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Charging up a Mountain of Debt:  
Households and Their Credit Cards

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# **Charging Up A Mountain of Debt: Households And Their Credit Cards**

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## **Abstract**

I use the Surveys of Consumer Finances conducted in 1983, 1989 and 1992 to separate the growth of credit card debt into two categories, changes in the number of households with credit cards and changes in households credit card debt. I can then account for the relative contributions of increases in credit card availability, number of households, and average credit card debt. I also use the household income information to quantify the impact of more lower income households with credit cards.

Data suggest that the increases in credit card debt is largely attributable to increased average credit card debt of households, not from more households with access to credit cards. Moreover, households in the top half of the income distribution accounted for most of the changes in the growth of credit card debt although lower income households increased their access to credit cards at a faster rate than households in general, and increased their average debt faster than the population.

**Keywords:** Credit cards, income distribution

**JEL Subject Codes:** D12, E21

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Total consumer credit outstanding grew from \$785 billion at the end of 1992 to \$1,164 billion by July 1996, an average annual growth rate of 12 percent during the three and a half years. The rapid rise of consumer credit, especially credit card debt, has alarmed many analysts, some of whom argue that consumers are over-extended thereby placing the economic expansion in a precarious position. These analysts point to rising delinquencies, higher debt-to-income ratio and increasing personal bankruptcies as signs of consumers buried in an avalanche of debt. Others respond that the rapid rise of consumer credit needs context -- low interest rates allows households to finance larger debt, the stock market has significantly increased wealth thereby offsetting the rise in debt, and special offers like frequent flyer miles encourage households to use credit cards rather than cash or checks.

The range of comments about the growth of credit card debt may lead one to believe that household debt is largely credit card debt. Kennickell and Starr-McCluer (1994) find otherwise. They find that in 1989 and 1992 nearly 40 percent of all households had mortgages and home equity debt and that the incidence of credit card debt was very similar. However, mortgages and home equity lines of credit were much larger accounting for nearly 60 percent of the total debt of all families whereas credit card balances were less than three percent of total household debt.

Still, credit cards continue to draw a large amount of attention. Analysts may be concerned that credit card debt is unsecured, unlike mortgages or auto loans or the rapid growth of credit cards may trouble them. Data from the Bank for International Settlements do indicate rapid growth of credit cards. Between 1988 and 1994, credit cards in circulation increased 34 percent and the number of credit card transactions increased 55 percent. Moreover, the value of credit card transactions increased 98 percent during the same time period.

So, will consumers be gasping for air soon, or are analysts making a mountain out of a molehill? Unfortunately, aggregate data provide very few answers to these questions because the data do not provide information about why credit card debt has increased -- a larger fraction of households have credit cards but there are more households as well, average credit card debt is higher but prices have increased as well, and more lower income households have credit cards but more higher income households have credit cards too. These factors add to the growth of credit card debt but have different implications about its viability. The answer to the questions also requires information about households' ability to service their debt, and thus requires information about how credit card holders and their credit card debt are related to their income.

In this paper I attempt to clarify the situation by using household data to examine the different strata of credit card debt. I use the Surveys of Consumer Finances conducted in 1983, 1989 and 1992 to separate the growth of credit card debt into two categories, changes in the number of households with credit cards and changes in households credit card debt. I can then account for the relative contributions of increases in credit card availability, number of households, and average credit card debt. I also use the household income information to quantify the impact of more lower income households with credit cards.

## **SURVEY OF CONSUMER FINANCE**

The Federal Reserve with the assistance of other agencies and organizations conducted the Surveys of Consumer Finances (SCF) in 1983, 1989 and 1992 to obtain detailed information about household's assets, liabilities, income and use of financial institutions and instruments such as credit cards.<sup>1</sup> The survey uses a random sample of

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<sup>1</sup>Avery and Elliehausen (1986), Avery, et al. (1984a, 1984b), Kennickell and Shack-Marquez (1992), and Kennickell and Starr-McCluer (1994) provide more details of

U.S. households with an oversample of high-income and high-wealth households to obtain a detailed, comprehensive and representative picture of U.S. households. The oversampling is necessary because income and wealth are concentrated among a small number of households so a random sample of the population will miss too many dollars.<sup>2</sup> The surveys included 4,103 households in 1983, 3,143 households in 1989 and 3,900 households in 1992.<sup>3</sup>

The survey provides fairly good information that match information from other surveys and aggregate data. Antoniewicz (1996) and Avery, et al. (1988) find that the information in the survey corresponds fairly closely to other surveys and aggregate estimates.<sup>4</sup>

Although the surveys contain much information about households, I do not attempt to present numerous cross-tabulations which show how credit card holders and debtors differ by various characteristics. Avery, et al. (1987) and Canner, et al. (1995) present such detailed information about household indebtedness. Rather, I limit myself to the relationship between household income and credit cards because income provides the wherewithal to repay debt and because credit card issuers appear to focus on household income in their credit card applications. I split the households into income deciles using

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the surveys.

