

PAYMENT METHODS AND PRACTICES AMONG COLLEGE STUDENTS: A CLASSROOM DISCUSSION TOOL

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Abstract

Technological innovations have changed the way we pay for goods and services. While cash and checks are still popular, the degree to which we use paper-based payment methods is steadily declining. Most notably, in the last few years we have begun to rely heavily on electronic payment options including credit and debit cards, online bill payments, and e-money. Near field communication technology, such as cell phones, appears to be the next big step in this rapidly changing field. In this paper, we discuss the results of a survey that we developed to introduce students to these and other changes in payment technologies. The survey can be used to encourage classroom discussion when history of money, types of money, or monetary aggregates are introduced. We also analyze data collected from our students and suggest possible classroom discussion questions.

Key Words: payments methods, classroom activity, survey

JEL Classification: A22, E42

Introduction

Technological innovations have changed the way we pay for goods and services. While cash and checks are still popular, the degree to which we use paper-based payment methods is steadily declining. Most notably, in the last few years we have begun to rely heavily on electronic payment options including credit and debit cards, online bill payments, and e-money. In many countries, these changes have outpaced those in the U.S.² For example, while there are a few cases of cell phone technology being used in the U.S. to pay for items or transfer funds (Marte 2009), consumers in Korea and Japan have been using this technology for years.³ There are also some examples in different countries of biometric payment methods such as fingerprint scanning⁴ and body implants.⁵

In this paper, the results of a survey developed to introduce students to changes in payment technologies are discussed. The survey can be used to elicit classroom discussion at the time that history of money, types of money, or monetary aggregates are introduced. These topics are usually taught in Principles of Macroeconomics, Intermediate Macroeconomics, and Money and Banking courses. Bringing student experiences into the classroom and comparing them with national and international trends is a fun way to get students involved in learning.

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² Humphrey, Pulley, and Vesala (1996) show trends in payment methods in several industrialized economies.

³ "In South Korea, All Life is Mobile". The New York Times.

⁴ See "The Latest Way to Pay is at our Fingertips" in Seattle Pi, or the abc report <http://abcnews.go.com/Technology/story?id=3902517&page=1>.

⁵ "Barcelona Clubbers get Chipped". BBC News.

In the next section we discuss several sources of information that instructors can use to introduce students to the evolution of the payments system, including newspaper articles, online videos, and data sources. We then describe a survey that we developed to use in our courses. Finally, we analyze the data collected from our students and compare it with national trends.

Sources of Information

There are several data sources available to instructors to introduce students to changes in the payments system both in the U.S. and abroad. Detailed sources of information on the prevalence, frequency of use, and trends of payment technologies include the Federal Reserve Payment Studies, the Survey of Consumer Finances conducted by the National Opinion Research Center at the University of Chicago, and the Boston Federal Reserve Survey of Consumer Payment Choice. The main differences are that the first study obtains data from financial institutions while the latter two get data directly from consumers. These sources are freely available online. Private companies also have conducted similar studies, such as Javelyn Strategy & Research, and Visa, Inc. These data are not freely available and are expensive. Some excellent articles that summarize these and other data sources include Foster et al. (2010), Herbst-Murphy (2010), Mester (2006), and Garcia-Swartz, Hahn, and Layne-Farrar (2004).

Several short videos are freely available online for showing in the classroom. These include a VISA commercial in which the line to pay goes smoothly until a customer tries to use cash⁶; a 20/20 segment that discusses fingerprint scanning at a Seattle grocery store as well as microchip implants and retina scanning (à la Tom Cruise in the movie “Mission Impossible”) as potential payment technologies⁷; a Five News segment that discusses near-field communication technology in cell phones;⁸ and a video that shows customers of night clubs in Barcelona and Amsterdam with microchips containing personal and financial information implanted in their arms - radio frequency technology is used to identify the customers and to draw funds from their financial institutions when they purchase drinks.⁹

Finally, there are newspaper articles that show different trends in payment technologies, including money transfers by texting (Marte, 2009), cell phones as all inclusive electronic wallets (Sang-Hun, 2009), and fingerprint scanning and implant technologies (*BBC News*, 2004; *Seattle pi*, 2002).

While all these sources are useful – and some of them are even entertaining – students are more likely to get involved in a discussion if the instructor draws on their experiences. In the next section, we discuss a survey that we designed with this purpose in mind.

