fees Check, ACH, Wire - $1.19 trillion (5.5%) - 4.95 billion (0.8%) - $310.06/transaction
GOVERNMENT	Benefits, refunds Check, ACH, EBT - $1.76 trillion (8.2%) - 2.16 billion (0.3%) - $162.69/transaction	Goods, Services, Refunds Check, ACH, Wire - $505 billion (2.3%) - 3.56 billion (0.6%) - $141.83/transaction	Intra-Government Check, ACH, Wire - $452 billion (2.1%) - 90 million (0.01%) - $800.00/transaction

TABLE 2 [10]
ESTIMATES OF HISTORICAL U.S. PAYMENT VOLUMES (BILLIONS OF ITEMS)
Sources: Hancock and Humphrey (1997), Federal Reserve Bank of St. Louis Annual Reports, Green Sheet, Faulkner & Gray, and NACHA

PAYMENT	1995	1996	1997	1998	1999	CAGR
Currency	500	--	--	--	--	--
Postal Money Orders	0.20	0.21	0.20	0.21	.225	1.5%
Check	63.0	64.7	66.0	67.5	68.8	2.3%
Credit Card	14.9	16.1	16.9	17.5	NR	11.9%
EFT	10.5	11.8	12.6	13.2	13.3	6.3%
ATM	9.7	10.7	11.0	11.2	10.9	3.1%
Debit at POS	0.7	1.1	1.6	2.0	2.4	33.5%
ACH	3.4	3.9	4.5	5.3	6.2	16.0%

C. KEY QUESTIONS

Despite the breadth and depth of developments in this area, the question regarding what is stopping the migration to electronic banking products (e.g., electronic bill payment, smart cards, e-cash, etc.) remains. From the supply-side, are the incentive structures embedded in various payment instruments limiting the greater acceptance of electronic payment alternatives?

[10] Payment volumes include payments initiated by business and government, in addition to those by consumers.

Are network externalities or the proverbial "chicken and egg" issue leading to slower adoption because of potential challenges associated with coordinating on investments in joint industry-wide infrastructure, standards, or product offerings? Are other supply-side factors such as stickiness of changes in contracting or adverse selection impeding financial firms' ability to implement innovations? From the demand side, do consumers lack sufficient information or understanding about different payment options? Are current communications approaches the most effective ways of delivering financial information? Do other cultural, psychological, or legal obstacles stand in the way of the migration toward electronic payments? Or are paper-based payments more efficient, thereby failing to give consumers a compelling reason to substitute new electronic payments for traditional payment forms?

II. LITERATURE REVIEW

There exists a significant literature on consumer payment choice among "traditional" payment instruments such as checks, credit cards, and cash. In an extensive survey of the payments literature, Humphrey and Hancock (1997) provide an extensive survey of the payments literature. Using a longitudinal Norwegian survey (1989-1995), Humphrey, Kim and Vale (1997) concluded that efficient payment instrument pricing would induce greater electronic payment instrument use because of their lower cost, relative to paper-based payments. MacKie-Mason and White (1996) provide a thorough review of the types of factors that developers of electronic payment systems should consider.

A number of studies have examined consumer payment willingness to use payment cards. Using a multinomial logistic regression model, Carow and Staten (1999) investigated consumer preferences among debit cards, credit cards, and cash for gasoline purchases. Education, income, and presence of a number of credit cards were associated with greater use of credit cards than

cash. Convenience, not borrowing capacity of credit, was the greatest determinant of a credit card user. Lastly, Carow and Staten found that a consumer's ownership of cards and use of credit cards were related to the possession of a certain type of account revealed payment preferences. The American Bankers Association and Dove Associates (1999) conducted a conjoint analysis of a survey of 1,400 consumers to investigate the factors motivating consumer payment instrument choice between online and offline debit. They found that consumers exhibit strong and distinct payment preferences, with different segments of consumers valuing different debit attributes.

Several other studies outline consumer preferences relating to displacing checks. Using the Federal Reserve's 1995 Survey of Consumer Finances (SCF), Kennickell and Kwast (1997) analyzed the influence of demographic characteristics on the likelihood of electronic payment instrument usage. As shown in Table 3, higher levels of education and financial assets increased the likelihood of electronic payment instrument usage.

TABLE 3
FACTORS IN USE OF PAYMENT TECHNOLOGY
Source: Kennickell and Kwast (1997)

	INCOME	FINANCIAL ASSETS	AGE	EDUCATION
In-Person	-	+	0	0
Mail	+	+	-	+
Telephone	+	+	0	+
Electronic Transfer	0	+	-	+
ATM	0	+	-	+
Debit Card	0	+	-	+
Automatic Deposit/Debit	-	+	+	+
Direct Deposit	-	+	+	+
Pre-Authorized Debit	0	+	-	+
Computer	0	+	-	+
Smart Card	0	0	0	+
Statistically significant positive/negative factor (+/-) Not statistically significant factor (0)				

Wells (1996) found that check float does not explain the persistence of consumer check use; rather alternative explanations include the consumer perception of checks and ACH as dissimilar payment instruments, market failure, and measurement errors. Murphy (1991) found that the use of electronic banking does not lead to a reduction in the number of checks consumers write, while an increase in per check charges effects the frequency of check use.

In terms of consumer awareness, a study for the New York Clearinghouse conducted by Wirthlin Worldwide measured usage before and after a marketing campaign was employed from September 1996 to February 1997. Roughly half of all non-users surveyed remembered the principal messages of the campaign, including the ideas that direct deposit is convenient (18%), easy to use (17%) and available (16%). However, the study did not find evidence that communication efforts increased direct bill payment usage. A 1998 Federal Reserve Bank of St. Louis study found that 99 percent of consumers stated they understood direct deposit and 97 percent of current users report satisfaction with the system. Only 55 percent of consumers felt they understood direct bill payments well, though 84 percent of users report satisfaction with this type of payment instrument.