<sup>2</sup>Weicher (1995, 1997a) uses the SCF's to analyze the concentration of wealth among U.S. households.

<sup>3</sup>1989 and 1992 SCF's use five different imputation methods for missing values, and reports all five imputed values. This multiplies the number of observations in the survey by five. I have adjusted for this whenever it was appropriate.

<sup>4</sup>Antoniewicz compares estimates of total household liabilities from the 1989 and 1992 surveys to estimates from the Flow of Funds Accounts (FFA). For 1989, SCF estimate total household liabilities equal \$3.1 trillion whereas FFA estimates about \$29 billion less and for 1992, the SCF estimates \$3.6 trillion while FFA is about \$116 billion higher. Estimates of consumer credit from the SCF are \$821 billion and \$664 billion for 1989 and 1992 while FFA's estimates \$807 billion and \$828 billion.

their population weights, to examine the relationship between income and credit card holders and their credit card debt. Splitting the households into income percentiles avoids issues of inflation, overall growth of real income and partitions representing different sizes of the population. Table 1 shows the income percentile ranges and the number of observations within each cell for the three surveys.<sup>5</sup> The use of population weights estimates income deciles for the population, not for the sample. Thus, some deciles, especially the highest decile, may have more observations than others.

### **WHO HAS CREDIT CARDS?**

The increasing number of households who have credit cards undoubtedly contributed to higher total credit card balances because some of the new card holders undoubtedly accumulated credit card debt. So it is important to know how the fraction of households with credit cards changed between 1983 and 1989 and between 1989 and 1992. In addition, average credit card indebtedness and the ability to service such debt are likely to vary with income so we may want to know how the incidence of credit card holders changed for different income deciles, and if changing incidences affected the characteristics of a typical credit card holding household.

A majority of American households had some type of credit cards in 1983, as shown in table 2.<sup>6</sup> In that year, nearly two-thirds of all households had some type of credit

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<sup>5</sup>The households with very high (negative) income often reported large (negative) amounts of income from a professional practice, business or farm, capital gains (losses), other interest income, dividend income, or net rent, trust income. Census estimates median household income was \$20,346 in 1982, \$27,228 in 1988, and \$30,126 in 1991 (income reported in the SCF's typically correspond to the year prior to the year of the survey.)

<sup>6</sup>The 1983 SCF identified six types of credit cards: gasoline company, bank (Visa, Mastercard), general purpose (American Express, Diner's Club), national retailer, other store or retailer, and other (rental car, airlines). The 1989 and 1992 identified five types: bank-type, store, gasoline, general purpose and other. I will not distinguish among credit card types nor among households with multiple credit cards.

cards; even many low income households had access to some type of credit cards. Nearly one-third of all households in the lower three income decile had credit cards

The surveys reveal three broad patterns. First, the likelihood of a household having a credit varies with income -- lower income households are less likely to have credit cards, and the likelihood of having a credit card increases nearly uniformly with household income. In 1983, a family in the highest income decile were five times as likely to have credit cards than one in the lowest decile. In between, the fraction of households with credit cards within each income group increased as income increased, and in all instances but one, the differences appear to be statistically significant because the point estimates do not lie within the 95 percent confidence intervals.<sup>7</sup> 1989 and 1992 SCF's also show patterns of increasing probability of credit card ownership with income.

Second, the surveys indicate that the fraction of households with credit cards increased over time. By 1989, 70 percent of all households had at least one credit card, and over 72 percent of all households had credit cards by 1992. The increases in the proportion of the population with credit cards between 1983 and 1989, as well as between 1989 and 1992, appear to be statistically significant. In addition, the increased credit card ownership rates affected all income groups although credit card ownership rates among the top half of the income distribution appears to have stabilized between 1989 and 1992.

