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American Consumer Confidence & Income: Relationship with the Stock Market

Analysis of the Correlation between Consumer Confidence by Income Level and Stock Market Returns

Senior Thesis
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ADMN 799H
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TABLE OF CONTENTS

INTRODUCTION	2
BACKGROUND	3
METHODOLOGY	7
RESULTS	9
CONCLUSIONS	11
REFERENCES	13
TABLES	15
FIGURES & GRAPHS	20

I. INTRODUCTION

Since 2000, the median household income has fallen by almost five percent (U.S. Census Bureau). In the same time period, the Consumer Confidence Survey has measured household perceptions of the economic climate. January of 2000 depicts an index number of 150.6 (with 1985 acting as the base year with an index number of 100) – the highest the index reached within the last twelve years. That supreme confidence would be severely tested throughout the first decade of the twenty-first century, falling to an all-time low of 31.2 in February of 2009, and eventually crawling its way back to 72.2 in October of 2012 (The Conference Board). Throughout the last twelve years, stock holdings within the average household have stopped growing and the value of those holdings has either remained stagnant or declined (2007 Survey of Consumer Finances).

The most recent decades have been tumultuous for investors. Along with the decline of median incomes and volatility of investments, the American economy has seen monetary and fiscal policies never before used. Consumer confidence is derived from the surrounding environment and economy, and these three factors create a higher risk situation for the typical American. Confidence levels vary with the degree of risk associated with a given event. More risk is added as the volatility of the stock market increases. In the face of great net worth losses over the past few decades, it is easy to see that Americans are more risk-averse and show less confidence. Therefore, it is important to look at how consumer confidence has changed in the United States month to month.

This thesis will aim to examine consumer confidence as well as attempt to show links between confidence and stock market returns. Furthermore, confidence will be dissected into income levels to show how different segments within the United States feel about the economic

environment. The ultimate goal is to illustrate the correlation between American consumer confidence levels and the performance of the stock market.

II. BACKGROUND

Three ideas make up the background to the data analysis for this thesis. The first, a historical perspective looking back on similar financial times and the consumer confidence reaction is examined. Secondly, the idea of the decline of the middle class is touched upon as it has an effect on income brackets. The confidence and economic perception disparity will widen among consumers as the bifurcation of the middle class develops. Finally, in the interest of the composition of the stock market, the impact of household stock holdings is discussed.

Household income and investments along with confidence and perception of the economic climate will play a vital role in the data analysis to follow.

The Japanese Experience

A financial crisis much like that in the United States culminated in 1990 in Japan. The bubble—fueled by borrowing money and buying up real estate—burst, leaving the Japanese with a wealth loss roughly equal to three years of GDP. While the U.S. financial crisis erased only about one year of the nation's GDP, the two situations are strikingly similar (Furumi). After the financial decline in Japan, the risk mentality of investors—and perhaps the investor confidence—never recovered to the levels before the crisis. To this day, the Japanese would rather forgo higher returns in order to avoid the risk of the equities market.

The mentality of investors in the U.S. today closely resembles what the Japanese experienced in the 1980s. It also displays similarities to investor sentiment after the stock market crash of 1929 that led up to the Great Depression. In the aftermath of the Great Depression, Americans shied away from equities until the 1950s. It took numerous efforts from the business

community and finally a full marketing campaign to restore confidence to American investors (Roxburgh, Lund and Dobbs). More recently, middle aged investors have endured staggering losses to their portfolios, retirement accounts, college funds, and the like. As this age group is the most likely to invest meaningful sums of money in the markets, it is worrisome if their confidence in equities is lost (Sorensen).

These observances of risk mentality help to round out the picture of consumer confidence. It is easy to see that many Americans will not be confident investing for a great deal of time at the perceived risk level that the stock market currently entails (Sorensen). This can subsequently draw down confidence as seen in the Conference Board's Consumer Confidence data. Confidence and stock market returns may be more highly linked as investors become ever more sensitive to changes in the market. This creates the basis for the hypothesis that the stock market has an effect on consumer confidence over time.

The United States investor has shown a willingness to jump back into the markets. This fact could put to rest the idea that some generations may never choose to play in the equities markets again for fear of risk and lack of confidence. In 1982, American investors began putting their money back into equities as a bull market was growing. This rebound came after the poor returns on the market in the 1970s were predicted to scare investors into fixed securities for years to come (Roxburgh, Lund and Dobbs). Consequently, confidence in the economy, as reported by the Consumer Confidence Survey, jumped by more than twenty index points between 1982 and 1983 (The Conference Board). This mentality in the American investor shows that return with risk can become valuable again.

Additionally, the US markets are becoming more attractive with their growing dividend yields. Dividends can, at times, provide more structured return than many bonds can (Roxburgh,

Lund and Dobbs). Hence, the US economy should not expect a Japanese experience, although there is a definite cause for concern. Perhaps (hopefully) it is inherent in the nature of American investors that confidence may be more easily re-instated. When investors can see growth over multiple periods (or dividend growth), their confidence is bolstered.

Decline of the Middle Class Incomes

A number of trends and shifts in the demographic outlay of the United States have begun to affect the demographics of the stock market as well. Christian Buss of Credit Suisse put the bifurcation of the American consumer into more digestible terms: the divide between the “income statement consumer” and the “balance sheet consumer”. His analogy helped to define what has grown into a national dilemma over the middle class. Where has it gone?

Consequences of this demographic shift will certainly impact the stock market and its players. For instance, 54.5% of the total U.S. income is comprised of households that earn less than \$100,000 a year—the income statement consumers. These consumers are ones that must make purchasing decisions based on the income they take in each week. The other 45.5% of total U.S. income is generated from households pulling in greater than \$100,000 a year—the balance sheet consumers. These households have seen a ten percent increase in average income over the past ten years (McDonald). The most recent data (2009) from the U.S. Census Bureau reports that only 20.1% of U.S. Citizens earn more than \$100,000 a year in income. In 1990, only 15.0% of the population placed into this income category (U.S. Census Bureau). Balance sheet consumers are not living paycheck to paycheck, and are in fact getting richer as the years go by. Higher salaries and a more rosy perspective on the economy help to boost consumer confidence at these income levels (McDonald). Those in the higher earning bracket are far more likely to invest in the stock market.