From the supply-side, using 1997 survey data to investigate consumer responsiveness to changes in checking account costs, Stavins (1999) found that the supply of bank deposits to checking accounts is sensitive to banks' per item fees and check return, teller, and foreign ATM restrictions. Using the Federal Reserve Board's Terms of Credit Card Plans Survey to investigate consumers' willingness to pay for credit card service, Stavins (1996) found that consumers respond to product offerings that bundle other services. This research suggests that despite the fact that banks could earn higher revenues by lowering their price, they would not necessarily maximize profit of the accounts. There are also more technical literatures that

consider how and why consumers spend and save [11] and the unique characteristics and needs of unbanked consumers [12]. In terms of modeling consumer decisions, there is an extensive literature on discrete choices that builds on utility maximization within financial and non-financial (e.g., search costs, risk aversion, etc.) constraints [13].

III. METHODOLOGY

This paper provides a framework for considering how consumers choose among alternative payment instruments. The analysis considers the factors that motivate consumer decisions and the ways in the ways consumer segmentation and specific purchase scenarios influence payment decisions [14]. This framework was developed based on the survey of the literature, review of the Federal Reserve Retail Product Office's Qualitative Electronic Banking Survey (1998), and 35 in-depth interviews with a stratified, random sample of consumers in Chicago. These interviews used behavioral interviewing techniques that called for consumer to recall recent payment experiences, specifically the context of the payment, the options that were considered, what they did and why, and what worked and didn't work [15]. This was done for a variety of reasons. First, because of the personal nature of the subject matter, consumers tend to guard their experiences with money and payments. Consequently, consumers may be reluctant to share openly in a focus group on subjects like this. Second, consumers tend to give little thought to low involvement decisions such as the choice to use or not use electronic banking,

[11] For instance, see Friedman (1957) and Thaler (1985).
[12] For instance, see Bond and Townsend (1996), Bezdek (1997), and Hogarth and O'Donnell (1999)
[13] For instance, see Becker (1962), Becker (1965), Celsi and Olson (1988), Kahneman, Knetsch, and Thaler (1991), Belk (1975) and Hershey, Kunreuther, and Schoemaker (1982), and McFadden (1980).
[14] This paper does not consider the merchant or payment provider perspectives, which are both beyond the scope of this one paper. Nonetheless, merchants and payment providers may and will have very different perspectives. For instance, while an ACH-based debit card may be quite attractive to consumers as will be referenced later in this paper, it may not be as attractive to some merchants because of lesser functionality in terms of real time authorization and settlement. Clearly, future research will want to consider the interaction between merchant and providers goals with those of a consumer's goals.
[15] See Wansink (2000). These interviews were conducted by Federal Reserve Bank staff and were supervised by a marketing research consultant.

particularly when financial institutions have not explicitly priced these services in the past. Consequently, consumers are more likely to make-up or infer reasons for their behavior. Third, the surveying process tends to educate consumers and leads them to adjust their responses. The behavioral format allows the interviewer to identify different behaviors and continue on with other lines of questioning before turning to more evaluative lines of questioning which, if done earlier, might bias the respondent's answers later in the interview.

IV. THE CONSUMER PAYMENT DECISION-MAKING PROCESS

The payment decision-making process for consumers is complex [16], making it even more critical to have a systematic way to characterize it. The value of a decision-making framework is dependent on its ability to (1) articulate a framework with ample simplicity to be understood, (2) reasonably characterize actual market outcomes, and (3) provide testable predictions. Based on the survey of the literature and analysis of the qualitative research, a three-factor decision-making framework was specified (See Appendix I). The factors relate to consumer wealth, personal preferences, and transaction-specific factors.

A. Wealth

The first level of the payment instrument decision-making process relates to consumers' ability to fund payments in the foreseeable future. Consistent with Kennickell and Kwast's (1997) findings, wealth (wealth, income, and liquidity more generally) is clearly among the most important influences on consumer payment decision-making. Consumer financial characteristics influence not only payment instrument choice, but also the availability of instruments that consumers can choose in some cases. For example, individuals who routinely do not have sufficient funds to make payments will more likely be influenced by the expectations of corporations who seek to minimize the risk of bounced checks and so forth. Furthermore, even if

consumers preferred paying bills electronically, financially constrained individuals might use checks and credit cards more frequently for their float and funding benefits. While having adequate income and wealth to meet consumption needs is critical, it is also important to note that the stability of income/wealth and expenditures may be just as critical a factor as wealth itself. After all, while they may be able to fund their obligations generally, consumers that experience brief financial shortfalls may not find electronic bill payment desirable as a payment instrument. In these situations, some consumers may choose not to use pre-authorized electronic bill payment as a basic risk management tool (e.g., eliminate the potential for their bank account to be overdrawn). It is also important to remember that different consumer's responses to the same survey question may have very different interpretations based on wealth. For instance, a low-income consumer and a high-income consumer who report concern over losing "control" over initiating a payment in many cases are referring to fundamentally different challenges. The higher-income consumer is more likely seeking improved customer service and recourse (e.g., for instance, a guarantee that a company's error will quickly be fixed), while the low-income consumer is more likely seeking protection against the risk that their accounts are overdrawn.

B. Personal Preferences

The second factor influencing payment instrument choice pertain to consumers' personal preferences. Based on a review of the literature and focus group interviews, five general consumer preferences were identified: (1) control, recourse, and customer service; (2) budgeting and record-keeping; (3) incentives and low cost; (4) convenience; (5) privacy and security; and (6) personal involvement. Some consumers might value more than one preference, but it appeared that most consumers were primarily driven by just one or two preferences across the different payments they were making. The research found these different consumer preferences

[16] Kolsky (1999) describes the consumer's process as an interlocking puzzle.

to be diverse and to have important nuances. For instance, consumers' desire for "control" includes the ability to review, initiate, stop, and record payments, as well the importance placed on recourse and customer service if problems arise. In addition to minimizing cost, preferences for incentives include other benefits such as reward programs and the feeling that a person knows they are getting a "good deal." Convenience involves not only the ability to easily sign-up for electronic bill payment, but the expectation that the entire process, including error resolution, will be convenient and tailored to meet an individual's particular needs. It should be noted that convenience, like other preferences, is a relative term. From a consumer's perspective, once a certain level of convenience is reached, additional convenience brings only incremental benefits. Consequently, consumers may perceive little additional convenience from smart cards when they already carry cash, credit cards, and debit cards. Similarly, electronic bill payment might save time but may not be perceived to be convenient if there remains a risk of errors that cause a consumer significant problems and risk.