Finally, although all income groups were more likely to own credit cards, lower income households increased their card ownership rates faster than higher income families. Credit card ownership rates for the bottom half of the income distribution increased from 45 percent in 1983 to 50 percent in 1989 and to 54 percent in 1992, whereas the top half increased from 86 percent in 1983 to 91 percent in 1989 and then

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<sup>7</sup>I constructed the confidence interval using a bootstrap method. I drew 1,000 random samples with replacement from the original survey. I calculated the fraction of the population that had credit cards for each new sample, and then calculated the 95 percent confidence interval based on the ordered estimates.

dropped to 90 percent in 1992. The income distribution of households with credit cards also show the increasing importance of lower income households among all credit card holders; the increases in credit card ownership rates shifted the distribution of households with credit cards toward lower income households, shown in figure 1. Three percent of households with credit cards had income within the first decile in 1983, and nearly the same proportion of credit card holding households fell in the first decile in 1989, but by 1992, 3.5 percent of all credit card holding households had income within the first decile. The increasing incidences of credit cards among lower income households flattened between the survey years, indicating more uniform access to credit cards. In 1989 a smaller fraction of households with credit cards were in the top three income decile than in 1983 while a larger fraction of them had income between the 10th and 60th percentiles. The distribution of credit card holders continued to shift, so by 1992 households with income under the 40th percent accounted for even a larger share of all households with credit cards.

### **WHO HOLDS CREDIT CARD BALANCES?**

Average credit card debt is the other important factor in determining changes in total household credit card debt. So, how has average credit card debt changed over time? Do low income households carry large balances, and do high income families use their cards for convenience, paying off their balances in full?

Average credit card debt calculated from the three surveys reveal two stylized facts. First, average credit card balances tend to increase with income. In 1983 households in the lowest income decile owed on average a total of \$297 on their credit cards, whereas families in the highest income decile owed a total of \$615. Although the differences in average credit card debt between adjacent deciles may not all be statistically significant, total credit card debt and a family's income appear to be positively related.



This positive relationship between income and average credit card debt is also noticeable in 1989 and 1992. This conclusion is consistent with other studies that indicate low income and wealth households do not have high levels of total debt.

Second, average credit card debt increased over time. Average household's total credit card balance more than doubled between 1983 and 1989, from \$491 to \$1,064, and increased by nearly 30 percent between 1989 and 1992 to \$1,341. Clearly some of the increases merely reflect changes in prices -- the Consumer Price Index rose 24 percent between 1983 and 1989 and another 13 percent between 1989 and 1992 -- but the increases in average total credit card debt are much larger. Moreover, the increases in credit card indebtedness occurred for all income groups. Average credit card debt of the lowest income decile increased 167 percent between 1983 and 1992 while the highest decile's average debt increased 177 percent.

Median credit card indebtedness, shown in table 4, reveals the same basic patterns as average credit card debt. Median indebtedness and income are positively related, although the top decile now indicates no median balance in all three years, and median credit card debt increased over time. There are, however, a few differences. First, a majority of households do not owe much on their credit cards. Second, median debt suggests mid- to upper-income households are more likely to have credit card debts than lower or the highest income households. Finally, the increases in median indebtedness between survey years are much smaller, 50 percent between 1983 and 1989 and 27 percent between 1989 and 1992.

The previous section shows that the relative number of lower income households with credit cards among all households with credit cards increased between 1983 and 1992. So, how has the lower income households' share of total credit card changed? The answer is not obvious because on average, an additional low income household with a credit card has a smaller effect on total credit card debt than an additional high income

family. Figure 2 shows the distribution of total household credit card balances among households separated by income. Households in the lower half of the income distribution tended to hold a small fraction of total household credit card. The bottom half of the distribution held 22 percent of the total credit card debt in 1983, 24 percent of the total debt in 1989 and 27 percent of the total in 1992. In addition, the distribution of total credit card debt shows some changes of the relative importance of households from the different income deciles. The distribution of total credit card debt remained relatively unchanged between 1983 and 1989, but it suggests that increased incidences of credit card holders among lower income households, combined with their large indebtedness increased their share of total credit card debt, between 1989 and 1992.

### **WHY DID CONSUMER CREDIT GROW?**

In 1983, total credit card balances held by households was nearly \$27 billion. By 1989, that figure grew to nearly \$70 billion, and by 1992, it stood at \$92 billion. Two factors already mentioned, more households with credit cards and larger average credit card debt, account for these changes. Using the data at hand, I can attribute the increases in debt to those two factors by holding one factor constant while changing the other. So, the effect of more card holders equals the change in card holders times the average credit card debt for the base year. Similarly, the effect of higher indebtedness equals the number of card holders in the base year times the change in average debt. There is a third term, and it accounts for the fact that the new card holders do not hold average balances of the initial year. Table 5 shows the relative contributions of the three factors to the growth of credit card balances.