But keep in mind that the median household income is \$49,777 (in constant dollars based on CPI-U-RS deflator) (U.S. Census Bureau). On the far end of the spectrum, it is alarming to note that almost a quarter of the household incomes in the U.S. fall below \$25,000 per year (Vo). The shift in the American public will have a growing effect on the disparities between confidence levels at different income brackets.

Breakdown of the Stock Market

It is imperative to first break down the stock market by type of investor before analyzing data in order to become familiar with how each constituent group affects the activities of the equities market. Looking at Graph 7 (in Figures & Graphs), it is apparent that household investors (including non-profit organizations) are the most prevalent of investor type. The breakdown of the equities market by investor type helps to visualize the changing mentality of investors, specifically in the household sector. There has been a major trend from household sector holdings to managed funds such as mutual funds, pension funds, and state and local government retirement funds. However, the household sector is still large enough to analyze the investors in that cross section. Currently, households own approximately 36.55% of all equity holdings. This is the largest holding group in the stock market (2007 Survey of Consumer Finances). The Consumer Confidence Survey, whose data is under examination in this thesis, calls upon households only. Therefore, it is necessary to see what impact households potentially have on the stock market. Institutional holdings and mutual funds very well may not share the same confidence that households do.

Conversely, it is equally important to understand the importance of the stock market to household asset portfolios. Net holdings in equities have historically been the largest stake of household investments, even as the stock market plummeted in the Great Recession. These

figures can be seen in the graph on investments by the household sector (Graph 8). Therefore, the stock market has an equally significant impact on household finances.

III. METHODOLOGY

Information taken from the US Census 2012 Statistical Abstract and the Federal Reserve System was used to create graphs that would visually show income levels and investment holdings. Some of this information was coupled together to help the viewer to understand trends between populations and equity holdings (See Figures & Graphs section).

Additionally, information on stock ownership by income was extracted from the Federal Reserve System Board of Governors “2007 Survey of Consumer Finances” in order to visualize which households partake in the stock market. While the income brackets are not synced with the income brackets defined by the Conference Board, there are some similarities between income levels that allow for us to make comparisons. The Survey of Consumer Finances defines income levels by percentiles: the 20th being an income of \$20,600 (in 2007 dollars); 40th marking an income of \$36,500; 60th with an income of \$59,600; 80th with an income of \$98,200; and finally the 90th percentile with an income of \$140,900. Hence, information is shown as: less than 20; 20 to 39.9; 40 to 59.9; 60 to 79.9; 80 to 89.9; and 90 to 100. This information helps to connect the households that are investing in the stock market with the income levels that are most highly correlated with the stock market (2007 Survey of Consumer Finances).

The Conference Board’s Consumer Confidence Survey served as an integral data source for the findings of this thesis. In its survey, the Conference Board determines the consumer and investor sentiment in the United States month by month. The index number illustrates the confidence that Americans have in the current economic climate (Ludvigson). Beginning in

1967, the Conference Board has collected monthly data (every two months from 1967 until 1977) ranging from perceptions on income to business conditions and employment. Surveys are mailed to a randomly selected group of households that are geographically dispersed across the nation with the goal of collecting approximately 3,000 samples. Starting in 2011, seasonal adjustments were put in place when needed. The main concepts, definitions, questions, and operations of the surveys, however, have remained constant since the inception of the Consumer Confidence Index (The Conference Board).

Consumer confidence levels were obtained for five different income brackets from the Conference Board's Consumer Confidence Survey. These brackets are as follows: under \$15,000, \$15,000-\$24,999, \$25,000-\$34,999, \$35,000-49,999, and \$50,000 and higher. The data ranges from February of 1967 to October of 2012 and reports a monthly index number for each income bracket (The Conference Board). The year 1985 acts as the base year to this index. In addition to this data set, the monthly index levels for the S&P 500 were collected from Capital IQ. The returns from each index string were calculated and then compared. The correlation between the Consumer Confidence composite index, along with each income bracket, and the S&P 500 returns was calculated. Furthermore, correlations were determined with two lagging months of the Consumer Confidence Survey, four lagging months of the Survey, and two leading months of the Survey (Table 4). To be thorough, a correlation matrix was created between the income brackets themselves to render the connection between each income level (Table 3).

Regression analyses were run in order to obtain the t-stat and P-value for each income bracket and the S&P 500. This will show the significance of the correlation between the consumer confidence change for each income bracket and the returns on the S&P 500. T-statistics greater than two signify a strong correlation. The P-value will be noted in order to

determine the chance that the results obtained could occur again in a random distribution. If, say the P-value is 5%, then there is a 95% probability that the variables have some effect on each other (Table 5) (Princeton University).

Ultimately, the correlations and regression analyses were studied to determine the effect of the S&P 500 on the Consumer Confidence Index, and vice versa. This data analysis can help to show the link between investor sentiment and consumer perception with the performance of the stock market. As stated above, the inputs to the Consumer Confidence Survey span all income levels and demographic groups; however the breakdown of income brackets allows further insight into the connection between various household perceptions of the economy and the S&P 500.

IV. RESULTS

The bulk of data analysis occurred between the Consumer Confidence Index and the S&P 500 returns from the year 1967 to 2012. The correlation and regression analysis that was conducted allowed for a visual of the connection between the two.

Firstly, some knowledge can be gleaned from looking at the Consumer Confidence data set alone. It is interesting to note that the mean consumer confidence levels for each income category generally increase as the income grades rise. With the exception of the income bracket ranged \$35,000 to \$49,999 (CC50K), the trend line of consumer confidence slopes upward as income levels rise. This could be anticipated, considering higher level incomes have greater amounts of disposable income to spend on the stock market (income statement consumers vis-à-vis balance sheet consumers). While the mean index level for the composite Consumer Confidence Index hovers just under 100 (at 96.9), one can also point out that those with an

income \$50,000 or above have, on average, a far higher confidence in the economy (114.5). Refer to Table 1 to see the summary statistics for the Consumer Confidence Index and the breakdown between income brackets. Furthermore, refer to Graph 2 to note the dispersion of the income brackets over the time period provided.