Preferences for privacy/security included the ability to withhold information that may be detrimental if disclosed and using payment instruments that minimize the risk of being physically harmed. It should also be noted that privacy preferences must be discussed in the context of relationships between the consumer and other relevant parties. For instance, whether the consumer is being asked to report information relating to a telephone, credit card, or medical bill will fundamentally affect their assessment of the importance of privacy pertaining to a given payment instrument. Personal involvement includes the well-known desire for social interaction (e.g., walking into the bank branch as part of a social ritual), but also includes the sense of accomplishment one gets from doing a job like budgeting and bill paying on behalf of one's family. At another level, a preference for personal involvement relates to feelings of self-esteem

that are associated with differentiation among other consumers, for instance, being a gold-card member who is recognized at the counter versus being a general member. Clearly, national credit card issuers have shown how these consumer desires can influence payment product offerings.

C. Transaction-Specific Factors

The third factor that influences consumer decision-making in the payment instrument arena relates to the specific nature of the payment being made, where it is being made, and how the consumer views their relationship with the merchant. For instance, the extent to which bills are for small dollar amounts and/or fixed amounts positively influences the likelihood of using electronic bill payment. To the degree that bills vary in amounts and/or are for larger dollar amounts tended to reduce the likelihood of electronic bill payment use. Furthermore, consumer beliefs about the quality and timeliness of customer service with particular institutions appear to have a strong influence on their willingness to consider electronic bill payment [17]. Clearly the availability of appropriate payments infrastructure has a significant influence on the choice of payment instrument [18].

It should also be noted that the choice of payment instrument also reflects consumers' unconscious efforts to budget. Consequently, specific attributes of different purchases, for instance cost or life of a product, tend to lead to consistent consumer choices. For example, consumers use credit cards to fund purchases if they did not have adequate funds, but also use credit cards as a short term loan to fund larger capital items that are paid for over time (e.g., installment loans). Carow and Staten (1999) also show that wealth-constrained consumers who

[17] In planning future market research initiatives, it should be noted that consumer's responses to many questions need to be viewed from the context of a specific payment. After all, consumers preferences vary significantly between different situations.

[18] For instance, see Ferguson (1998).

revolve balances tended to use company specific credit cards (e.g., a gas credit card) as an additional source of funding, leaving their general purpose cards available for other uses. Consumers who valued convenience used general purpose cards to consolidate purchases into one account for ease of payment. Consumers who valued record keeping for reimbursements tended to use company specific credit cards to expedite the ease of record keeping.

V. APPLYING THE FRAMEWORK: CONSIDERING SUBSTITUTABILITY?

A. Bill Payment: Check, ACH, and PC Banking

Overall, the results of this analysis are consistent with current moderate increases in electronic bill payment use. Consumers with the highest incomes and who place the highest value on convenience pay a larger fraction of their bills electronically, many times via pre-authorized debit (ACH), because this requires the least amount of time and involvement. Individuals with either moderate economic resources and/or moderate convenience preferences find electronic bill payment to be efficiency enhancing for only small-dollar, fixed dollar payments. Consumers with moderate to high levels of economic resources and/or higher preferences for control tend to use PC banking more frequently because the consumer controls initiating the payment and has improved ability to cancel these payments. Individuals with moderate and higher incomes but stronger preferences for control will continue to prefer checks for many bill payment transactions until financial institutions and merchants can provide adequate guarantees, customer service levels, and other forms of credible recourse. See sections VI.B and VI.C for further discussion.

More importantly, consumers with low and moderate incomes do not perceive electronic bill payment to be a substitute for checks, money orders, or cash. These individuals often prefer the ability to pay late, to make partial payments, and/or to easily stop payments. In fact, some of

these individuals are quite concerned about losing control over the timing of payment and would clearly indicate this on electronic banking surveys. Nonetheless, the concern that this group voices is significantly different that the concern other consumer segments are voicing. See the section VI.B for further discussion. This framework appears to be consistent with recent developments where electronic bill payment usage is increasing modestly as payment providers are incrementally offering better recourse and customer service [19] [20], more convenient electronic bill payment sign-up [21], more ubiquitous bill payment service [22], and incentives to encourage the use of electronic payments[23].

B. Point of Sale: Credit, Debit, and Electronic Benefits Transfer Systems

The increasing use of debit cards might appear surprising to some individuals. After all, debit cards appear, ceteris paribus, to offer less utility than a credit card that offers a short-term, interest free loan coupled with superior customer service and a check that offers float and some record-keeping advantages. Yet, a closer analysis of the evolution of the debit card market suggests that the increase in debit cards usage is consistent with the decision-making framework presented in Appendix II. Here, a fraction of convenience users migrate from credit cards to debit cards as debit cards become comparatively more attractive than credit cards. For instance, consider recent market developments where financial institutions have reduced credit card grace

[19] See PayMyBills.com. "PayMyBills.com Introduces Premiere Bill Management Services – Freeing Consumers from Bill Paying Headaches." [Accessed on June 29, 2000 at www.paybills.com/news.]

[20] At least one Regional ACH association already offers a limited customer service function, serving as an intermediary between financial institutions and corporate recipients of consumer payments. Source: Author's discussions.

[21] Banks have long partnered with corporations and other banks to provide sign-up forms for multiple billers. More recently, the Federal Reserve Bank of Atlanta Retail Product Office and the Federal Reserve Bank of Chicago ACH Department are undertaking a pilot of a web-based enrollment service. These efforts seek to replicate the convenience and functionality associated with European "Giro" based systems.