Changes in the number of households with credit card accounted for little of the increase in total debt. The increase in the number of households with credit card accounted for 11 percent of the growth in credit cards between 1983 and 1989.

Approximately half this change is due to changes in the number of households between surveys, shown in the lower panel. The number of households grew 11 percent between 1983 and 1989 while the number of households with credit cards grew 19 percent. The remainder is attributable to changes in the fraction of households with credit cards. The table indicates similar changes between 1983 and 1992 as well as between 1989 and 1992.

Changes in average balances account for the vast majority of the increase in total credit debt between 1989 and 1983. Average debt grew 117 percent between the survey years but undoubtedly some, albeit small amount, of this increase is to price changes which increased 25 percent. A similar trend shows up in the changes between the other survey years.

So did lower income households, those in the bottom half of the income distribution, have much affect on the change in total debt? The data suggest not. The lower panel indicates that the changes in the number of lower income households with credit cards consistently grew faster than the number of upper income households during the inter-survey years, as did the average indebtedness of lower income households. Yet, there are more upper income households with credit cards so the growth of all households with credit cards is weighted toward the growth rate of the higher income households. Similarly, the growth rate of all households' average balances is close to the growth rate of the average debt of higher income households because they hold a preponderance of total debt. In sum, changes in credit card ownership and average balances of the top half of the income distribution account for nearly two-thirds to three quarters of the changes in total household credit card debt.<sup>8</sup>

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<sup>8</sup>Increasing indebtedness of lower income households may be welfare improving if liquidity constraints prevent them from optimizing their spending patterns. Cox and Jappelli (1993), using the 1983 SCF, argue that borrowing constraints prevented some households from borrowing as much as they wanted, up to 75 percent less. They argue that if the constraints were lifted, household liabilities would have increased 9 percent.

## CONCLUSION

Household data from the Surveys of Consumer Finances from 1983, 1989 and 1992 suggest that the increases in credit card debt is largely attributable to increased average credit card debt of households, not from more households with access to credit cards. Moreover, households in the top half of the income distribution accounted for most of the changes in the growth of credit card debt although lower income households increased their access to credit cards at a faster rate than households in general, and increased their average debt faster than the population.

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**Table 1****Income Percentile Ranges and Number of Observations**

<b>Percentile</b>	<b>1983</b>	<b>1989</b>	<b>1992</b>
Total Survey	(-24,062, 3,425,887) 4,103	(0, 99,491,000) 15,715	(-1,000,000, 65,300,000) 19,500
0-10	(-24,062, 5,230) 388	(0, 6,000) 1,131	(-1,000,000, 6,600) 1,419
10-20	(5,230, 8,568) 376	(6,000, 10,000) 1,167	(6,600, 11,000) 1,317
20-30	(8,568, 12,000) 375	(10,000, 14,000) 1,088	(11,000, 15,000) 1,359
30-40	(12,000, 15,448) 363	(14,000, 20,000) 1,156	(15,000, 20,000) 1,432
40-50	(15,448, 19,523) 371	(20,000, 24,000) 1,142	(20,000, 26,000) 1,456
50-60	(19,523, 24,000) 367	(24,000, 30,000) 1,193	(26,000, 33,000) 1,456
60-70	(24,000, 29,811) 367	(30,000, 38,000) 1,219	(33,000, 41,000) 1,468
70-80	(29,811, 37,100) 373	(38,000, 49,000) 1,328	(41,000, 53,000) 1,561
80-90	(37,100, 50,000) 358	(49,000, 66,000) 1,504	(53,000, 76,000) 1,904
90-100	(50,000, 3,425,887) 774	(66,000, 99,491,000) 4,796	(76,000, 65,300,000) 6,136

Note: Ranges shown in dollars. Number of observations in each cell may not sum to the total number of observations because some observations fall within more than one cell.