The findings of the correlation and regression analysis show the viewer that the stock market does indeed affect the perceptions of consumers, via the Consumer Confidence Index. The correlations found by lagging the total Consumer Confidence Index by two months to the S&P 500 show a higher correlation of the stock market affecting consumer perceptions of the economy than when the Consumer Confidence Index leads the S&P 500 by two months. That is to say that the S&P 500 has more impact on household confidence in the economy than consumer confidence has on the returns of the stock market. The correlation with a two month lag of the composite Consumer Confidence Index is 0.04303 (or 4.303%). The correlation with a two month lead of the Index is 0.034827 (or 3.4827%). However, the highest correlation between the total Index and the S&P 500 returns are when the two are concurrent; the correlation is thus a 0.3366 (or 33.66%). This correlation shows us that there is a definite positive connection between the two sets of data and that they certainly do influence each other (Table 4).

Looking further into the income breakdown for the concurrent correlation between the Index and the S&P 500, it can be seen that the income bracket \$50,000 and over carries the highest correlation (0.31818) with the stock market returns. Perhaps this correlation is so high because this particular income bracket has represented, on average, 49.5% of the population over the last twenty-two years (see Table 2). It is interesting to note that within this income category, the correlation is higher when the Consumer Confidence Index is leading the S&P 500 returns rather than when the Index is lagging behind stock returns. Also worth noting is the graph

displaying stock holdings' share of total financial assets for the top half of income levels (Graph 6). For instance, in 2007 the 60th to 100th percentiles of households filled out their financial asset portfolios with, on average, 53.1% stock holdings (2007 Survey of Consumer Finances). In addition to this information, households make up approximately 36.55% of total equity holdings (Flow of Funds Accounts of the United States). All of these statements help to make the argument that the top percentiles of household incomes have a strong link with the stock market. It is most definite that their confidence and their returns move concurrently.

By reviewing the regression analysis for each income bracket compared with the S&P 500, it is apparent from looking at the t-statistic and the P-value of each regression analysis that the findings for each income bracket are statistically significant. Each t-stat is large, implying that each coefficient was able to be estimated with a good deal of accuracy. The regression analysis for the coefficient of the Consumer Confidence composite index return rendered a t-stat of 8.3530; for the Consumer Confidence income bracket under \$15,000 (CC15K) a t-stat of 4.5864 was given; for the income bracket CC25K, a t-stat of 6.1663; for the income bracket CC35K, a t-stat of 6.2917; for CC50K, a t-stat of 5.4399; and for the income bracket CC50plus, a t-stat of 7.8424. Furthermore, the P-values for each regression were far below the 5% range, signifying that the variable is indeed imposing an effect (Table 5). Full regression analyses can be seen in Table 5 (The Conference Board).

V. CONCLUSIONS

After analyzing the correlation between the Consumer Confidence Index and the S&P 500 returns, the conclusion can be made that the stock market has an impact on consumer perceptions of the economy. That correlation is more so when the two indicators are concurrent,

Tappan, C.

rather than when one index lags the other. Perhaps the most impact is seen among the higher income levels, those households taking in \$50,000 a year or greater. This conclusion points to the trend of the bifurcation of the middle class. Households with greater disposable income are more confident in the economic climate of the United States. They have greater funds to invest, and are more likely to have stock holdings as a larger portion of their asset portfolios. The higher income household is more confident in the economy. However, the volatility of today's stock market creates a sizeable amount of risk that dampens the confidence of the general public.

Ultimately, households and the stock market each play a major role in the other's success. Households are the largest investor segment of the stock market, and the market takes up a significant amount of many household asset portfolios. How and when they influence each other is vital to the economic climate of the United States.

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VII. TABLES

Table 1: Summary Statistics – Consumer Confidence Survey categories and statistics on the S&P 500 returns

(February 1967 – October 2012)

Summary Statistics							
	Consumer Confidence Survey by Income Bracket						S&P
	CCTotal	CC15K	CC25K	CC35K	CC50K	CC50plus	
Mean Δ	0.0016	0.0034	0.0040	0.0030	0.0037	0.0021	0.0061
Mean Level	96.87	75.95	88.43	99.18	95.17	114.49	549.93
Median Δ	-0.0005	-0.0012	0.0000	0.0003	0.0022	-0.0004	0.0091
Median Level	98.03	75.50	90.25	101.70	96.49	116.25	328.79
Maximum Δ	0.4236	0.5652	0.5256	0.6494	0.7730	0.7714	0.1655
Maximum Level	150.63	129.21	143.63	153.73	156.29	168.33	1547.04
Minimum Δ	-0.3350	-0.3292	-0.4272	-0.4804	-0.3796	-0.3555	-0.2308
Minimum Level	31.23	22.48	21.67	26.90	25.98	38.59	63.39

CC: Consumer Confidence; Income brackets: CC15K = < \$15,000; CC25K = \$15,000-\$24,999; CC35K = \$25,000-\$34,999; CC50k = \$35,000-\$49,999; CC50plus = \$50,000 and >.

Table 2: U.S. Population by Income Level

Year	Household Income: Percent Distribution of the U.S. Population by Income Level		Income Levels				
	# of Households (1,000)	Median Income (dollars)	<\$15,000	\$15,000 to \$24,333	\$25,000 to \$34,333	\$35,000 to \$43,333	\$50,000 and >
1998	94,312	\$47,537	14.0	11.3	11.2	13.7	47.2
2000	109,209	\$52,301	12.1	11.1	10.5	14.5	51.7
2002	117,134	\$50,112	13.4	12.0	11.0	14.1	49.4
2003	117,536	\$49,777	13.0	11.9	11.1	14.1	49.7

Modified from U.S. Census Bureau, Statistical Abstract of the United States: 2012 - Table 620

Year	A. Crossover Point: The Income Level \$50,000 and over				
	\$50,000 to \$74,333	\$75,000 to \$99,333	\$100,000 and over		
1998	20.0	12.2	15.0		
2000	18.4	12.7	20.5		
2002	17.6	11.9	19.9		
2003	18.1	11.5	20.1		

Modified from U.S. Census Bureau, Statistical Abstract of the United States: 2012 - Table 630

Table 3: Correlation Matrix – Consumer Confidence Survey Income Levels

The matrix shows the correlations between each income level confidence recorded by the Consumer Confidence Survey.