Payment Methods Survey

We developed a series of questions that ask students whether or not they have ever used a variety of payment methods, whether or not they use them on a regular basis, which are their preferred ways to pay for small and large value transactions, and how these preferences have changed over the years. Since we wanted to be able to compare students’ answers with national trends, some of our questions are based on the Boston Federal Reserve Survey of Consumer Payment Choice. On the other hand, certain questions, such as the degree to which students barter, are unique to our survey.

⁶http://www.youtube.com/watch?v=Xy_PxLw1B_c&feature=player_detailpage

⁷<http://www.youtube.com/watch?v=ybKSwuIHvL8&feature=related>

⁸http://www.youtube.com/watch?v=zYqmWFRqx_k

⁹<http://www.youtube.com/watch?v=HTs48E0NFXI&p=4B1269095E1791D4&playnext=1&index=5>

We consider twelve different payment methods: barter, or the exchange of goods and services for other goods and services; precious metals such as gold or silver; cash (coins and paper bills); credit cards (such as VISA, MasterCard, American Express, etc.); debit or check cards; checks; electronic bank deductions (such as automated bill payments); biometric payment methods (such as fingerprint scanning); cell phone technology (such as microchips embedded in cell phones or payment by texting); traveler's checks; e-money (such as Paypal); and money orders.

The complete survey may be administered online or in person. We have done both. Instructors should distribute the questionnaire, or make it available online, at least one class period *before* the intended discussion date in order to process the responses. Instructors electing to use the in-class version should allow students 5 to 10 minutes of class time to complete the survey.

Classroom Statistics and Discussion Topics

We have administered the survey in several courses. Table 1 summarizes responses from 142 students. Fifty-seven students in the sample (40.14%) are women and 85 (59.86%) are men. Most students in the sample are white (69.01%) or African American (25.35%). The average and median age of the students are 24 and 22 years.

Table 1: Frequency of Use (N=142)

Question	Have you used the payment method listed below at least once in your life?	Do you use the payment method listed below regularly?
1.Barter	85.21%	42.96%
2.Precious metals [†]	5.26%	5.26%
3.Cash	98.59%	95.77%
4.Credit cards	87.32%	72.54%
5.Debit or check cards	97.89%	93.66%
6.Checks	92.25%	47.18%
7.Electronic bank deductions	69.01%	51.41%
8.Biometric methods	2.11%	2.11%
9.Cell phones	37.32%	24.65%
10.Traveler's checks	24.65%	2.11%
11.E-money	73.94%	36.62%
12.Money order	69.72%	23.24%

[†] Sample = 57

According to the survey, bartering is not uncommon among students. Almost 43% of students said that they bartered regularly and over 85% said that they had bartered at least once in their lives. As seen in Table 2, younger students were more likely to say that they bartered on a regular basis while older students were more likely to say that they engaged in electronic bank transfers.

Table 2: Frequency of Use by Age

Payment Method	Difference between the Proportion of Older and Younger Students (Old – Young)	
1.Barter	-0.2985	*
2. Precious Metals[†]	-0.0790	
3.Cash	-0.0084	
4.Credit cards	-0.0120	
5.Debit or check cards	0.0016	
6.Checks	0.1082	
7.Electronic bank deductions	0.2873	*
8.Biometric methods	-0.0385	
9.Cell phones	-0.0504	
10.Traveler's checks	-0.0385	
11.e-money	-0.0124	
12.Money order	0.0036	

* 1% significance level, ** 5% significance level, *** 10% significance level

[†] Sample = 57

Table 3: Frequency of Use by Gender

Payment Method	Difference in the Proportion of Men and Women (Men – Women)	
1.Barter	0.0728	
2. Precious Metals[†]	0.0909	
3.Cash	-0.0120	
4.Credit cards	0.0687	
5.Debit or check cards	0.0114	
6.Checks	-0.0204	
7.Electronic bank deductions	-0.0204	
8.Biometric methods	-0.0353	***
9.Cell phones	0.2066	*
10.Traveler's checks	0.0353	
11.e-money	0.0842	
12.Money order	0.1245	**

* 1% significance level, ** 5% significance level, *** 10% significance level

[†] Sample = 57

In a follow-up classroom discussion students explained that they typically bartered with textbooks at the beginning of the semester, with goods and services on Craig's list, and informally among family and friends for different services. Some students mentioned bartering car rides for gas money, books for tutoring, and video games and DVDs for other items of the same type. An informal polling of the 27 students in this class revealed that 60% felt that bartering was a convenient way to trade. Finally, while the majority of students (56%) declared

that the state of the economy did not influence the frequency with which they bartered, 37% said that they bartered more frequently during recessions.