[22] Electronic bill payment providers are increasingly offering "pay anyone" services where the service provider will make payments to any entity that a consumer would like. This adds significant potential convenience since consumers can pay all of their bills electronically, rather than paying some electronically but paying the rest by check. See Costanzo (1999).

[23] For example, see Toonkel (2000a).

periods; increased fees (penalties) [24]; and offered additional consumer protection to debit cards [25]. In this context, debit cards are increasingly efficiency enhancing for convenience-driven consumer segments. These consumers value the new consumer protections given to debit cards, as well as the fact that they may no longer need to write a check to the credit card company if they make payments via debit card. In a similar manner, as debit cards become more widely accepted by merchants and financial institutions continue to provide better transaction information onto consumer bank statements, and financial institutions explore potential debit-based loyalty programs, convenience and control-seeking consumers are finding debit cards a more attractive option[26].

Again referring to the decision-making framework, it is not surprising that anecdotal evidence suggests that low-income consumers recognize benefits to the migration to electronic payments, as paper food stamps are replaced by payment cards. After all, new electronic benefit transfer (EBT) systems offer convenience since individuals do not need to spend time and resources to cash checks. EBT also offers an improved sense of self-worth since EBT cards appear no different from credit cards when paying, a marked-difference from food stamps [27].

C. Point of Sale: Stored Value and Smart Cards

The modest increase in smart card use in the United States [28], even in case of more successful implementations in closed communities, is consistent with this consumer decision-making framework in Appendix I for U.S. consumers. After all, a significant fraction of consumers already have an assortment of successful payment options available to them, including cash, credit cards, debit cards, and checks. Smart cards require consumers to carry one

[24] For example, see Souccar (1999b).
[25] For example, see Fickenscher (2000b).
[26] For instance, see Stock (2000).
[27] Source: Author's discussions.

more card with, in many situations, only an incremental benefit because of limited retailer acceptance[29]. More interestingly, this decision-making framework explains the greater acceptance of smart card usage in parts of Europe. After all, the European telecommunications infrastructure is slower and, because network authorization is not required, smart cards allow for faster transactions for both the consumer and the merchant [30]. Consequently, it becomes clearer that smart cards are not necessarily substitutes for credit and debit cards, but rather for the electronic authorization networks that financial institutions have built-up over the last several decades[31]. Nonetheless, the increasing success of smart cards at unattended point of sale locations, such as parking meters, stores without attendants, and low dollar/high speed environments such as mass transit does suggest the existence of niche applications [32].

D. Point of Sale: Electronic Check Conversion (ECC)

There is limited evidence to date on recent pilots where merchants are converting physical checks to electronic ACH items as one means to reduce offline debit fees [33]. This framework would suggest that lower and mid-incomes consumers who valued control, record-keeping, and personal involvement will find ECC to be efficiency-enhancing for lower dollar payment transactions [34]. While ECC addresses the fundamental question of whether consumers are willing to migrate from checks and cash to debit-based products, it should be noted that there

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[28] See Chakravorti (2000).

[29] See Good (1997) and Chakravorti (2000)'s discussions of the chicken-and-egg question associated with this technology being rolled-out to a large enough base of merchants to gain consumers' interest.

[30] Source: Author's discussions. Furthermore, any person old enough to remember when retailers had to place a telephone call to authorize a consumer's credit card can appreciate the value that smart cards offer consumers in those countries where the telecommunications infrastructure is either slow or costly to provide quick authorization.

[31] Nocera (1994) reports that in 1972 National BankAmericard Inc. (the credit card organization spun-off by Bank of America, introduced a nationwide network linking computers via telephone lines to authorize credit card transactions at the point of sale. Although the system cost $3 million to implement, it saved NBI members an estimated $30 million in the first year.

[32] See Johnston (1999) and Souccar (1999).

[33] NACHA's Electronic Check Council reported on the results of its check conversion pilots where 24,656 retailers are using ECC and where 1.5 million checks were converted to ACH in January 2000. Montgomery Advisor (2000).

[34] Under this view, ECC would be a product tailored for those consumers who were the heaviest users of checks.

are perhaps more interesting debit-based pilots underway in the food retailing industry . Several sophisticated regional food retailers have had proprietary, ACH-based debit card products in use for over a decade. Some of these retailers report penetration as high as 30% of their customers and also note that users of these "debit" products tend to spend more and to be very stable, long-term customers[35]. This experience, which we must be careful in applying to other scenarios, suggests that some consumers are quite willing to migrate to debit when the product is introduced in a convenient way, does not involve incremental costs, is associated with retailer loyalty programs, and significant customer commitments are made by retailers. At this point, it is not clear that ECC will, in the long-term, be a superior solution to other potential debit card implementations. Nonetheless, ECC may be able to fill an interim niche in the market.

E. Virtual Point of Sale: E-cash and Emerging Online Payments

There is a long history of failed E-cash and micro-payment implementations [36]. Nonetheless, Appendix I puts some of these initiatives into perspective, noting that consumer reluctance was likely more a result of these products offering inferior solutions (relatively few benefits) than of some inherent consumer reluctance to electronic banking innovations. For instance, merchants continue to readily accept credit cards for payment [37], which means that consumers will evaluate E-cash solutions against the convenience and protection of the established and effective credit card product. Second, past E-cash implementations have tended to involve developing entirely new payment systems rather than leveraging current systems. This involves significant investment costs and many times leads to technical challenges in integrating different systems, again decreasing the availability and convenience to the

[35] See Hood (1999). It should be noted that while merchants benefit from lower transaction costs, they incur increased information technology and customer service costs for using a riskier form of payment.
[36] For instance, see Stock (2000).

consumer[38]. Nonetheless, Appendix I illustrates that there may be opportunities for different versions of E-cash. For instance, while early E-cash developers that focused on micro-payments to be used to buy online information (and many times anonymously) did not see the value in bundling recourse and customer service. However, with the advent of the worldwide web and the emergence of online, person-to-person trading communities, a new opportunity has emerged for peer-to-peer payments and particularly payments that introduce some level of recourse and customer service. After all, since there may be no merchant or financial intermediary between two consumers in some auctions, consumers will likely continue to find these types of services more valuable.[39] Again, this framework suggests that payment innovations must be targeted at clear consumer segments and clear transactions where benefits can be identified.

