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Debt Decision and Repayment of US Young Adults

This study investigates the characteristics of young debtors at risk of repayment problems. A cumulative logistic model is used in order to examine the effects of explanatory variables on the probability for young adults to pay off debt obligations. The following conclusions can be drawn from the results. First, the high indebtedness of young debtors increases the probability of payment delinquency whereas high income by young debtors decreases the probability. Second, financial emergencies that young debtors experienced and payment delinquency are positively related. Finally, financial resources for emergency needs reduced the probability of being delinquency on payment of household debt.

Young adults during the 1990s were struggling with student loans and credit card debt even though they were riding the technology boom to great heights (Draut & Silva, 2004). In the 2000s, young borrowers are still going deeper into debt. In the *Chicago Tribune* Steward (2005) mentioned if Generation X got tagged as the slackers, Generation Y is quickly becoming the clueless debtors. Teik (2005) defined the young adult group as "Generation D" or "Generation Debt". According to Lewis (2001),

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previous generations tended to begin adulthood with reduced resources such as "milk crates in the living room, Old Milwaukee in the fridge" and they worked their way into material comfort while learning that buying is closely related to earning. Conversely, many in Generation D begin adulthood with material comfort. Dçmos (2007) demonstrated that current young adults are relying more on credit to cover basic living expenses, particularly during the first few years in the workplace and identified several factors related to payment problems. For example, many young adults are expected to reply that the "credit line becomes a life line" because the starting salaries are not enough to pay off rising student loan bills, housing costs, and health care costs. Also, the high debt of young adults threatens the ability to manage the costs of living, build assets, save for retirement, and support a family.

According to the Survey of Consumer Finances, families headed by those less than 35 years old were the first group of debtors without any payments that were due sixty days or more and they were also the second highest group of whose debt ratio was greater than 40 percent (Bucks, Kennickell & Moore, 2006). Data on U.S. family finances, Draut and Silva (2004) found that young Americans have the second highest rate of bankruptcy after those aged 35 to 44. The rate among 25-34 year olds increased between 1991 and 2001, indicating that Gen Xers were more likely to file bankruptcy as young adults than were young Boomers at the same age.

One of the warning sign of debt problems is deteriorating repayment performance. The problems in debt repayment might influence the economic security of borrowers since these problems might cause serious economic consequences. The most direct consequence is a late fee that has risen by 194% during 1993 and 2005 (Cardweb, 2005). Next, the payment history is recorded by credit reports, often resulting in lower credit scores used to determine insurance rates and levels of risk associated with most loans. The potential employers may check the credit history of job applicants before hiring them and landlords may check it to see if they would be wise to give those looking for a room a lease or not (Goldsmith, 2005). Also, debtors who are late in debt payments with low credit scores may be the target of universal default (Sahadi, 2005). Also, these universal default policies and penalty interest rates employed by a host of credit card industry makes it more difficult to pay off the debt in a timely manner (Dçmos, 2007). The lower credit scores of young debtors make some young borrowers experience higher interest rates or insurance rates when they look for a home mortgage or education loans for further study. The fact that a poor credit history might negatively influence employment is in that many young borrowers are looking for a job.

The concern outlined earlier demonstrated the need for a better understanding of factors related to debt decision and debt repayment among young debtors. Few studies have demonstrated plausible reasons. For example, Redd (2004) attributed the debt problems among young debtors to the growing gap between family affordability and college prices. This argument was supported by the fact that the total amount of financial assistance provided to students increased more than three times since the early 1990's and most of the increase had been in student loans. The increase in student loans can be explained by the fact that federal and state financial aid policies changed from grants toward loans because of changes in the federal reauthorization of the Higher Education Act of 1965 since 1992 (Pascarella & Terenzini, 2005) and the rising cost of college tuition (Redd, 2004). Draut and Silva (2004)

attributed the higher indebtedness of the current young adults (than that of the generation at the early 1990s) to the fact that wage growth has been stagnant or increased slowly, whereas costs of child care, transportation, and housing has increased. Additionally, Draut and Silva (2004) speculated that the aggressive marketing to young people and deregulation increase the availability and fees that make it difficult for young Americans to be relieved of debt.

Limited information exists about the borrower-related characteristics of young debtors with repayment problems. Having a more comprehensive understanding of young adults with debt repayment problems will be beneficial for both practical and theoretical reasons. The objectives of this study are twofold. First, to describe the debt decision and repayment pattern among young adults. Second, identify young adult debtors who are financially at-risk and may be potential defaulters to quantify which factors have a higher impact on payment delinquency by young adult debtors. Based on theoretical backgrounds regarding the ability of debtors to pay and findings of previous studies, this study is interested in the relation between the financial emergencies of young debtors, payment performance, and role of financial resources available in emergencies in the deterioration of payments. The study presents the questions as follows. 1) Whether the ability of young debtors to pay can account for payment delinquency; 2) Whether there exists a relation between financial emergencies and young debtors in their payment difficulties; 3) Whether the financial resources of borrowers available in emergency will reduce the probability of payment delinquency. This study presents the relevant theoretical framework and existing research and then describes the dataset and method used. Finally, the study presents empirical findings and conclusions.