Correlation Matrix						
	CCTotal	CC15K	CC25K	CC35K	CC50K	CC50plus
CCTotal	1	0.7406092	0.7407703	0.7812809	0.7603744	0.8424033
CC15K	0.7406092	1	0.5282208	0.4935851	0.4776662	0.5537056
CC25K	0.7407703	0.5282208	1	0.5798525	0.4789111	0.5568419
CC35K	0.7812809	0.4935851	0.5798525	1	0.5687096	0.6197788
CC50K	0.7603744	0.4776662	0.4789111	0.5687096	1	0.7976595
CC50plus	0.8424033	0.5537056	0.5568419	0.6197788	0.7976595	1

Table 4: Correlation between Consumer Confidence and the S&P 500

	CCtotal	CC15K	CC25K	CC35K	CC50K	CC50plus
Concurrent Correlation	0.336614	0.192605	0.255156	0.259998	0.226744	0.318180
w/ 2 lags	0.043030	0.028421	0.043549	0.054306	0.020709	0.003055
w/ 4 lags	0.008822	-0.019492	-0.047009	0.015207	0.024172	0.011147
w/ 2 leads	0.034827	0.038985	-0.034161	0.032108	0.046813	0.029468

*lags: consumer confidence lagging S&P returns

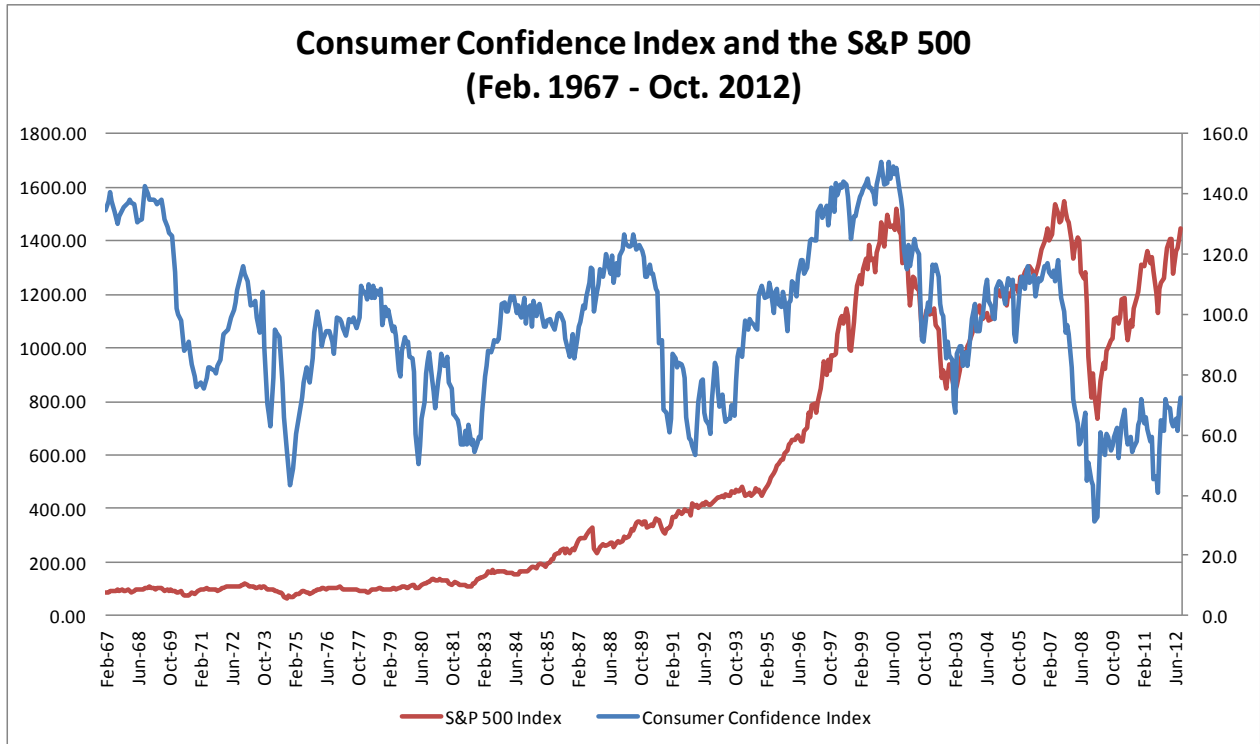
*leading: consumer confidence leading S&P returns

Table 5: Regression Analysis for each Income Bracket

Regression Analysis	
Presented as: Coefficient (t-Stat)	
Significance:	*** 99% significance of coefficient (i.e. p-value <0.01) ** 95% significance * 90% significance
S&P with CCTotal Δ	
<i>Coefficient:</i>	0.198989 *** (8.353005)
S&P with CC15K Δ	
<i>Coefficient:</i>	0.083842 *** (4.586402)
S&P with CC25K Δ	
<i>Coefficient:</i>	0.106459 *** (6.166253)
S&P with CC35K Δ	
<i>Coefficient:</i>	0.118803 *** (6.291656)
S&P with CC50K Δ	
<i>Coefficient:</i>	0.098500 *** (5.439922)
S&P with CC50plus Δ	
<i>Coefficient:</i>	0.173783 *** (7.842376)