**Table 2****Percent of Households with Credit Cards by Income Percentiles**

<b>Percentile</b>	<b>1983</b>	<b>1989</b>	<b>1992</b>
Total Survey	64.40 (63.94, 67.03)	70.37 (69.41, 71.36)	71.86 (71.08, 72.62)
0-10	19.25 (15.15, 23.38)	20.53 (17.06, 22.83)	26.42 (24.26, 28.97)
10-20	33.39 (28.43, 38.77)	38.80 (36.57, 43.32)	41.89 (38.80, 44.74)
20-30	47.11 (42.42, 53.60)	53.70 (50.47, 57.53)	66.42 (63.59, 68.90)
30-40	57.33 (50.84, 62.19)	63.60 (59.41, 66.96)	67.67 (65.25, 70.19)
40-50	65.90 (60.98, 72.26)	72.38 (68.90, 75.50)	67.03 (64.43, 69.98)
50-60	74.28 (69.17, 78.75)	83.78 (81.16, 85.98)	81.98 (79.81, 83.77)
60-70	81.50 (76.95, 84.98)	87.49 (85.69, 89.78)	88.06 (85.99, 89.89)
70-80	87.57 (84.06, 91.26)	91.47 (89.94, 93.21)	89.67 (87.74, 91.35)
80-90	90.79 (87.51, 93.91)	93.63 (92.14, 94.89)	93.77 (92.35, 95.06)
90-100	96.88 (94.81, 98.47)	98.00 (97.20, 98.70)	95.69 (94.71, 96.69)

Note: 95 percent confidence interval from bootstrapping in parentheses.

**Table 3****Average Credit Card Balances by Income Percentiles**

<b>Percentile</b>	<b>1983</b>	<b>1989</b>	<b>1992</b>
Total Survey	490.81 (451.70, 531.87)	1,064.14 (1,009.25, 1,115.23)	1,341.19 (1,283.10, 1,400.79)
0-10	297.41 (171.23, 427.39)	219.42 (153.10, 290.82)	792.83 (626.37, 920.72)
10-20	212.77 (148.82, 389.42)	307.98 (258.58, 436.10)	761.93 (530.94, 1,053.23)
20-30	257.38 (179.45, 372.26)	662.59 (517.58, 821.59)	966.47 (811.91, 1,104.23)
30-40	333.39 (247.78, 411.28)	568.15 (457.86, 646.07)	990.67 (851.01, 1,107.69)
40-50	407.83 (318.50, 509.72)	1,239.71 (1,051.66, 1,453.18)	1,063.68 (879.09, 1,248.69)
50-60	514.73 (403.48, 633.68)	758.82 (732.85, 955.20)	1,313.26 (1,190.67, 1,462.39)
60-70	503.13 (415.79, 615.60)	1,134.45 (895.89, 1,238.31)	1,741.97 (1,557.63, 1,951.48)
70-80	619.16 (478.44, 755.67)	1,192.85 (1,042.76, 1,388.56)	1,541.88 (1,384.25, 1,728.51)
80-90	627.71 (517.77, 743.73)	1,466.97 (1,265.16, 1,587.40)	1,559.20 (1,383.37, 1,755.68)
90-100	615.22 (477.99, 744.46)	1,645.60 (1,463.04, 1,841.15)	1,701.92 (1,479.50, 1,904.49)

Note: Figures in dollars. 95 percent confidence interval from bootstrapping in parentheses.



**Table 4****Median Credit Card Balances by Income Percentiles**

<b>Percentile</b>	<b>1983</b>	<b>1989</b>	<b>1992</b>
Total Survey	100 (70, 125)	150 (130, 170)	190 (140, 200)
0-10	0 (0, 135)	0 (0, 70)	200 (100, 370)
10-20	0 (0, 44)	40 (0, 80)	0 (0, 0)
20-30	0 (0, 54)	0 (0, 30)	200 (100, 270)
30-40	30 (0, 100)	0 (0, 20)	230 (150, 350)
40-50	180 (100, 235)	270 (140, 350)	200 (140, 300)
50-60	160 (100, 285)	140 (100, 200)	400 (300, 500)
60-70	152 (80, 250)	300 (200, 300)	400 (350, 560)
70-80	200 (100, 300)	300 (250, 500)	250 (200, 350)
80-90	134 (62, 300)	450 (300, 550)	200 (120, 300)
90-100	0 (0, 36)	0 (0, 0)	0 (0, 0)

Note: Figures in dollars. 95 percent confidence interval from bootstrapping in parentheses.