LITERATURE REVIEW

Theoretical background

Ability-to-pay theory The debt payment model for

young debtors is grounded in mortgage literature on the ability to pay theory. This theory suggests that individuals involuntarily default when they are unable to meet current payments. This theory ignores the relation between debt difficulties and the unwillingness of debtors to pay or forgetfulness in the assumption that a borrower refrains from default if the income is sufficient to meet periodic debt obligations without causing undue financial burden (Weagley, 1988). This theory intensifies a greater role for flow measures of mortgage repayments in determining delinquency patterns and argues that lower monthly payments retard the decision to default.

Several studies on debt repayment have supported this theory. For example, Jackson and Kasserman (1980) tested if borrowers default only when the income flow becomes insufficient to satisfy periodic payments requirements. They found that loan-to-value ratios and mortgage interest rates correlated to payment defaults.

Volkwein *et al.* (1998) employed the ability-to-pay theory in examining the similarities and differences in student loan default among whites, African-Americans, and Hispanics. The study projected that inability to pay would be the most obvious explanation for default This projection is confirmed by the large number of defaulters indicating that the primary causes were unemployment and low wages, whereas ignorance and misinformation were not significant determinants. They also expected that the income levels of borrowers and families exert substantial influence on the loan repayment behavior. The study suggested the attention on the earnings, marital status, and family size of a borrower, but also on parental income since some individuals who find themselves in financial difficulty may be able to rely on parents for financial assistance. Clauretie and Sirmans (2003) supported Volkwein *et al.* (1998) by showing that personal characteristics of borrowers that include family size, source of income, number of dependents, and total family earnings were related to loan repayment.

The theory also assumed that certain trigger events in life that have strained resources that trigger default (Elmer & Seelig, 1998). For example, Barth

and Yezer (1983) considered financial events as a common reason for default since default will occur whenever the current income of an individual is less than expenditures or it falls below the total of the mortgage principal plus interest. Quercia, McCarthy and Stegman (1995) analyzed data from annual surveys over a six year time span, tracking borrowers who received assistance through the FMHA Section 502 program. With regard to trigger events, they found that both change in marital status and loss of a dependent household member were statistically significant and positively correlated with the probability of foreclosure. They also found that higher payment burdens were associated with higher incidences of foreclosure, suggesting that reductions in borrowers' ability to pay were a factor in foreclosures.

Financial emergencies A number of studies on household debt payment have identified the financial emergencies that borrowers experience as one of the important factor which influence debt repayment performance (Elmer & Seelig, 1998; Gross & Souleles, 2002; Reeder, 2004; Springer & Waller, 1993). Several studies weigh the effect of financially negative events in the delinquency model showing that solvency is likely to decrease for those who experience financial emergency. For example, the negative income changes of the borrower, an increase in living expenses, or sudden increase in debts that impede the ability by the borrower to pay debts on time. These incidences might trigger poor payment performance. Also, employment is a shift (such as from full time employment to self-employment) that may result in the increased volatility of loan repayments and credit card expenses (Kordichev, Powel & Tripe, 2005).

Getter (2003) included financial events such as an unexpected rise or fall in income in his delinquency model. That study found that many of the significant variables related to delinquency risk represent changes in economic circumstances occurring after the household credit was granted. Getter (2003) used the 1998 SCF question 'Is your 1997 income unusually high or low compared to what you would expect in a normal year?' in order to

capture the effect of a negative financial events. Having an unexpectedly low income and being divorced or separated was found to be a significant factor of the probability of payment delinquency. Avery *et al.* (2004) provided more insight on the role of financial emergency in the default model. They found that long-term married individuals have lower likelihood of default compared to never married individuals. This suggests that long-term married individuals are less vulnerable to income disruptions, possibly because they have two income sources. People who migrated from joint to single accounts during from July 1996 to July 1997 and people newly divorced or separated were more likely to default on new accounts. These borrowers have higher likelihood of default compared to "never married" individuals when other factors are held constant. Less recently "divorced" was only slightly more likely to default than "never married", suggesting that the adverse financial consequences of divorce or separation have both permanent and transitory influence. Lyons (2004) also expected that the negative financial incidences such as an increase in tuition or living expenses, car repairs, or medical expenses that influence the ability of students to meet debt obligations. However, no variable was included the model to test the effect.

Resources available in emergency Several studies on debt payment have focused on the effect of resources available emergency. As discussed above, adverse financial events might deteriorate the solvency of borrowers and make it difficult to make a debt repayments in a timely manner. However, house-holds might be protected against such financially negative events if they have enough resources available in an emergency. Even though two households experience the same financially adverse incidences, they might deal with these situations and manage their debt repayment obligation in a different way depending on the resources they have in an emergency.

Reeder (2004) mentioned that financially negative impacts could be buffered by household savings, insurance, and the ability of a borrower to have support from family, friends, and social organizations. Black and Morgan (1999) found that holdings of liquid assets also lowered delinquency risk dramatically and financial resources such as large amount of stocks and bonds reduced the risk of delinquency. However, the impact of the last two resources was insignificant in the statistical sense.

Getter (2003) included financial wealth and homeownership in the model and found that these two variables were also important determinants that explain delinquency risk. In Boyes, Hoffman and Law (1989), being a homeowner is associated with a lower chance of default, a renter associated with default. Similarly, the analysis by Lyons found that renting an apartment increased the probability of delinquency, but being financially independent and receiving financial aid increased the probability of not paying balances in full each month. Boyes, *et al.* (1989) also found that being a homeowner is associated with a lower chance of default, a renter associated with default.