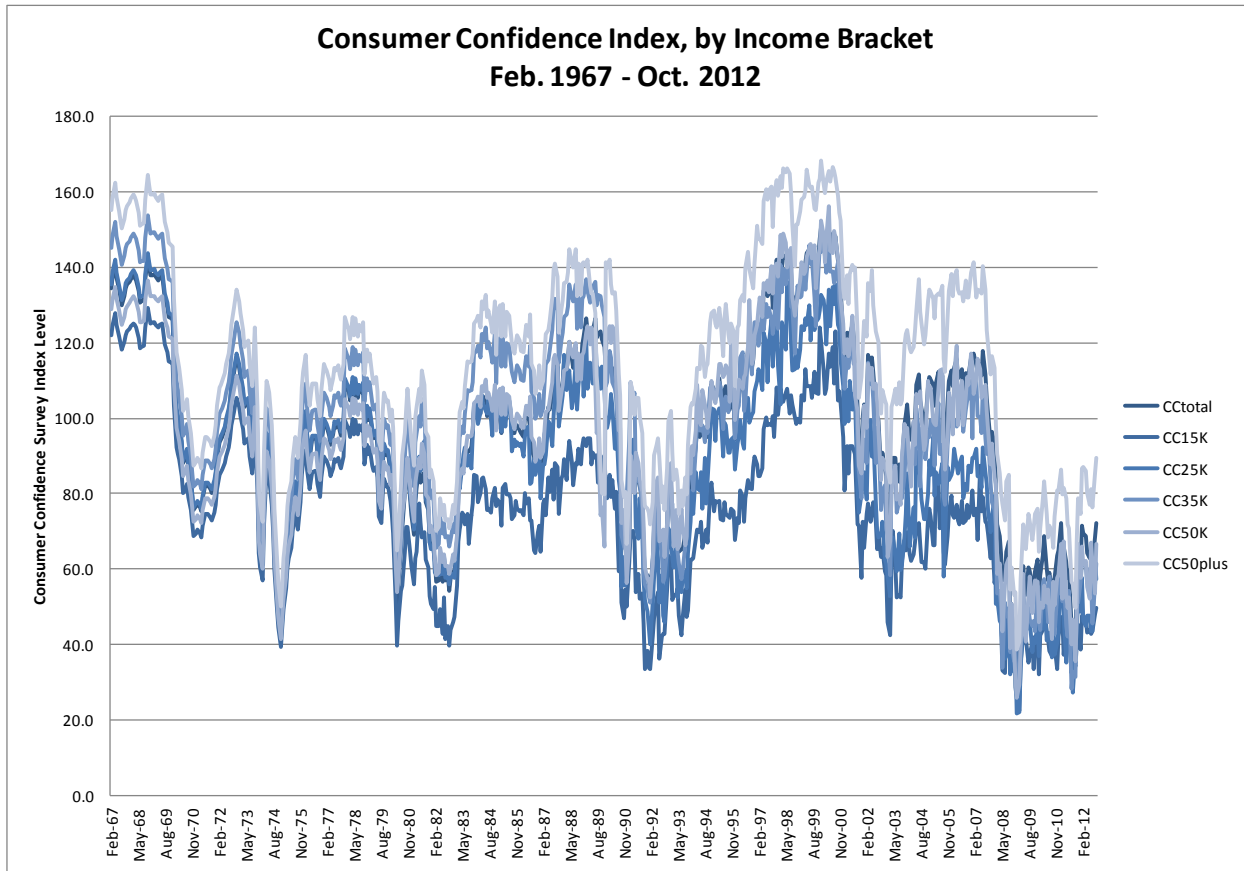
VIII. FIGURES & GRAPHS

Graph 1:



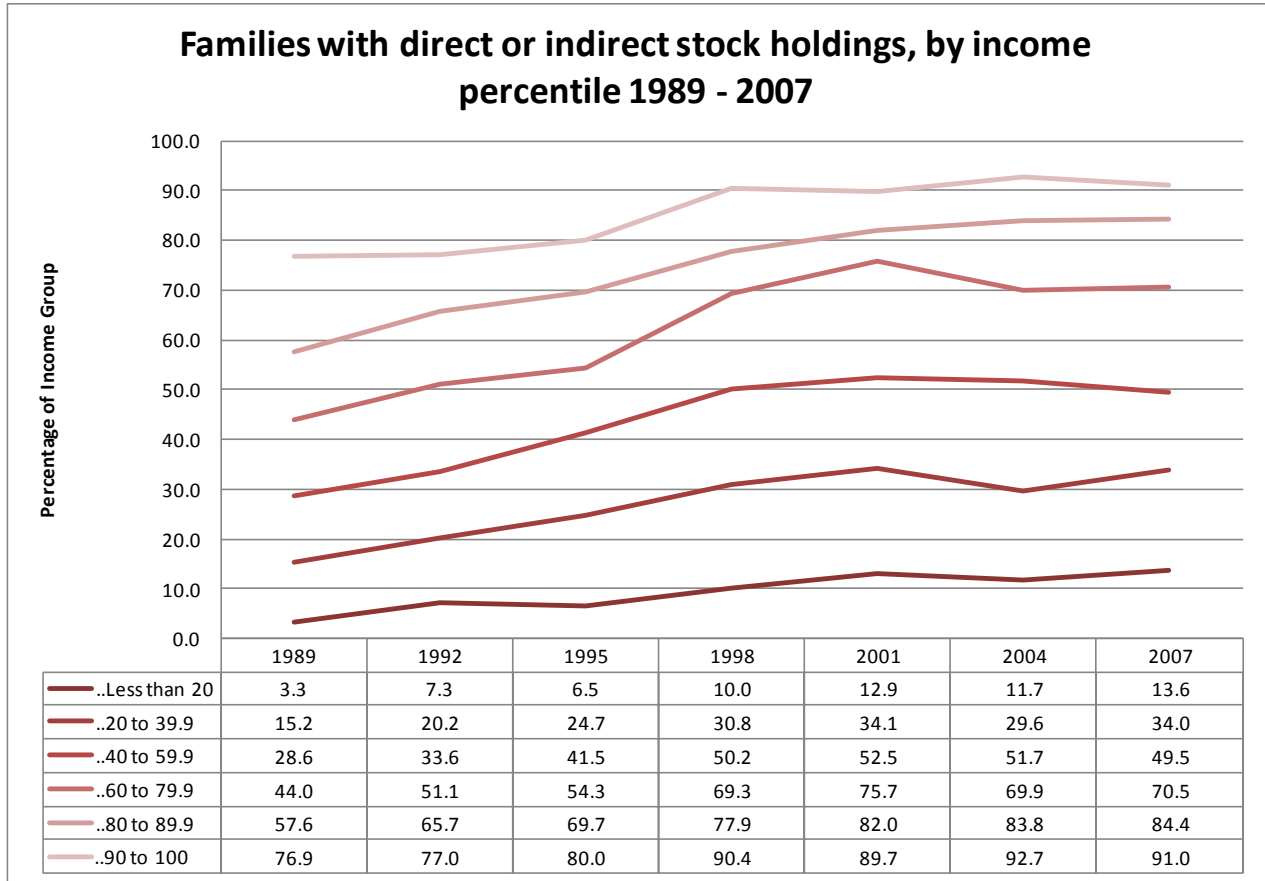
(The Conference Board)
(S&P Capital IQ)

Graph 2:



(The Conference Board)