**Table 5****Accounting for the Changes in Total Credit Card Debt between Survey Years  
(percent of change in total debt)**

<b>factor</b>	<b>1983 to 1989</b>	<b>1983 to 1992</b>	<b>1989 to 1992</b>
number of households with CC	11	9	9
lower income	3	3	5
upper income	8	6	4
household's average CC debt	76	74	85
lower income	17	18	25
upper income	58	55	60
interaction of both factors	13	17	7
lower income	4	7	5
upper income	9	10	1

**Percent Changes in Various Factors between Survey Years**

<b>factor</b>	<b>1983 to 1989</b>	<b>1983 to 1992</b>	<b>1989 to 1992</b>
total credit card debt	159	243	32
# of households	11	14	3
number of households with CC	19	25	5
# of lower income w/CC	24	38	11
# of upper income w/CC	17	19	2
inflation (CPI)	25	41	13
household's average CC debt	117	173	26
lower income avg debt	125	198	33
upper income avg debt	116	172	26

Figure 1 - Distribution of Households with Credit Cards

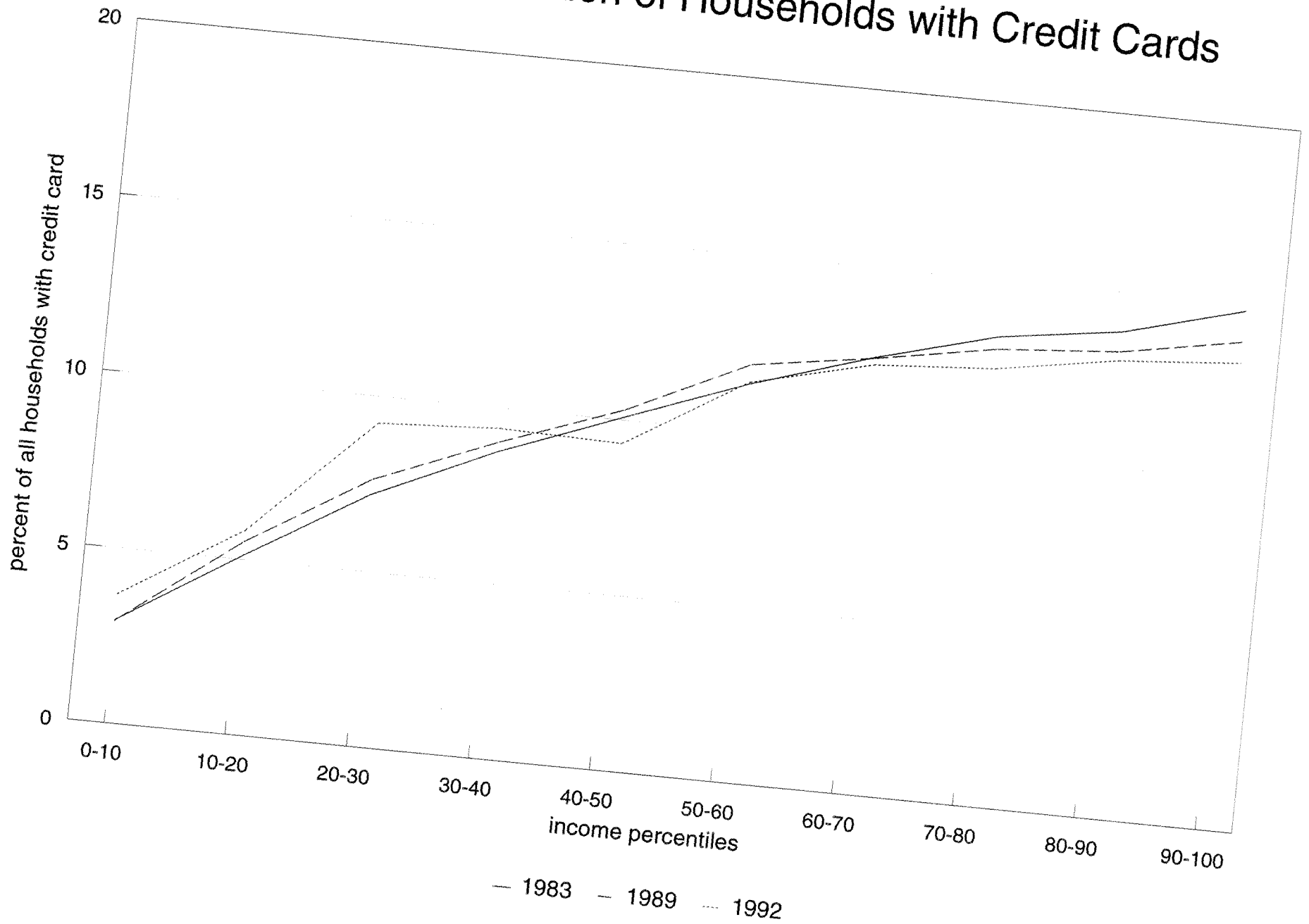


Figure 2 - Distribution of Total Credit Card Debt