Previous Research

Young people in credit markets have received less attention in scholarly literature, although economic theories posit that the ability to borrow may be critical to "attain a number of milestones that typically are related with adulthood" (Chiteji, 2006). This study observed a few exceptional studies focusing on credit behavior among college students rather than credit problems among young debtors. First, Lyons (2004) explored a profile of financially at-risk students. For empirical purposes, the study defined students as "financially at-risk" if they met one or more of the following characteristics: 1) have credit card balances of $1,000 or more, 2) are delinquent on credit card payments by two months or more, 3) have reached credit cards limits, and 4) only pay off credit card balances some of the time or never. In the study, financially at-risk students were more likely to come from low to middle income families, be financially independent, and racial/ ethnic minorities. In addition, they received financial assistance, held $1,000 or more of other types of debts, and acquired credit cards by mail, at a retail store, or on campus.

Also, Pinto and Mansfield (2006) extended the

work of Lyons (2004) using data on student loan debt and prioritization of debt repayment and provided a profile of financially at-risk students based on credit card usage behavior. When compared to the non-financially at-risk students, those who are in the financially at-risk group had higher student loan balances. In addition, if forced to prioritize debt repayment after graduation, those who were in the financially at-risk group indicated they would pay any credit obligations before making student loan payments.

This study observed a number of studies on debt problems for the general population. Most of them included the age of the borrower as one of the important factors to explain debt repayment and provided insight into understanding the debt problems of young debtors. However, there has been an inconsistency about the effect of age on debt repayment. Some studies (Morgan & Toll, 1997; Anderson & VanderHoff, 1999; Stavins, 2000; Bertaut & Haliassos, 2002) expected that age could be a significant factor in credit default and confirmed that the age of household heads was negatively related to debt repayment difficulties. They showed that the increased age of a borrower decreased the likelihood of credit repayment difficulties. In addition, Sullivan and Fisher (1988) found that the group with highest probability of payment difficulties was those in the 25 to 34 age using a 1983 Survey of Consumer Finances.

Contrary to these findings, Hakim and Haddad (1999) found that age was not significant in all regions except the southwest, where default appears strongly associated with older borrowers. The authors attributed this result to declining property values in Texas and surrounding regions and problems caused by the oil glut and severe depression during the time period of this study rather than the age effect. Also, Zhao (2003) grouped the ages of respondents into five categories in order to capture the non-linear relationship between the age of the borrower and the household debt burden. No statistically significant relationship was found for this variable.

Interestingly, Ambrose and Capone (1998) provided a detail explanation on the mixed results of

age effect on debt repayment problems. For example, they described that younger homeowners tend to have fewer resources to depend on if they need to avoid a default. Therefore, young debtors were more likely to experience repayment problems. On the contrary, younger homeowners tend to be re-employed, which may enhance the chance of getting loans reinstated. Therefore, the young borrowers might be able to get out of debt with ease.

Research Hypotheses

H₁ The ability-to-pay theory suggests that individuals make payment delinquency involuntarily only when income is insufficient to meet the debt obligations Therefore;

H1-1 Young debtors with higher indebtedness level are more likely to make late or missed payment on household debt.

H1-2 Young debtors with higher income are less likely to make late or missed payment on household debt.

H₂ Even though young adults have every intention of paying off debt obligations when they are incurred or they makes make assumptions about the future ability to repay loans in planning their borrowing, the borrowers are unable to repay current debts due to the financial emergencies. Therefore;

H₂₋₁ Young debtors who experienced income decrease compared to the normal year are more likely to make late or missed payments on household debt. The coefficient for income decrease is expected to be positive.

H₂₋₂ Young debtors who reported the health conditions are more likely to make late or missed payment on household debt. The coefficient for health conditions is expected to be positive.

H₃ If young adults have resources available in an emergency, they will deal with the financial events in life and keep up with debt obligations properly. Therefore;

H₃₋₁ Young debtors who have liquid asset are less likely to make late or missed payment on household debt. The coefficient for

liquid asset is expected to be negative.

H$_{3-2}$ Young debtors who are able to use a support network including family or friends in emergencies are less likely to make late or missed payment on household debt. The coefficient for financial assistance in emergencies is expected to be negative.

METHOD

Data

The debt repayment performance of young adults that was analyzed in this study was drawn from the Survey of Consumer Finances (SCF), a triennial Federal Reserve survey of the assets and liabilities of American families. Data from the SCF are widely used, for analysis at the Federal Reserve and other branches of US government to work at various economic research centers (The Federal Reserve Board, 2008). Respondents are selected randomly and they are strictly voluntary in order to ensure the representativeness of the study (see more information on website of The Federal Reserve Board). The SCF allows examining household debt issues by drawing on the extensive reporting of both household balance sheets and the financial services usage of households.

The 1995 to 2004 SCFs have been combined in this study to obtain an adequate sample size since the number of payment delinquency of household debt per each year of survey was relatively low for the econometric estimates on the probability of making payment delinquency of household debt. Overall fewer than 100 households in each year of survey reported delinquency or serious delinquency (defined below). This study expected to obtain meaningful estimates on the determinants of payment delinquency of household debt in combing four datasets through the combination of four survey years 1995, 1998, 2001, and 2004 (the most recent data available). The total number of observations used in the multivariate analysis was 3,372.