VI. LOOKING FORWARD: CHALLENGES AND OPPORTUNITIES

A. Household Budgeting: A Critical Requirement

The ability to pay electronically is closely tied to the ability to fund payments. Perhaps one of the least reported on but most important obstacles for using electronic payments such as electronic bill payment is the following obstacle: "I don't have the money in my account yet." Clearly, any forecast for the future use of electronic payments needs to consider the impact of consumer finances on payment instrument choice. This suggests that the migration towards electronic bill payment will continue to be uneven, with some segments quickly adopting direct electronic payments while other segments, particularly lower-income consumers, adopting more

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[37] Secure Sockets Layer (SSL) technology appears to have provided an interim solution to providing online protection of credit cards, where Secure Electronic Transactions (SET) technology was less successful in the past because of its restrictive security features. See Zeitler (1999).

[38] See Zeitler (1999). It should be noted that there are also other explanations similar to this including observations that many online information products are either given away for free or bundled with other service fees which decreases the market potential for E-cash. Online purchases can also be bundled into monthly Internet Service Provider bills, much like credit cards, which means that many times these charges are billed eventually to a consumer's credit card. Both explanations suggest that the clear consumer need may not have emerged rather than that consumers are reluctant to use E-cash.

slowly or not at all. In this vein, it is important to note that consumers use of different payment instruments is driven in part by imperfect attempts to budget and control scarce household financial resources. For instance, Carow and Staten (1999) noted the differences between credit card users who used gasoline credit cards as one more source of funding to avoid adding balances to their general purpose credit card, consumers who used gasoline credit cards as a way of segregating personal and business travel purchases to make reimbursement easier, and consumers who used general purpose credit cards rather than gasoline credit cards to minimize the number of accounts they need to maintain.

A.1. Building Budgeting Capabilities Into Payment Systems

Consequently, it will be important to consider how electronic banking innovations can promote improved budgeting rather than increase uncertainty and potential for risk. For instance, consider the risks which pre-authorized bill payment services introduce for variable-dollar payments versus the stability that pre-authorized deductions from payroll transactions introduce. This is especially true when employers are able to break larger deductions (e.g., health care contributions) into monthly deductions which eases one time pressures on household budgets while indirectly contributing to budgeting. Clearly, more needs to be done to understand the relationship between consumer finances and payments behavior [40]. Recent advances in account aggregation technology and, more importantly, financial institutions' growing acceptance of this service which consolidates consumers' financial information is one example of efforts to provide better financial planning and management practices [41].

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[39] For instance, see Fickensher (2000).
[40] See Thaler (1985).

A.2. Rethinking Billing Practices and the Value of Credit-Like Services

The above point emphasizes what financial institutions and merchants alike have recognized for years – credit-based products are a highly valuable stand-alone product and add-on service to consumers. Facilitating consumers' ability to pay for larger dollar purchases over periods of time is a beneficial economic service for some consumer segments. While some might read this to be arguing for significant advances of credit-based services that would "trap" consumers, this analysis argues for credit-based services when justified on clear economic and budgeting principles. In a similar manner, adjustments to billing practices could address this issue. For instance, some large utilities have for years offered consumers the option of paying one set-monthly bill each month rather than variable bills each month and then handling differences at the end of the year.

A.3. Consumer Financial Education

Clearly, as many individuals have noted, the above practices are no replacement for improved consumer financial education. The ability to develop goals and budgets and to make trade-offs among competing needs are topics that will require significant effort from private and public groups alike[42]. This need is particularly important for low income consumers. Kolsky (1999) notes that these consumers' needs are significant and that they may not be fully met by current payment providers.

B. Rethinking Control: From Obstacle to Opportunity

This analysis highlights that control means different things to different consumers – monitoring account balances and bills, initiating payments, advance knowledge of a payment, ability to stop a payment, ability to get a payment problem or dispute resolved conveniently,

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[41] See Toonkel (2000c).
[42] For instance, see Oliver (1999) and Savage (2000).

access to proof of payment, and effectiveness in recording transactions. While control is many times perceived as a significant "barrier" to the greater use of electronic payments, Appendix I suggests that control should be thought of as an economic good with a set of costs and benefits associated with its provision. According to the framework, different consumers may expect and prefer different levels of control. In addition to heterogeneity of preferences among consumers, the framework also suggests that a particular consumer's preferences may be heterogeneous across payment scenarios. In this context, the decision to use a check or credit card versus other payment options can be viewed as the purchase of a low cost insurance contract, which limits future potential payment problems at the cost of some marginal inconvenience and expense.

B.1. From Biller-Initiated to Consumer-Initiated Bill Payments

Many consumers will prefer the greater control offered by paper payment instruments for bills that vary in amount, may be subject to more frequent errors, where customer service and/or recourse may not be perceived to be adequate, or where the ability to make partial payments is important. These same consumers may also prefer electronic payments for smaller, fixed-dollar payments. Consequently, it will be critical for billers and financial institutions alike to consider products and services that increase consumers' control over the timing and amount of payments, for instance promoting PC banking solutions or telephone-based services that allow for easier cancellation or changes in payments. See IV.A.2 above for additional discussion on the inter-relationship between budgeting and consumer preferences/need for control.

B.2. Offering Greater Recourse and Error Resolution

Given the number of parties involved in an electronic bill payment transaction, the consumer, the consumer's bank, the biller, and the biller's bank, consumers may be apprehensive to enter into an arrangement in which errors may be difficult to settle. In addition, any

arrangement that involves multiple institutions is subject to coordination and incentive problems in dispute settlement. Consequently, services that begin to replicate the functionality of the credit card with its easy and reliable 1-800 customer service and error resolution may likely be desirable services for bill payment, debit cards, and EBT. These services not only help alleviate consumers' concerns, but also tend to align merchants' and billers' incentives to provide error-less service. After all, these firms will increasingly bear a greater share of the cost of potential errors than consumers realize. Obviously, there are costs and benefits with these types of commitments and not all firms may be able to justify the investment in order to capture this segment[43].