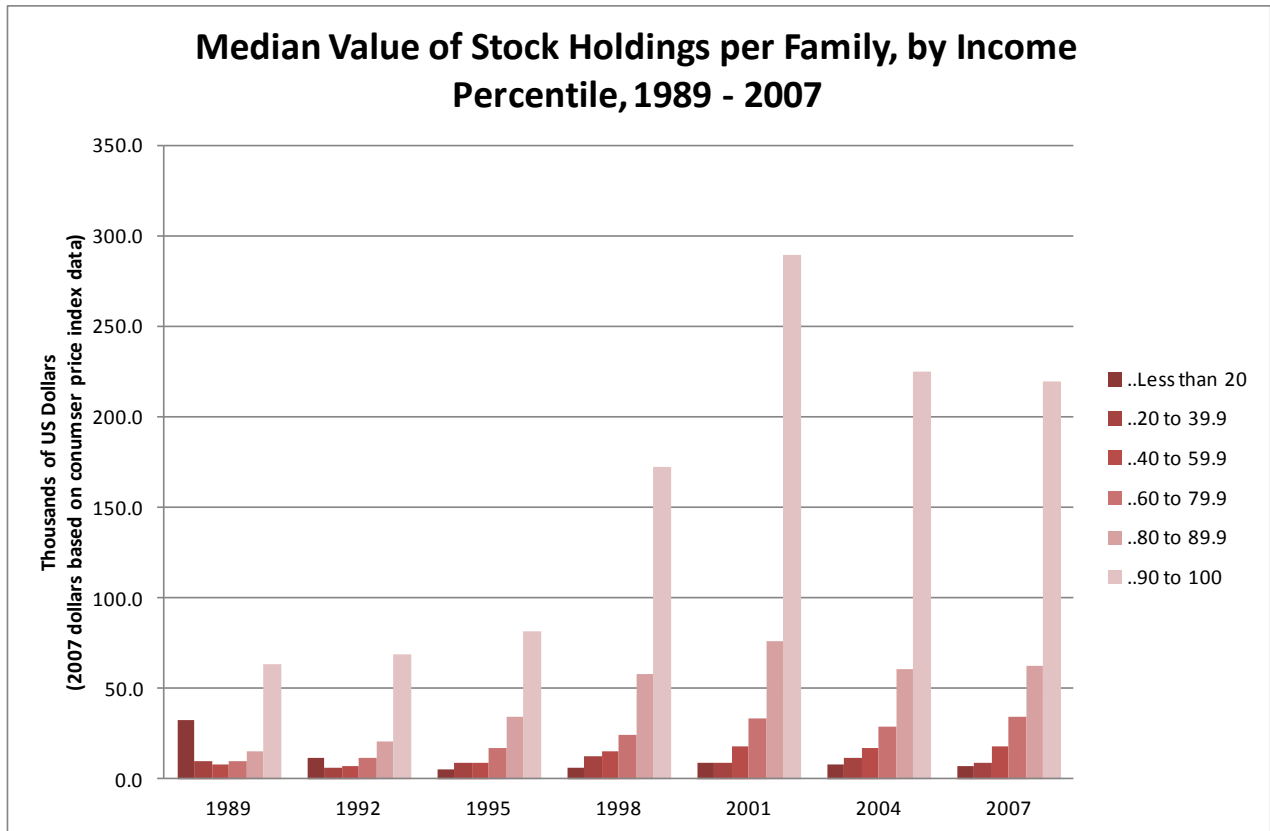
Graph 3:



Income percentiles (in 2007 dollars): 20th: \$20,600; 40th: \$36,500; 60th: \$59,600; 80th: \$98,200; 90th: \$140,900.

(2007 Survey of Consumer Finances)

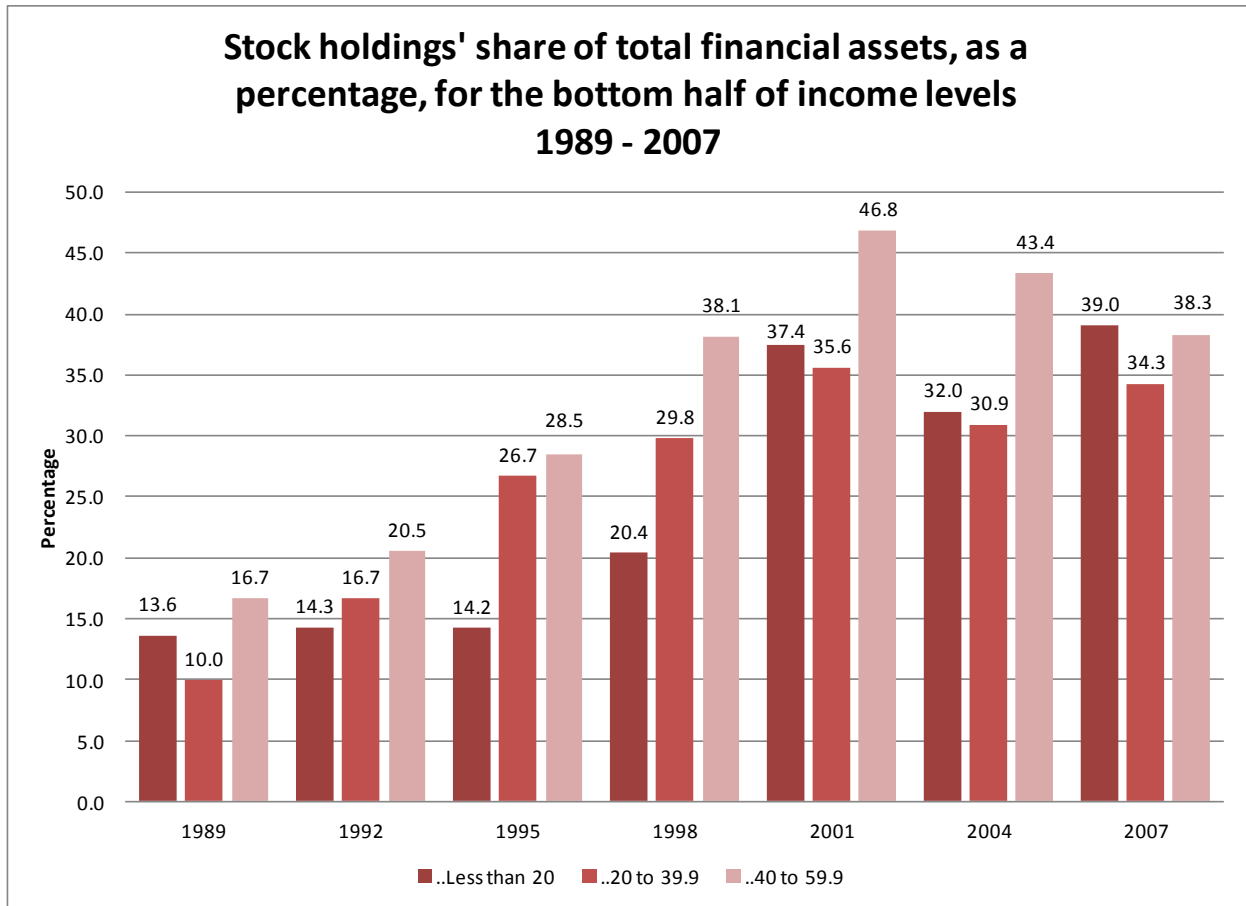
Graph 4:



Income percentiles (in 2007 dollars): 20th: \$20,600; 40th: \$36,500; 60th: \$59,600; 80th: \$98,200; 90th: \$140,900.

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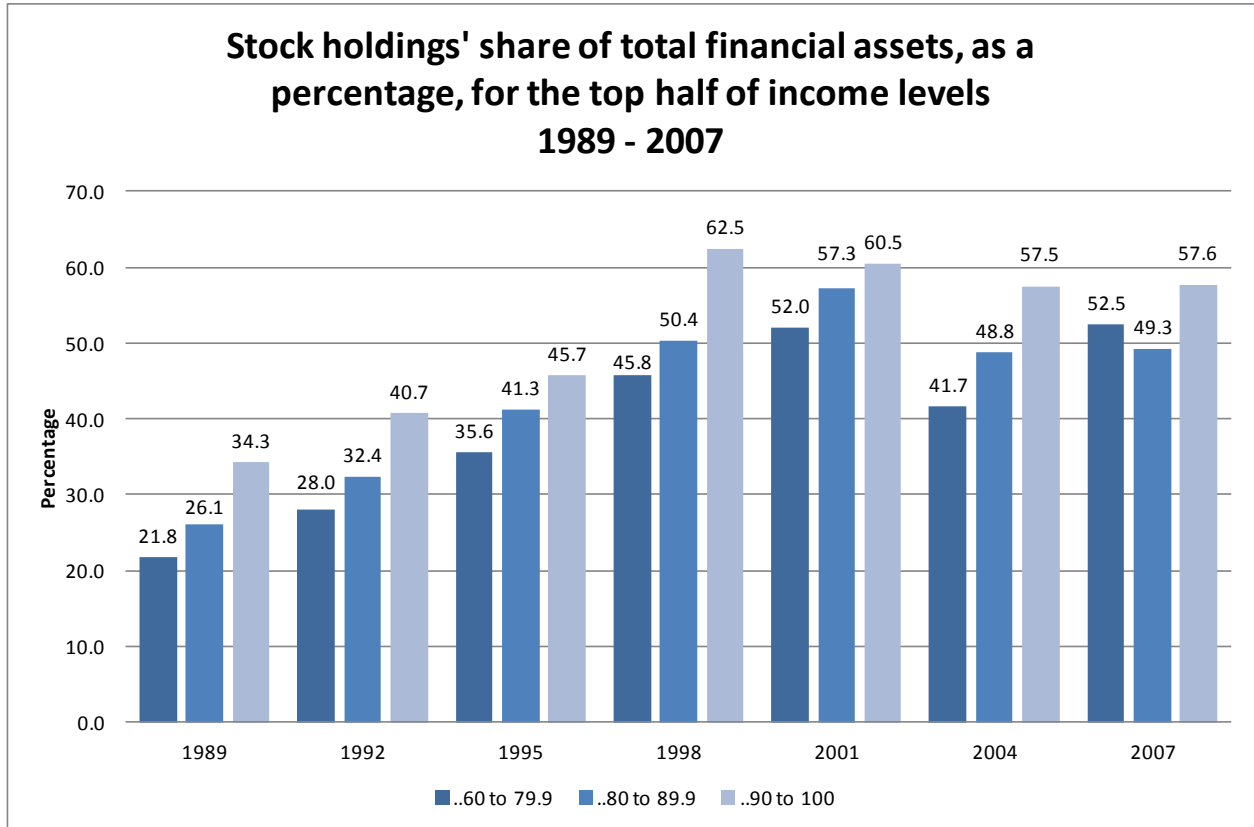
Graph 5:



Income percentiles (in 2007 dollars): 20th: \$20,600; 40th: \$36,500; 60th: \$59,600; 80th: \$98,200; 90th: \$140,900.

(2007 Survey of Consumer Finances)