Sample

Samples used in this study meet the following two criteria. (1) The age of household head in 25-34 and (2) those who made repayment of any of the various loans or mortgages during the prior year of the survey year. All analyses are in reference to a household during 1995 to 2004. The observations used in the current study are 3,372 households including 824 in 1995, 862 in 1998, 876 in 2001 and 810 in 2004. The first two descriptive findings (shown in Table 1 and Table 2) compared those who are aged in 25-34 with all households regardless of whether they made any payment. The third descriptive finding (shown in Table 3) and the multivariate findings limited the sample into those who are aged 25-34 and made payment of any of the various loan or mortgage during the prior year of the survey year.

Analysis

A cumulative logistic model was used in order to examine the effects of explanatory variables on the probability for households to pay off debt obligations. It is similar to logistic regression but modeling an ordered categorical outcome with more than two levels. The dependent variables are defined as two. The first dependent variable is whether respondents reported that payments on any of the loans were made later or missed or not. Second dependent variable is whether the delinquent payment was ever behind by two months or more. Weights were computed and provided for use by the Federal Reserve in the datasets for each observation to adjust for systematic differences in response rates by demographic groups, as well as to adjust for the sample design. The descriptive result was weighted, but the logistic estimates were not weighted. To estimate these two probabilities, a logistic regression model included six groups of independent variables: 1) demographic and economic variables (DE) 2) proxies for financial emergency (FE) 3) proxies for resources available in emergency (R) 4) proxy of household debt burden (DB) 5) psychological variable (PSY), and 6) environmental proxy (E). The two following logistic regression models were estimated.

Prob (Delinquency) = f_1 (DE, FE, R, DB, PSY, E)

Prob (Serious Delinquency) = f_2 (DE, FE, R, DB, PSY, E)

Measurement of dependent variables

The dependent variable is measured by the following two SCF questions: (1) In regards to all the various loan or mortgage payments you made during the last year, were all the payments made the way they were scheduled, or were payments on any of the loans sometimes made later or missed? (2) Were you ever behind in your payments by two months or more? These two questions allow the distinguishing of those who experienced serious repayment problems from those who occasionally miss a payment. This study generated a new variable 'payment performance' by combining the two questions, which has values 1- All paid as scheduled or ahead of schedule; 2- Sometimes got behind or missed payments, but paid no later than two months; 3- Ever behind payments by two months or more; and 4- Inapplicable. To suit the proposed statistical model, each household is identified into one of the four payment performance tired by the two SCF questions, ordered from good payment, delinquency, serious delinquency, and inapplicable. The data analyses of 'payment performance' uses the third answer as the proxy of the serious delinquency. Also combined are the second and third answers and used it as the proxy of the delinquency. Excluded were respondents who answered 'inapplicable' since they do not meet the sample criteria.

The research model is under the assumption that the respondent understands the question to refer to all payments on all types of household debt including mortgage, home equity, installment, credit cards, and other outstanding loans. These four SCF data report six categories of debt such as (1) mortgage or housing debt, (2) residential debt other than that associated with the primary residence, (3) lines of credit other than home equity lines, (4) credit card debt, (5) installment debt, and (6) other debt. Also, information on whether all the payments on any of the loans are made the way they were scheduled. All debt amounts are inflation adjusted in 2004 dollars.

A wide range of independent variables were used

in the multivariate analysis as mentioned in the methodology. Five categories of independent variables are included (1) demographic and economic variables, (2) proxies for financial emergency, (3) proxies for resources available in emergency, (4) a proxy of household debt burden, and (5) psychological variables. The age, race, gender, education level, and level of income of borrowers were included as demographic and economic variables. The self identified health status and income volatility of borrowers were used as proxies for financial emergencies. Liquid asset, assistance from friends or relatives in emergencies, and homeownership were used for proxies for resources available in emergencies. The debt that households carry was used as a proxy of the household debt burden. This study includes the expectations of borrowers about future income, time preference, and financial risk tolerance in order to examine the relationship between payment performance and psychological characteristics of young debtors.

The study uses whether the respondents overspend or nor as the proxy of the self control. There have been changes in amount of debt young adults carry and the delinquency rate in every single year of survey; the study combined four survey data from 1995 to 2004 and included the year of survey as the proxy of an environmental variable.

RESULTS

Changes over 1995 to 2004

Debt Decision from 1995 to 2004 Table 1 reveals most young adult households carry household debt. The percentage of debt ownership among young adults was comparable to those of the population at large. This figure is a little bit higher than the proportion that all U.S. families (older than age 18) are indebted. Credit card debt and installment debt are the primary exceptions. The proportion of young adult households with credit card balance was higher than the incidence of credit card indebtedness in the population at large. Similarly, the proportion of young adults with installment loans also exceeded the comparable figure for the population at large.