B.3. Reducing the Need For Error Resolution

To the degree that some financial institutions and billers have comparative advantages in customer service and the quality of billing operations, several traditional market-based mechanisms such as reputation and customer service commitments may play a role in increasing electronic bill payment use. After all, if consumers can be assured that errors will not occur and that they have good recourse if errors do occur, then consumers will be more likely to enroll in electronic banking services[44]. Of course, quality improvements have a cost that some financial and commercial firms may not find profitable to undertake. Nonetheless, it appears that market forces may already be in the process of allowing consumers a choice in this matter (e.g., choosing a provider that is cost-focused versus one that is customer-service focused). As previously noted, the market is also appearing to respond to provide greater protections to debit cards as well as with emerging online payments, as previously discussed.

[43] Clearly, these efforts would have to guard against potential over use. Also, these investments would presume a clear business case that justifies investment. Again, this paper considers only those product features that consumers appear to tend to value, irrespective of whether firms can economically provide them.

[44] For instance, see Hart (1988).

C. Rethinking Convenience

C.1 Consumer-Defined Convenience: End-to-End Service

Some past electronic banking failures that were not readily adopted have been labeled failures due to "consumer reluctance" to change. The framework in Appendix I allows one to focus on the concept of marginal convenience and "end-to-end" convenience, rather than resistance to change. After all, while electronic bill payment is advertised as being more convenient, interviews with consumers confirmed that electronic bill payment is not incrementally more convenient until many or all bills can be paid online and until error resolution amongst banks and corporations can be easily addressed. This suggests that electronic bill payment may move towards European models such as the giro that implicitly tie together improved sign-up, control, and recourse attributes. For another example, consider the lessons from the Mondex pilot in Guelph, Canada. While there were many well-documented accounts of the failure of the Mondex smart card pilot to reach mass adoption in Canada, anecdotal reports suggest that consumers found the home loading terminals to be very valuable [45]. The opportunity to have a "personal ATM" at home won significant, though apparently undocumented, praise. So while consumers could not be induced with small incentives to use the smart card, a number of consumers were apparently willing to pay for access to a telephone loading device for their homes. Clearly the lines between financial and telecommunications access for consumers will continue to blur.

C.2. Leveraging Installed Infrastructure

In a similar vein, the recent reported success of e-mail-based payment products also points to the importance of defining convenience from a consumer's point-of-view, especially when thinking about payment instruments being broadly available. After all, past E-cash

innovations many times required fundamentally new technology to be implemented by financial institutions, merchants, and/or consumers. Yet more recently, innovations have allowed consumers to use their current e-mail and transaction accounts meaning that the products can be rolled out more quickly and to a broader fraction of consumers, unleashing the potential for far more significant change than perhaps was every believed possible [46]. Also refer to the earlier discussion relating to retailers online debit innovations which leveraged the current ACH system. As noted in the introduction, other firms are also looking into ways to continue to leverage ATM networks for internet and bill payments.

C.3. Convenience: A Catch-22?

This analysis also reinforces the often-cited fact that making a payment instrument convenient will only add to its success. For instance, past innovations such as standardized bank routing transit numbers (RTN's), Magnetic Character Ink Recognition (MICR) technology which allows for automated clearing of checks, and electronic imaging technology continue to allow the check to be a low-cost, ubiquitous solution for almost all payment transactions. Clearly, the financial services industry is not unique from this front. Other industries have and do wrestle with similar questions often with no solution other than that markets in the end will determine the outcome often to the betterment of customers and often done by the firm in a better position to produce[47]. Decisions to invest in check imaging and check conversion, though driven by efficiency, may lead to lengthening the success of traditional payment mechanisms.

D. Pricing: Overcoming The Incentives Challenge

D.1. Social Versus Private Incentives

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[45] Source: Author's discussions. Toronto, Canada.

[46] See Toonkel (2000b) for discussion of this market and see Downes and Mui (1998) for a more general treatment of how break-through innovations tend to occur.

The incentives question is one of the toughest questions facing the financial services industry. At a societal-level, Humphrey, Kim, and Vale (1996) suggest that the introductions of marginal price increases that reflect the true social cost for payment services does lead to changes in behavior, at least in some European countries. It is not clear to what degree these results extend to the U.S., which has a different financial infrastructure, but clearly incentives and explicit pricing of payment services will play a role in this future migration.

D.2. Firm-Level Implementation Issues

At the firm-level, Stavins (1996) notes that it may not be as easy for individual firms to introduce effective incentive/pricing programs. Stavins (1996) highlights the important adverse selection challenge the industry faces in targeting incentives, where firms may not always be able to profitably target incentives. Nonetheless, this may be less of a challenge based on interstate deregulation which allows larger firms to increasingly segment their customer bases. Clearly the entry of large, non-bank firms into this area with focused customer bases also offers the ability to implement more targeted forms of incentives either explicitly or implicitly [48].

D.3. Incentives or Disincentives?

The incentive question is also interesting because industry observers sometime suggest that only positive monetary and product incentives encourage usage. Yet, influencing incentives could also mean downgrading the value of some current payment product's attributes to make newer forms of payments relatively more valuable [49]. Furthermore, industry observers many times discuss consumer choice as being critical in all scenarios. Clearly past history suggests

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[47] For instance, consider the debates and uncertainty that surrounds the gradual migration in telecommunications in the move from copper cables to fiber optics.

[48] For instance, Garver (2000).

[49] Anecdotal evidence associated with the success by some financial institutions of eliminating consumer expectation of receiving the return of a physical check is cited as an example of scenarios in which consumers readily accept some lowering of service level. For instance, see Brokaw (1996). Because other factors need to be

that in some cases other firms will decide what consumers will use for payment, for instance, consider mass transit systems that mandate the move to magnetic stripe stored value systems which have seemed to obtain almost universal acceptance where implemented. While this may be troubling to some outside observers, clearly strong consumer demand for these current products and their current product attributes would mean that some payment providers would not see an incentive to degrade services in this way. This model is consistent with the market providing multiple payment options tailored to the specific needs of different consumer segments.