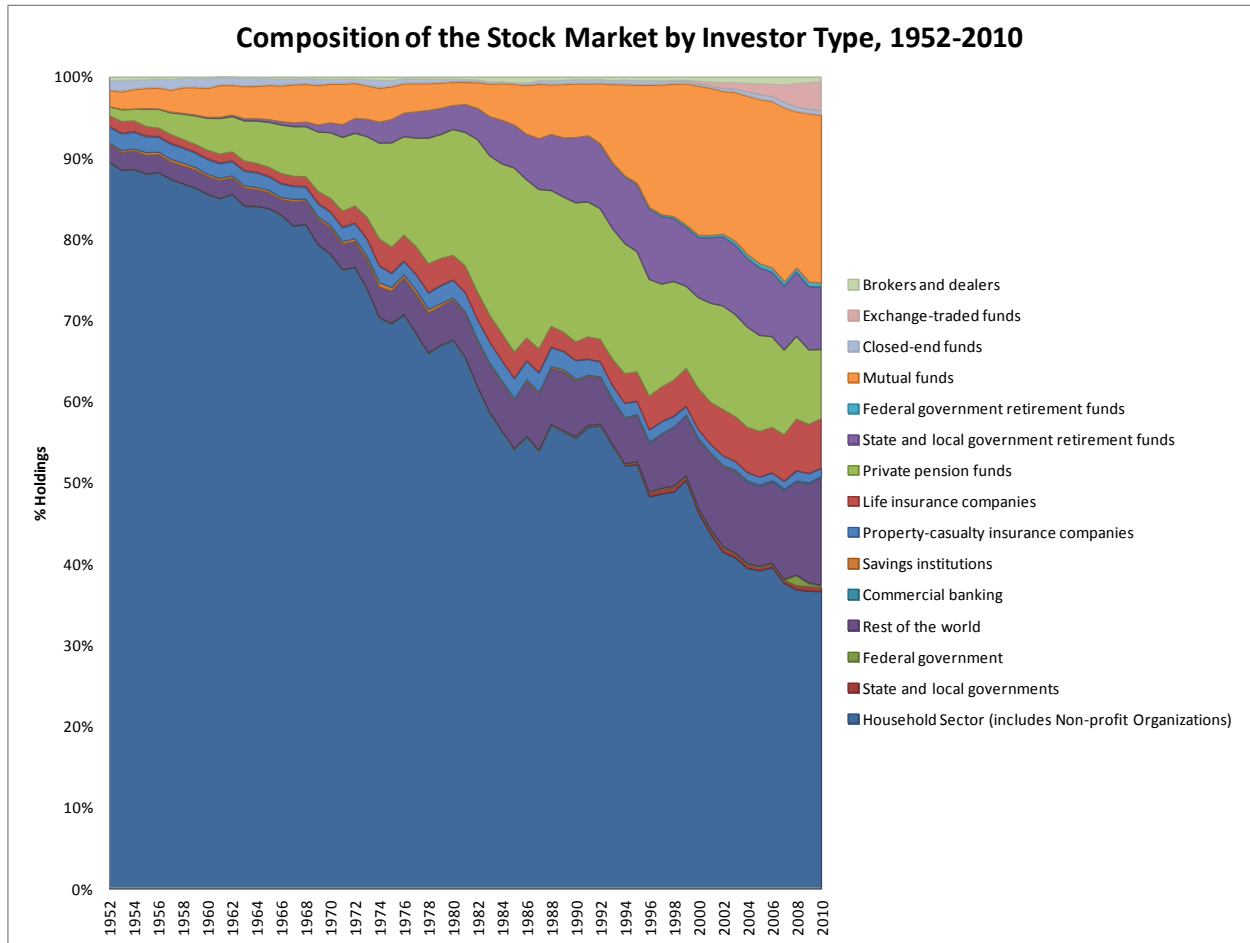
Graph 6:



Income percentiles (in 2007 dollars): 20th: \$20,600; 40th: \$36,500; 60th: \$59,600; 80th: \$98,200; 90th: \$140,900.

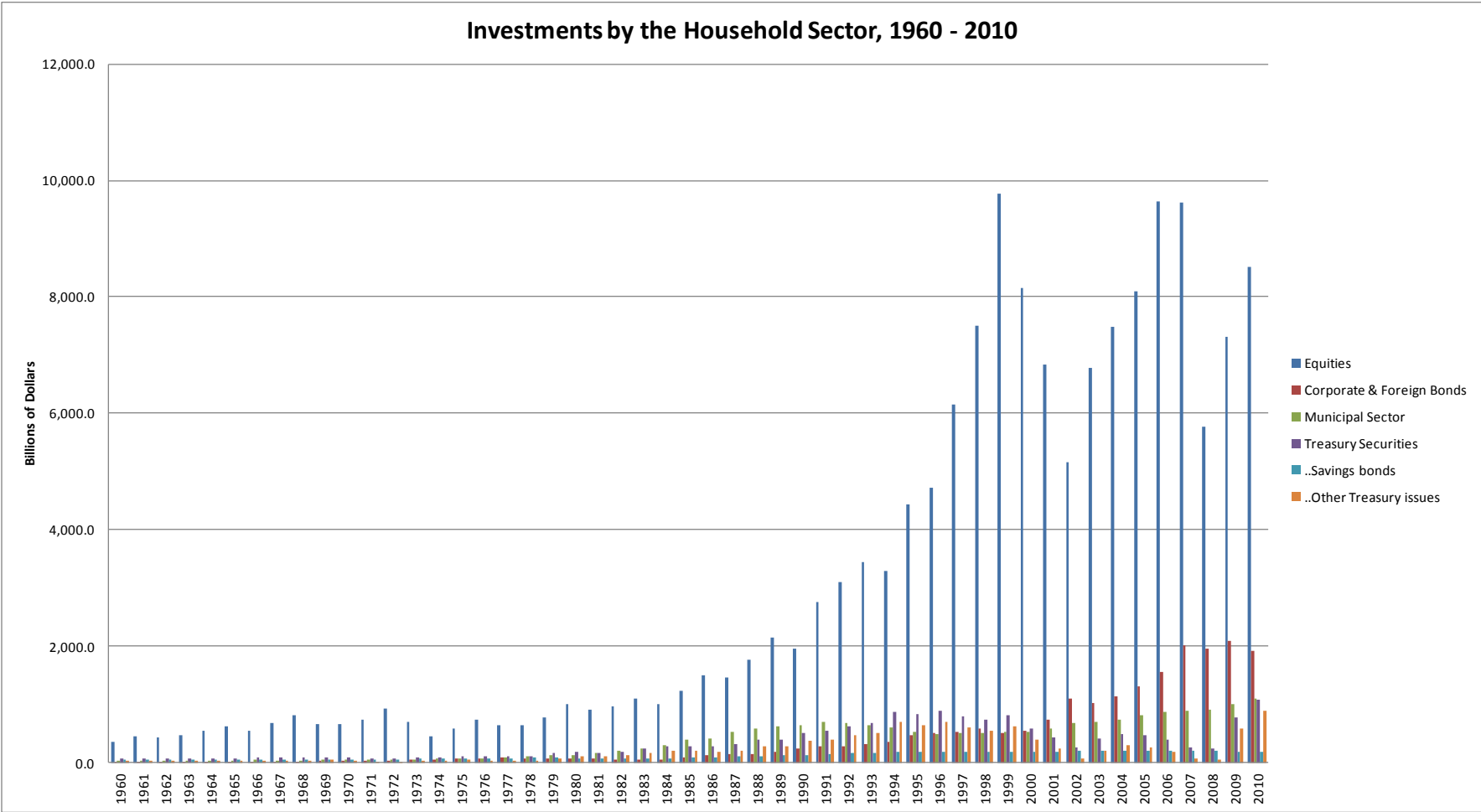
(2007 Survey of Consumer Finances)

Graph 7:



(Flow of Funds Accounts of the United States)

Graph 8:



(Flow of Funds Accounts of the United States)