TABLE 1. DEBT HOLDING BY YOUNG ADULTS AND ALL HOUSEHOLDS

	1995		1998		2001		2004	
	Young* adults	All**	Young adults	All	Young adults	All	Young adults	All
Mortgage debt	56.28%	65.83%	44.73%	58.17%	47.07%	58.32%	50.83%	60.89%
Other residential debt	4.85%	15.50%	4.22%	12.21%	4.09%	11.17%	3.94%	11.66%
Other lines of credit	4.10%	4.09%	3.83%	3.62%	2.30%	2.70%	3.55%	3.20%
Credit card debt	61.73%	48.98%	61.05%	48.46%	59.13%	48.18%	60.65%	48.89%
Installment debt	81.20%	58.30%	71.99%	50.59%	74.24%	51.35%	73.18%	52.46%
Other debt	7.57%	11.51%	11.45%	11.25%	9.45%	23.72%	8.06%	9.84%
Total debt	99.44%	96.12%	98.91%	94.54%	99.39%	94.28%	99.52%	94.67%

Created by authors based on SCF 1995, 1998, 2001, and 2004.
* the age of household head in 25-34
** the age of household head more than 18

TABLE 2. MEAN AND MEDIAN DEBT BY YOUNG ADULTS AND ALL HOUSEHOLDS (2004 DOLLARS)

	1995		1998		2001		2004	
	Young adults	All	Young adults	All	Young adults	All	Young adults	All
Mortgage debt	$47,821 [$20,928]	$49,802 [$22,159]	$44390 [$0]	$51,782 [$19,708]	$52522 [$9,585]	$57,123 [$21,302]	$71,869 [$49,000]	$75,566 [$38,000]
Other residence	$1,824 [$0]	$5,413 [$0]	$1,518 [$0]	$5,482 [$0]	$2,246 [$0]	$4,662 [$0]	$3,204 [$0]	$8,104 [$0]
Other lines Of credit	$371 [$0]	$405 [$0]	$111 [$0]	$249 [$0]	$110 [$0]	$398 [$0]	$719 [$0]	$739 [$0]
Credit card balances	$2,441 [$615]	$2,340 [$418]	$2,727 [$579]	$2,862 [$370]	$2,861 [$426]	$2,566 [$319]	$2,653 [$500]	$3,042 [$540]
Installment loans	$9,306 [$4,924]	$7,956 [$3,077]	$13,571 [$5,796]	$9,711 [$1,738]	$12,119 [$7,136]	$9,321 [$2,236]	$15,477 [$7,660]	$11,291 [$3,000]
Other debt	$287 [$0]	$1,687 [$0]	$526 [$0]	$2,255 [$0]	$619 [$0]	$1,526 [$0]	$453 [$0]	$1,541 [$0]
Total debt	$62,053 [$36,932]	$67,606 [$36,932]	$62,846 [$35,391]	$72,343 [$37,168]	$70,479 [$42,604]	$75,598 [$39,408]	$94,378 [$61,000]	$100,286 [$54,000]
% change 1995-2004							52% [65%]	48% [46%]

Note : Median is in the box brackets
Created by authors based on SCF 1995, 1998, 2001, and 2004.

Table 2 shows that, on average, debt levels have increased among young adult families since the 1995 with some exceptional categories. The growth in debt that occurred between 2001 and 2004 is particularly striking. The young adult households held $62,053 in total debt in 1995 (measured in 2004 dollars), by 2004 this figure had grown to $94,378. The growth in indebtedness at the median was also substantial over the 1995 to 2004 period.

Debt repayment from 1995 to 2004 The conclusions show that the existing level of indebtedness might potentially pose problems for debtors. Table 3 shows that the rate of late payment of young adult borrowers was higher than that of all household during 1995 to 2004. In 2001, about 25% of young adult households experienced payment problems (approximately 14% of young adult households had fallen less than two months behind on making payments on debt and approximately 11% reported that the debt payments were made later or missed by two months or more) while about 13% of all household experienced payment problems (about 6% of all

TABLE 3. DEBT PAYMENT PERFORMANCE BY YOUNG ADULTS AND ALL HOUSEHOLDS

	1995		1998		2001		2004	
	Young adults	All households	Young adults	All households	Young adults	All households	Young adults	All households
Scheduled payment	70.16%	81.02%	72.23%	85.52%	75.32%	83.46%	67.18%	81.39%
Late payment 1*[1]	20.63%	12.97%	16.76%	11.64%	13.55%	7.12%	16.91%	11.50%
Late payment 2*[2]	9.21%	6.02%	11.02%	5.84%	11.14%	5.72%	15.91%	7.12%
Total observation	824	2734	862	3134	876	3296	810	3420

*1 Payments on any of the loans sometimes were made later or missed, but the respondent was not ever behind in payments by two months or more

*2 Payments on any of the loans sometimes were made later or missed, and the respondent was behind in payments by two months or more

household had fallen behind on making debt payments by two months or more and about 7% reported that the debt payments were made later or missed, even though they were not ever behind in payments by two months or more). In 2004, about 33% of young adult household reported debt payment problems, while about 19% of all household reported payment problems.