Table 4: Frequency of Use by Race

Payment Method	Difference in the Proportion of White and Non-White Students (White – Non-White)	
1.Barter	0.0297	
2. Precious Metals[†]	0.0314	
3.Cash	-0.0612	***
4.Credit cards	0.0960	
5.Debit or check cards	-0.0918	**
6.Checks	0.0909	
7.Electronic bank deductions	0.0863	
8.Biometric methods	-0.0023	
9.Cell phones	-0.1039	
10.Traveler's checks	-0.0023	
11.e-money	-0.0622	
12.Money order	-0.2231	*

* 1% significance level, ** 5% significance level, *** 10% significance level

[†] Sample = 57

Three students answered that they traded metals on a regular basis. The in-class discussion revealed that these are either students who weld or work with scrap metals, or students who are members of the Society for Creative Anachronism (SCA). In their own words: “I received items I couldn’t make myself, like a pair of stainless steel fluted leg armor, food, clothes(for SCA) and so on. We barter and help each other out a lot.”¹⁰

Fifty-three mostly male students (37.32%) said that they had paid for items with cell phones (Table 3). While this is a surprising number these students have been exposed to the technology in Atlanta’s sports arena (Philips Arena) where customers can pay for concession stand purchases with special cell phones.

The percentage of respondents who said that they regularly used money orders is also surprisingly high, especially for Non-White students (Table 4). This is an idiosyncrasy of the housing market where the school is located. Many apartment complexes require tenants to pay rent using money orders.

¹⁰ We do not consider the entire sample when analyzing the two questions dealing with trading in precious metals; we only consider a sub-sample of 57 students from two upper level courses. The responses to these questions in lower level courses appeared to be inconsistent with each other and unreliable.

Figure 1: Preferred Payment Methods (Small Value Transactions)

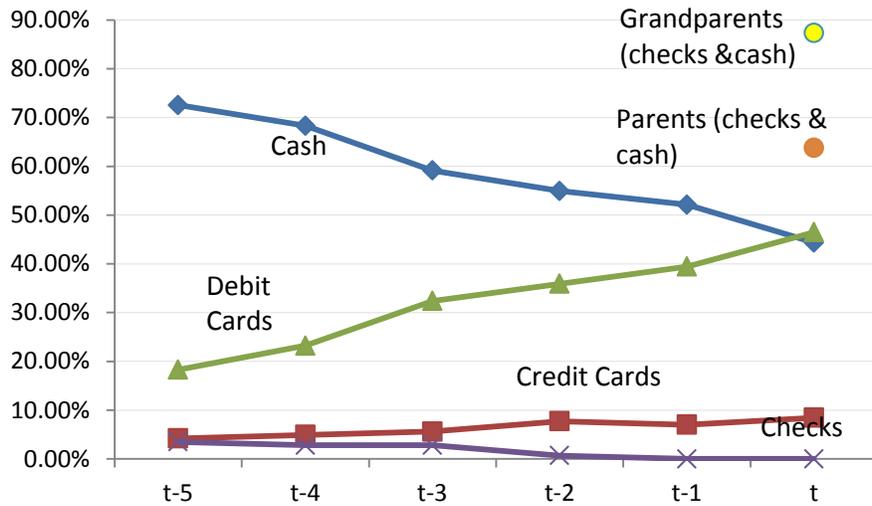
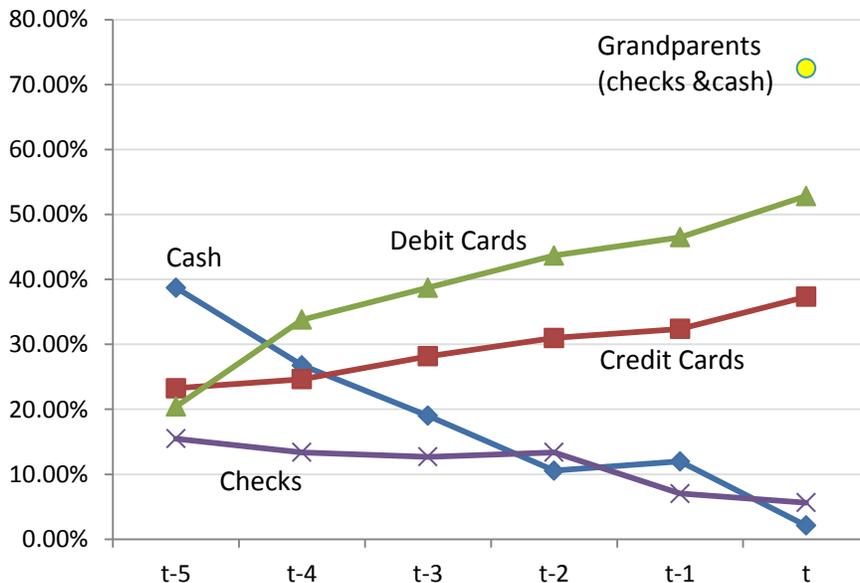