D.4. What Is the Business of Banking?

There are yet even more important incentives-related questions. For instance, some firms suggest that electronic banking products should be thought of as "the cost of doing business," rather than as a profit center[50]. From this point of view, financial institutions would focus on selling investment, credit, and other products, while providing electronic banking products as a bundled service and at no explicit cost. While this subject will clearly promote ardent debate, it should be recognized that it is one of the most basic questions. After all, every service provider bundles together some combination of product value, service, distribution, and price. Clearly, more needs to be known about the economics of bundling and electronic banking products.

E. Communications: Towards an Integrated Approach

E.1. The Communications Message

The literature review highlights the challenges in communicating the benefits and motivating action among consumers for low involvement, commodity products, as confirmed by

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controlled for before deciding that this evidence is proof that consumers are ready for fundamental change in payment services, one should be careful not to extend these results without further analysis.

the Wirthlin Study on behalf of the New York Clearinghouse Association. For instance, while communication campaigns have emphasized the critical benefit of convenience, other motivating factors, including preferences for safety, reliability, control over timing, recourse, and incentives, will be even more critical in the future. Communication efforts should explicitly communicate these features. The Wirthlin study is particularly important because it points out that even communications campaigns that are highly effective in delivering a memorable message may not be highly effective in inducing change. Linking these communications to information on ability to obtain customer service/error resolution and past track records for good service will be critical.

E.2. The Communications Medium and Place

Some researchers have also suggested rethinking when and how communications messages are delivered. After all, while mass mailings and TV advertising are effective tools to deliver targeted messages while meeting deadlines, alternative approaches may need to be explored. For instance, Kolsky (1999) advocates targeting electronic banking advertising when consumers signed-up for banking relationships, when consumer's signed-up for new services like telephone, utilities, insurance, etc., and for targeting consumers at the work place [51]. These approaches have several inherent benefits. First, they help overcome consumer's natural disinterest in thinking about electronic banking products. Second, it targets communications at the point in time when consumers can act on them. Third, in many cases, these approaches would encourage consumers to sign-up electronically before they begin to pay via check. As a result, communications campaigns do not have to get consumers to change per se. Nonetheless,

[50] For instance, see Ollenberg (1999) and Allen (1999). In the first case, electronic banking services are proposed to be supporting core products like asset management and credit products. In the second case, the speaker noted that many new entrants into electronic banking are not entering out of the need to earn revenues only from banking fees.
[51] See Kolsky (1999).

clearly, more must be learned about targeting communications messages in highly effective ways[52].

F. Public Policy: From Standard Setter to Standard(s) Setter?

The analysis highlights the importance of understanding consumers' varying preferences and needs in light of public policy decisions [53]. Public sector involvement surrounding the rights, warranties, consumer protections, and incentives associated with different payment instruments may have significant implications for the adoption of electronic payments. To some extent, consumer protection (e.g., legally mandated business practices) may motivate increased adoption of electronic payments[54]. An argument can be made that there is a positive externality in standard setting or in developing common rules for consumer protection, particularly in an industry with significant fragmentation and where uneven bargaining power between consumers and financial institutions might exist [55]. Yet, it must be recognized that setting these types of rules may bring costs as well as benefits. For instance rules on what firms must do to resolve errors may have the effect of implementing a price floor, which may lead to the unintended result where it is not economical to serve some consumer segments[56] [57]. One potential alternative to this is to have public entities work to coordinate the development of a reasonably small number of standards rather than one standard. The net effect would be a greater emphasis on

[52] See Celsi and Olson (1988)).
[53] For one perspective advocating the need to be looking actively at this, see Heller (2000). For a second perspective advocating monitoring these types of developments but being careful to act only when there is a clear and compelling reason to do so, see Perritt (1999).
[54] See Mann (1999).
[55] For instance, individual consumers may not have an incentive to negotiate for small dollar adjustments to their accounts, even if they are completely justified, if they expect this process to require significant cost and/or time.
[56] This is a particularly important question given the work underway to promote unbanked consumers obtaining financial relationships as part of the EFT99 legislation.
[57] A different argument could be made from the supply side about the introduction of multiple standards as a way to make it difficult to compete. This topic is beyond the scope of this paper.

transparency and disclosure and less on public determination of the final outcome [58]. Clearly, more needs to be known about the costs and benefits of potential public policy decisions. At a minimum, frameworks like the ones proposed in this paper help clarify where public policy decisions may be expected to have an effect, as well as to better understand where unintended consequences may arise.

G. Future E-Banking Forecasts: Making Them Realistic

G.1. Considering Natural Limitations

Important opportunities were noted which could advance the migration to electronic payments. However, it is critical to remember that many consumers do not place much importance on how they conduct a payment and that there is limited explicit cost to consumers for a significant number of their payment choices. Consequently, consumers will generally not spend a significant amount of time on payment instrument choice and will often make decisions based on simplified rules of thumb that help them both economize on time and search costs and limit exposure to potential risk. Furthermore, unless there is a reason to believe in the integrity and liquidity of these electronic payment instruments as part of a prudent risk management strategy, there will be a core part of a household's finances that consumers will choose not to put into electronic payment instruments. There will also be a core group of consumers who will adopt electronic payment instruments only very slowly, as history has suggested in the past migration from valuable metals to paper currency [59].

[58] The approach of allowing-multiple standards to flourish is clearly what many public entities do by abstaining from getting involved in these discussions. But, when public entitites do get involved, it may still be worth considering advocating multiple standards than just one.

[59] See Greenspan (2000).

G.2. New Product Diffusion Versus New Market Development?