Variable descriptions Table 4 shows that approximately 29% of young adult borrowers made late or missed payments on any of the loans and about 11.7% were ever behind in payments by the two months or more. These rates are higher than all households. The mean age of respondents in young adults groups and all households are 28 and 44. Young adult households have lower incomes than all

TABLE 4. VARIABLE DESCRIPTIONS AND SUMMARY STATISTICS 1995-2004

Variables	Descriptions	Young adults	All households
Payment performance			
Delinquency	1 if respondent reported that payments on any of the loans sometimes were made later or missed, 0 otherwise	29.00%	21.68%
Serious Delinquency	1 if respondent reported that payments on any of the loans sometimes were made later or missed and their delinquent payment was behind two months or more, 0 otherwise	11.66%	8.16%
Respondent Mean Age			
	Age of household head (continuous variable)	28yrs	44yrs
Race			
White	1 if respondents describe themselves as white, 0 otherwise	74.31%	77.60%
Black	1 if respondents describe themselves as Black, 0 otherwise	12.97%	11.95%
Hispanic	1 if respondents describe themselves as Hispanic, 0 otherwise	9.11%	7.06%
Others	1 if respondents describe themselves as others, 0 otherwise	3.61%	3.39%
Gender			
Male	1 if respondents are male, 0 otherwise	44.04%	45.78%
Female	1 if respondents are female, 0 otherwise	55.96%	54.22%
Education			
Education	Year of education	13.5yrs	13.5rys
Household Income			
Mean	Mean of Household income (continuous variable)	$49,799	$72,869
Median	Median of Household income (continuous variable)	$39,413	$49,178
Employment status			
Yes	1 if respondent is employed or self-employed, 0 otherwise	85.70%	77.46%
Homeownership			
Yes	1 if respondent owns a home, 0 otherwise	50.62%	73.42%

TABLE 4. CONTINUED

Variables	Descriptions	Young adults	All households
Liquid asset			
Mean	Mean of all types of transactions accounts (continuous variable)	$6,243	$17,401
Median	Median of all types of transactions accounts (continuous variable)	$1,597	$2,898
Assistance in emergency			
Yes	1 if a respondent gets financial assistance of $3,000 or more from any friends or relatives who do not live with you in an emergency, 0 otherwise (reference)	35.34%	37.22%
Self identified Health condition			
Bad	1 if Respondents' self-perceived health condition is poor, 0 otherwise	61.93%	68.44%
Income volatility			
Increase	1 if income is unusually high compared to what he/she would expect in a "normal" year, 0 otherwise	11.16%	10.58%
Decrease	1 if income is unusually low compared to what he/she would expect in a "normal" year, 0 otherwise	20.48%	17.13%
Same	1 if income is normal compared to what he/she would expect in a "normal" year, 0 otherwise (reference)	68.36%	72.29%
Debt			
Mean	Mean of The amount of total debt (continuous variable)	$63,059	$82,391
Median	Median of The amount of total debt (continuous variable)	$29,668	$43,988
Overspending			
Yes	1 if family's spending exceeded the family's income, 0 otherwise	21.31%	19.89%
Income expectation			
Same	1 if respondent expects his/her income to go about the same as prices and he/she has a good idea of what his/her income for next year will be, 0 otherwise	29.71%	33.61%
Increase	1 if respondent expects his/her income to go up more than prices and he/she has a good idea of what his/her income for next year will be, 0 otherwise	23.72%	15.84%
Decrease	1 if expects his/her income to go up less than prices and he/she has a good idea of what his/her income for next year will be, 0 otherwise (reference)	12.92%	20.34%
Not sure	1 if respondent does not have a good idea of what his/her income for next year will be, 0 otherwise	33.65%	30.21%
Time preference			
High	1 if respondent prefers a response of "next few months" or "next year" in planning his/her family's saving and spending, 0 otherwise (reference)	38.31%	31.32%
Mediate	1 if respondent prefers a response of "next few years" or "next 5-10 years" in planning his/her family's saving and spending, 0 otherwise	25.70%	25.03%
Low	1 if respondent prefers a response of "longer than 10 years" in planning his/her family's saving and spending , 0 otherwise	35.99%	43.65%
Risk Tolerance			
Substantial	1 if respondents are willing to take substantial financial risks, 0 otherwise	28.62%	23.97%
Year			
year1995	1 if year of survey is 1995, 0 otherwise	24.44%	21.73%
year1998	1 if year of survey is 1998, 0 otherwise	25.57%	24.90%
year2001	1 if year of survey is 2001, 0 otherwise	25.99%	26.20%
year2004	1 if year of survey is 2004, 0 otherwise	24.00%	27.18%
Total observation		N = 3,372	N = 12,584

households do: the mean incomes of young adult borrowers and all household borrowers were $49,799 and $72,869.

Young adults were more likely to have an excellent health status and more income changes compared to what they would expect in a normal year comparing to all household borrows. Young adults groups showed a lower percentage of homeownership and assistance from relatives/friends in emergencies and lower level of liquid asset comparing to the all households. The means of liquid assets that young adult debtors carried was $6,243. It was only 35% of the liquid assets that all households carried. The percentage of owning a home in young adults and all household were approximately 50% and 73%.

Young adult debtors tend to have more optimistic expectations about the future income (23.72%) comparing to household debtors (15.84%) whereas young adult debtors tend to have less pessimistic expectations about future income (12.92%) compared to all household debtors (20.34%). Young adult debtors were more oriented to the higher rate of preference than the shorter planning span. The rate of overspending was also higher in young adult groups than all households.

Multivariate Analysis Results

Logistic Analysis Results Table 5 represents the result of cumulative logistic regression. The first logistic result shows the factors related to the probability that young adults sometimes made late or missed payments on any of the loans. The second logistic result shows the factors related to the probability that young adults made late or missed payments on any of the loans and if they were ever behind in payments by two months or more.