Figure 2: Preferred Payment Methods (Large Value Transactions)



Finally, as seen in Figures 1 and 2 and Table 5,¹¹ cash and checks have become less popular while debit and credit cards have become more popular among students. This trend coincides with national and international patterns (see e.g. Humphrey *et al.* 1996). The move away from paper-based payment methods can also be seen by comparing students’ preferred payment methods with those of their parents and grandparents. More specifically, the younger

¹¹ Figure 1 summarizes the responses to the questions “Which is your preferred method of payment for small value transactions?” and “Which was your preferred method of payment for small value transactions x years ago?” where x refers to one, two three, four, or five years. Similarly, Figure 2 summarizes the responses to the questions: Which is your preferred method of payment for large value transactions?” and “Which was your preferred method of payment for large value transactions x years ago?”

generations are more inclined to pay by electronic means and the older generations are more inclined to use cash and checks. For example, students reported that their parents and grandparents preferred to pay for small value items with cash (63.38% of parents and 81.69% of grandparents); grandparents preferred to pay for large value items with checks (38.73%) and cash (33.80%), while parents preferred credit cards (39.44%) and checks (24.65%).

Table 5: Change in Frequency of Use (N=142)

Do you use the payment method with more, less or same frequency than before?	More Frequently	Less Frequently	With the Same Frequency
Cash	11.27%	74.65%	14.08%
Checks	9.86%	74.65%	15.49%
Credit Cards	47.89%	26.06%	26.05%
Debit Cards	80.99%	7.75%	11.26%
Electronic Bank Deductions	38.73%	15.49%	45.78%
E-money	30.99%	22.54%	46.47%

Conclusions

We present a survey developed to introduce students to changes in the payments system. The survey asks students whether or not they have ever used a variety of payment methods and the frequency with which they use them. The survey considers twelve alternative methods: barter, precious metals, cash, checks, debit cards, credit cards, biometric payment methods, cell phones, traveler's checks, money orders, electronic bank deductions, and e-money.

Having administered the survey several times, both online and in a classroom setting, we find that students' preferred payment methods follow national and international patterns. Cash and checks are losing ground as preferred payment methods, while debit and credit cards are becoming more popular. This result is particularly pronounced for large value transactions.

We found some interesting results and conducted classroom discussions around them. Many students engage in barter on a regular basis, for example, finding it more advantageous to barter textbooks than to participate in a used book market. They also regularly trade DVDs, video games, electronic devices and services. The prevalence of barter led to discussions on tax evasion as well as the winners and losers in a barter society.

Another result that was discussed in class was the common use of money orders by students. During this discussion, it surfaced that many apartment complexes require students to pay rent using money orders, because landlords cannot be sure that their personal checks have sufficient funds. Even though there are significant transaction costs associated with money orders, many students are familiar with them and use them, because they are required by rental agreements.

Some serious topics brought up by the survey include the underground economy, tax evasion, privacy concerns, and whether or not the concept of "money supply" as taught to students needs to be revised to include the ever changing nature of money and payments methods.

While our survey concentrated on students' preferences, it did not ask for the reasons behind their choices. For instance, why do some students rely on credit cards while others do not? Why do some students rely on cash while others do not? Is there a rational or an irrational

explanation behind their choices? More research is needed to understand why students choose the payment methods that they do.

Another question that we did not address, but is worth considering in our next iteration, is whether or not individuals always have a choice of payment method. Some sellers restrict payments to cash only, cash or money order, or some selected credit cards. This can potentially lead to an interesting classroom discussion regarding the concept of “legal tender.” Although currency may be recognized as “legal tender” by the government, for instance, under some circumstances currency is not accepted to meet debt obligations.

Finally, another necessary step in our research is to look at other communities, both inside and outside a university setting, and in the U.S. and abroad. Individuals (students or otherwise) in more metropolitan areas may be more inclined to use electronic payment methods, while individuals in more rural areas may rely more heavily on cash. Similarly, cultural idiosyncrasies may influence payment method choices. Furthermore, given our research design, we cannot tell how accurately our students provided information as to their parents and grandparents payment preferences. Extending our research to a broader community will help to determine the true preferences of older generations and the accuracy of students’ perceptions.

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