Downes and Mui (1998) draw the important distinction between new product introductions which are natural extensions of large firms' current markets versus new products which may require fundamentally new markets to be built. The first case requires careful marketing, communications, and efforts to promote awareness and trial. The second requires developing products for small niche segments and gradually tailoring the products for new segments and new uses over time. Of course the final consumer segment and product might be fundamentally different than the first consumer segment and product. To the degree that consumers perceive new electronic banking innovations to be fundamentally new markets, it is likely that the migration will be slower than one might otherwise expect.

G.3. Business Cases

As a result of the above points, it is increasingly clear that future increases in electronic banking usage will be driven by clear business cases realized by financial institutions and/or corporations from differentiating their products and services rather than in simply focusing on marketing communications to overcome consumer disinterest. These advances will many times require new levels of cross-industry coordination in defining product attributes, in funding research and development, and in handling basic yet critical issues like customer service. While financial institutions and merchants acting alone may have limited incentive to invest in electronic payments given the network nature of these products, recent industry events such as the continued strengthening of shared electronic bill payment infrastructure suggest that the tide may begin to be changing. VI.D.4 also makes the important point that while some incumbent firms or industries may not be able to develop adequate business cases for some new

innovations, it may be possible that firms from other industries will be able to identify clear business cases.

G.4. Defining and Measuring the Usage of Electronic Banking Products

It is critical to note that what is meant by a "debit card," "credit card," or "electronic bill payment" will need to be more clearly and explicitly defined in the future. After all, as noted with debit cards in section V.B, the group of product attributes that firms bundle with payment services will be critical drivers of consumer adoption. The differences between debit cards, credit cards, and/or electronic bill payment will continue to blur. References to "changes" in consumer adoption of electronic banking thus must be viewed in the context of the attributes bundled with these instruments over time. After all, the debit card that consumers adopt in the year 2000 will be a fundamentally different product than the instrument that consumers adopted five years ago in terms of convenience but also in terms of protection from errors [60].

VII. CONCLUSION

This framework suggests that consumers do exhibit rational payment preferences and behaviors. Consumers' behaviors are consistent with their preferences, which vary but may include convenience, incentives, control, privacy, security, and personal involvement. Consumers' financial positions and the nature of specific transactions also have a significant impact on consumer decision-making pertaining to payment instrument choice. The importance of personal finances and transaction-specific characteristics help explain why consumers may sometimes appear "irrational," when in fact behavior was being driven by situational factors. This paper asserts that to the degree that electronic payments carry the broader features similar to those of checks and credit cards, consumers will migrate towards electronic payments at an

[60] See Fickenscher (2000b).

increasing rate. Consequently, the future migration to electronic banking will be more dependent on establishing business cases for innovations than in overcoming consumer reluctance.

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Appendix 1[61] [62]

Consumer Decision-Making Framework

WEALTH	PREFERENCES	PAYMENT SCENARIO							
		Bill Payment					Point of Sale		
		Recurring		Non-recurring			Person Present		Person Not Present	
		Fixed Amount and/or Small $	Variable amount and/or Higher $	Critical/High Dollar	Less-critical/ Low Dollar		High $ / Important	Low $ /Less Important	Physical	Virtual
		Monthly Insurance Bill	Telephone Bill	Taxes, tuition, brokerage	Subscriptions, memberships		Larger shopping trips	Incidentals, fast food, etc.	Vending, mass transit, etc.	Software, auctions, etc.
Low Resources	Convenience	CH, CA	CH, CA	CH, MO	CH, CA, CR		EBT, CH, CR	EBT, CA, CH	CA, SV	CR, CH
	Incentives	CH, CA	CH	CH, CA, MO	CH, CA		EBT, CH, CR	EBT, CH, CA	CA, SV	CH
	Control/Recourse	CH, MO	CH, CA	CH, MO	CH, CA, MO		CH, CR, EBT	CH, CA, EBT	CA, SV	CH, MO
	Budgeting/Records	CH	CH	CH	CH		CH, CR, EBT	CA, CH, EBT	CA, SV	CH, MO
	Personal Involvement	CH, MO, CA	CH, CA	CH, MO	CH, CA, MO		EBT, CH, EBT	EBT, CH, CA	CA, SV	CH
	Privacy/ Security	CA, MO	CH, CA	CH, CA, MO	CH, CA, MO		CH	CA	CA, SV	MO
Moderate Resources	Convenience	ACH, CH	CH, ACH	CR, CH	CR, CH		CR, DB	DB, CA	CA, SV	CR, CH
	Incentives	CH	CH	CR, CH	CR, CH		CR, CH	CH, CA	CA, SV	CR, CH
	Control/Recourse	CH, ACH	CH	CH, MO	CH		CR, CH, ECC	CR, CA, DB, ECC	CA, SV	CH, MO
	Budgeting/Records	CH	CH	CH	CH		CH, CR, ECC	CA, CH, ECC	CA, SV	CH, MO
	Personal Involvement	CH, CA	CH	CH	CA, CH		CH, ECC	CA, CH, ECC	CA, SV	CH
	Privacy/Security	CH, CA	CH	CH, MO	CA, CH		CH	CA	CA, SV	CH, MO
High Resources	Convenience	ACH	ACH, CH, PC	CH	CH		CR, DB	DB, CA	CA, SV	CR, CH
	Incentives	CH	CH	CH	CH		CR	CR, CH, CA	CA, SV	CR, CH
	Control/Recourse	CH, ACH, PC	CH, PC	CH	CH		CH, CR, ECC	CR, CH, DB, ECC	CA, SV	CH, MO
	Budgeting/Records	CH	CH	CH	CH		CH, CR, ECC	CA, CH, ECC	CA, SV	CH, MO
	Personal Involvement	CH	CH	CH	CA, CH		CR, CH	CA	CA, SV	CH
	Privacy/Security	CH	CH	CH, MO	CA, CH		CH	CA	CA, SV	CH, MO

[61] This table simply illustrates the types of payment instruments different consumers might choose for different payment transactions.

[62] ACH = Automated Clearinghouse, CH= Check, CA = Cash, PC = PC Banking, CR = Credit Card, DB = Debit Card, MO = Money Order, SV = Stored Value, EBT=Electronic Benefits Transfer, ECC=Electronic Check Conversion