Environmental variable Young borrowers in 1995 are more likely to be in payment delinquency than young borrowers in 1998 whereas the probability that young adults in 1995 made a serious delinquency were not significantly different from young borrowers in 1998. Young borrowers in 2001 and 2004 are more likely to make late or missed payments by two months or more than the reference

year, 1998. After rerunning the model with different year references, we find that no difference in the probability of serious delinquency between 1995 and 1998.

Demographic and economic variables Two logit analysis show that the age of the borrower was positively related to the payment delinquency of borrowers. Young black adults are significantly more likely to be in payment delinquency than young white adults. In particular, young black adults were 35% more likely to be willing to sometimes make late or miss payments on any of the loans than whites. Conversely, young Hispanic adults are significantly less likely to have payment delinquencies than otherwise similar young white adults. The odds ratio showed that young Hispanic adults were 38.3% less likely to be delinquent on debt payments. In addition, the probability of serious delinquency also shows a similar pattern of racial/ethnic effects. Young adults in group "Asian and others" are not significantly different in both of two types of delinquency comparing to young white adults. Young female adults are more likely to make late or missed payments than otherwise similar young male adults, but the probability of serious delinquency shows no difference between young female adults and young male adults. The years of education were highly significant and indicates that more educated young adults were less likely to make late or missed payments. This study finds a weakness in the relationship between income and debt repayment.

Financial emergency The self identified health status and income volatility of young adults were employed as the proxies of financial emergencies. The overall effects of two variables accord with expectations. Those who reported health conditions and income decrease compared to the normal year are more likely to be in payment delinquency. In addition, young debtors who experienced income decrease tend to make late or missed payments than those who experience no income change. The first and second logit analysis showed similar results. One exception was the fact that the effect of income decrease was increased in the serious payment

TABLE 5. CUMULATIVE LOGISTIC RESULT

	Delinquency			Serious Delinquency		
	Estimate	Odds ratio	Prob.	Estimate	Odds ratio	Prob.
Demographic and Economic variables						
Respondent age						
Age	0.0473	1.048	< .0001	0.0603	1.062	< .0001
Race (White = 0)						
Black	0.2991	1.349	0.011	0.158	1.171	0.2724
Hispanic	-0.483	0.617	0.0002	-0.6323	0.531	0.0004
Asianother	-0.0287	0.972	0.892	-0.3599	0.698	0.2485
Gender (Male = 0)						
Female	0.1699	1.185	0.0001	0.0653	1.067	0.2932
Education						
Education	-0.0581	0.944	< .0001	-0.0799	0.923	< .0001
Income						
Log of income	-0.0333	0.967	0.0375	-0.0008	0.999	0.9719
Employment status (No = 0)						
yes	0.1732	1.189	0.0044	0.0833	1.087	0.3048
Financial emergency						
Health status (Not bad = 0)						
	0.4468	1.563	< .0001	0.457	1.579	< .0001
Income volatility (Same = 0)						
Increase	0.0324	1.033	0.6336	-0.0731	0.930	0.4588
Decrease	0.15	1.162	0.0041	0.3687	1.446	< .0001
Resources available in emergency						
Homeownership (No = 0)						
yes	-0.6697	0.512	< .0001	-0.7293	0.482	< .0001
Liquid asset						
Log of liquid asset	-0.0811	0.922	< .0001	-0.0729	0.930	< .0001
Assistance (No = 0)						
yes	-0.4305	0.650	< .0001	-0.5547	0.574	< .0001
Debt burden						
Debt						
Log of debt	-0.0126	0.987	0.4212	0.0344	1.035	0.1116
Psychological variables						
Overspending (No = 0)						
Yes	0.7089	2.032	< .0001	0.8672	2.380	< .0001
Income expectation (Decrease = 0)						
Increase	-0.1812	0.834	0.0116	-0.2874	0.750	0.0034
Same	-0.3428	0.710	< .0001	-0.4994	0.607	< .0001
not sure	-0.063	0.939	0.3355	-0.2216	0.801	0.01
Time preference (High = 0)						
Mediate	-0.2565	0.774	< .0001	-0.4274	0.652	< .0001
Low	-0.2815	0.755	< .0001	-0.5351	0.586	< .0001
Risk Tolerance (No = 0)						
Substantial	-0.2688	0.764	< .0001	-0.2163	0.805	0.0031
Environmental variables						
Year (Year1998 = 0)						
Year1995	0.2434	1.276	< .0001	-0.1090	0.897	0.205
Year2001	0.00109	1.277	0.9881	0.5376	1.535	< .0001
Year2004	0.2734	1.677	0.0007	0.8645	2.129	< .0001
Intercept	-0.428		0.0993	-2.6651		< .0001
-2Log Likelihood	16024.875		< .0001	9529.237		< .0001

delinquency model. Those who experienced negative income changes are 45% more likely to be delinquent on payments by two months or more than those with no change in income. In addition, young adults with a health condition status are 58% more likely to be seriously delinquent.

Resources available in an emergency   Results of two logit analysis show that having a homeownership decrease the probability of delinquency payments of household debt. Those with homeownership were less likely to be delinquent in debt repayment by 49% and were less likely to be delinquent by more than two months by 52% than those without homeownership. The log of liquid asset and assistance from relative or friends were used in order to the relation between resources available to young adult households in emergencies and the payment performance. Both of the two variables were found to be negatively related to the probability of two types of payment delinquencies. Those who can get financial assistance from friends or relatives in an emergency are 35% less likely to be in payment delinquency and 43% less likely to make serious payment delinquency.

Debt burden   No significant relationship between log of debt and debt repayment was observed for both logit analyses. The results showed that the amount of debt were not found to be factors to affect debt payment delinquency.

Psychological variables   Whether a respondent overspends were used as a proxy of self control and it was found to be positively related to payment delinquency. Young debtors who overspent have a significantly predicted probability of delinquency than young debtors who did not spend more than their income, with approximately 2 times the odds of those who did not overspend of being delinquent. Young debtors who overspent were more likely to have serious delinquency with 2.38 times the probability of those who do not overspend. Comparing to those who have negative expectation about future income, those who have positive or neutral expectations about future income are less

likely to be delinquent on debt repayments. In addition, the effect of income expectation was intensified in the probability of serious delinquency. Finally, the negative relationship was observed between financial risk tolerance and debt repayment performance. Those who have a substantial financial risk tolerance are less likely to make payment delinquency than the young adult debtors who have no or an average level of financial risk tolerance. For the second logistic model, the effect of low time preference is bigger than the effect in the first logistic model. In particular, those who preferred longer than 10 years in planning family savings and spending are 25% less likely to be delinquent on payments, and the effect was increased in probability of serious delinquency.

CONCLUSION AND IMPLICATIONS

The percentage of holding debt among young adults is higher than the percentage of all households. It is not so surprising since household income typically rise with age and young adults are expected to be acquiring indivisible goods, such as vehicles or homes. The purchase prices among young adult consumers normally exceeds monthly income, requiring them to use credit in order to finance purchases (Chiteji, 2006) and young adults appear to borrow against future income for the consumption smoothing over time. However, this study describes the debt decision and repayment performance among young adults. In addition, the intention was to quantify which factors have a higher impact on payment delinquency of young adult debtor. This study suggested that over indebtedness among young adults should be warned for future financial security.

The first hypothesis theorizes a relationship between the ability of borrowers to pay and make repayments. The study assumes that young debtors with a higher indebtedness level were more likely to make late or missed payments on household debt and young debtors with higher incomes were less likely to make late or missed payments on household debt. Interestingly, weakness was found of the

relationship not only between income and debt repayment but also between level of indebtedness and debt repayment. Therefore, these hypotheses in the second hypothesis were rejected.

Second hypothesis theorizes a relationship between financial emergency that young adults experience and repayment performance. This study stated that young debtors who experienced income decrease compared to the normal year are more likely to make late or missed payments on household debt or vice versa. The coefficient for income increase was expected to be negative. Also, expected is that young debtors who reported the health conditions were more likely to make late or missed payments on household debt. The coefficient for health conditions was expected to be positive. The study found that the effect of bad health status was significantly related to debt repayment problems. These hypotheses in the second hypothesis were accepted in both of two logistic regressions.

Third hypothesis theorize a relationship between resources available to young adult borrowers in emergencies and debt repayments. It was assumed that the liquid asset that young adults hold decrease the probability of making late or missing payments on household debt. The coefficient for liquid asset was expected to be negative. Also, young debtors who are able to use a support network including family or friends in emergencies were expected to be less likely to make late or missed payments on household debts. The coefficient for financial assistance in emergency was expected to be negative. The analysis revealed that variables indicating resources available to young adults in emergency are associated with reduced probability of delinquency. Therefore, these hypotheses in the third hypothesis were accepted in both of two logistic regressions.

This study found the age of borrowers to be positively related to payment delinquency. This result does not accord with empirical findings from the previous studies. An additional was test tried that included age and age squared using the all households. It found that as the age of respondent increases, the probability of delinquency increased up to age 35.8 and then decreased. Also, the probability of serious delinquency increased up to the age 36.8 and then decreased. Note that respondents used in this study are 25-34.

Further studies on this subject can assess the impact of psychological variables such as financial risk tolerance or the time preference on debt decisions or debt management. Even though these variables were ignored in previous studies, they were found to be highly significant factors in the current study. If these results in this study continue to hold true, it is suggested that studies based on only economic theories such as the ability to pay theory or traditional life cycle theory should explicitly consider the impact of the psychological characteristics of borrowers.

This study has some limitations since the data used in this study is cross sectional data. For example, important information such as when financial events occurred or whether these incidences occurred after the young debtors were granted credit might be obscured. Other theoretic analysis such as an event history analysis would be useful for future analysis. Brighton (1999) suggested the adoption of an 'event history analysis' to present better possibilities for insight on bankruptcies, this approach would address payment deterioration by young debtors as well. This approach examines the occurrence of events over time, such as being unemployed, illness, or the timing of carrying new debt. It would allow identifying the events in the lives of young debtors that create indebtedness and unmanageable levels of debt on them. This theory would be useful to determine if there are one or more predictable orders of sequence of events.

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APPENDIX

Age and age square was included in order to capture the nonlinearity of age effect using all household. For the first logistic analysis, the coefficients of age and age square were 0.0847 and -0.00118. For the second logistic analysis, the coefficients of age and age square were 0.0803 and -0.00109.