# The Effect of the Stock Market on Consumer Spending:
October, 1990 – April, 2002
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This paper investigates the relationship of the stock market and consumer spending between October, 1990 and April, 2002 in order to determine if the effect of the stock market on consumer spending changed over the course of the most recent market rise and fall (Figure 1). Considering the extreme volatility of the market over the past years, and the rise in the number of consumers invested in the market, the relationship between consumer spending and the stock market was likely different than that which existed during previous periods.

Figure 1: Wilshire 5000 Index (October 1990-April 2002)
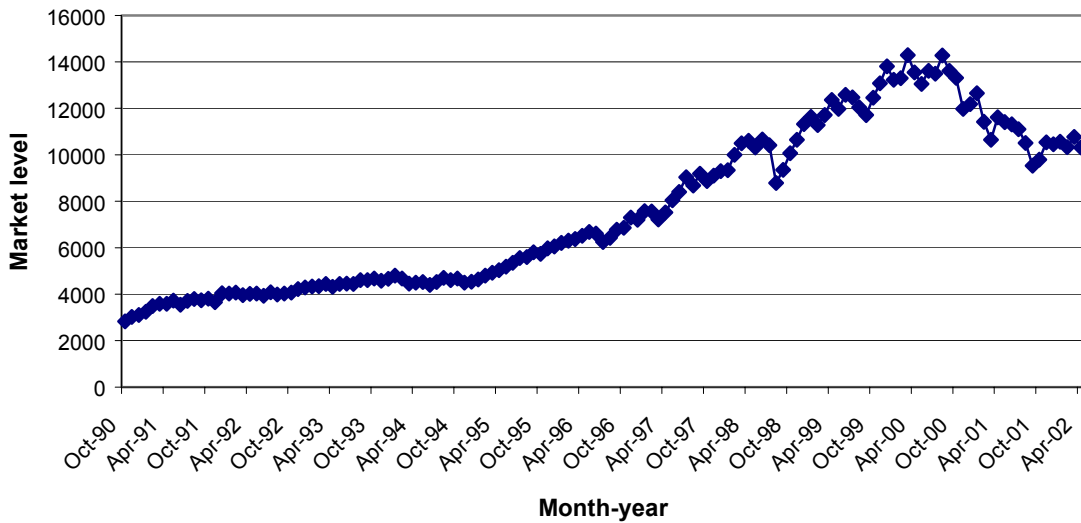
Just four decades ago, Ando and Modigliani (1963) were the first to assert that wealth, not just income, affected consumer spending. Since that time, economists have continually analyzed the degree to which consumer spending reacts to changes in the different components of wealth, such as total household wealth and stock market wealth. In previous recessions, the stock market did not constitute as sizeable a portion of consumer wealth as it did in the most recent recession. With a greater portion of consumer wealth held in the form of stocks (including retirement funds), and with a larger percentage of American households invested in the market, it is likely that the relationship between the stock market and consumer spending changed over this time period.

I. LITERATURE REVIEW

Previous research investigating the relationship between stock market wealth and consumer spending reveals a positive correlation. Although each study concluded that consumer spending responded directly to changes in the market, the magnitude of the relationship between the variables fluctuates between studies, as a result of different time periods. The marginal propensity to consume, or the portion of a $1.00 increase in stock market wealth allocated to

consumer spending, measures the magnitude of the stock market to consumer spending relationship. Overall, previous studies found an average marginal propensity to consume out of stock market wealth between $.03 and $.07 cents.

In 1998, McCluer (1998) conducted a survey based cross-sectional analysis of data collected from the Michigan Survey of Consumers. Unlike empirical studies that measure the extent to which spending responds to the stock market, her study simply surveyed whether or not people varied their spending habits based on changes in the stock market. McCluer concluded that most people did vary their spending slightly in accordance with the stock market. Additionally, she found that households with higher incomes reported more stock market based spending adjustments. Although McCluer's study did not measure the extent of the adjustment, her discovery that higher income investors reacted more to the changes in the market implies that the marginal propensity to consume out of stock market wealth, for a given time period, depends to some degree on the income of the average investor.

A study by Mehra (2001) similarly concluded that people react to changes in stock market wealth. His study, however, consisted of a time series regression analysis, rather than a survey analysis. Mehra found that the relationship between consumer spending and the stock market was negligible in the short run, but substantial in the long run. Although he found a negligible short run relationship during his study, Mehra acknowledged the tremendous size of the market prior to its most recent downturn (beginning in late 2000) and predicted a decline in the average 4% growth rate of consumer spending as early as the first quarter of 2001.

Ludvigson and Steindel (1999) studied the effect of total wealth on consumer expenditures between 1953 and 1997. In addition to their initial 43-year time span, Ludvigson and Steindel also performed similar regression analyses on six sub-sets of time within the 1953 to 1997 period. They estimated a range of marginal propensities to consume out of total wealth varying from a high of .106 (the period from1976-1985) and a low of .021 (from 1986-1997). Ludvigson and Steindel's first analysis utilized a variable representing total wealth. This variable included stock market wealth along with other household wealth. Ludvigson and Steindel also conducted the same analyses that included two different variables, stock market wealth, and total wealth. They found that the marginal propensity to consume out of stock market wealth was significantly smaller than the marginal propensity to consume out of total wealth. Ludvigson and Steindel concluded that, over time, the stock market became a more predominant part of total wealth. The emerging role of the market as a common form of wealth led to a decline in the marginal propensity to consume out of total wealth (the stock market included) and a rise in the marginal propensity to consume out of income.

Overall, previous research indicates that the stock market has had a direct effect on consumer spending. However, the specific size of the effect depended largely on the time period, the characteristics of market investors, and the expectations about future market conditions. Also, research found that people reacted more to permanent changes in wealth and income than they did to temporary ones. Therefore, the stock market effect on consumer spending is not discernable in the short run.

This study adds to, and updates, previous research. While some recent studies exist, none include data beyond 2000, when the market began its steep decline. The benefit of this study is that it includes the time period both before and after the most recent decline in the market. This decline accompanies very different market conditions than any previous decline. Because this study is more recent than any published works, its results will help determine the current effect

of the market on consumer spending so that economists and policymakers can apply the appropriate stimulants to the economy.

Another difference between this study and previous ones pertains to the use of a different and isolated stock market wealth variable. Unlike some previous studies that include stock market wealth in total wealth, this study specifically separates stock market wealth from other forms of wealth. The measure of stock market wealth for this study is the Wilshire 5000 index. Established in 1990, the Wilshire 5000 captures the stock levels of the top 5,000 publicly traded companies in the market (ranked by net worth). This index encompasses a larger number, and better variety of stocks than the DOW, which measures only the top 30 companies, or the NASDAQ, which primarily measures technology stocks.

In addition to a slightly different measure of stock market wealth, this study also differs in its measurement of consumer spending. Consumer spending in this study represents the total consumption of all three components of consumer spending: durable goods, non-durable goods, and services. Other studies included only one or two of the three categories of spending, and sometimes specifically exclude consumption on healthcare, housing, or education. When a person has more money to spend, whether it is from income, the stock market, or another form of wealth, they will likely spend more money on all three components of consumer spending. Isolating any one of the three components of consumer spending may cause biased marginal propensity to consume estimates.

II. THEORETICAL ANALYSIS

Ando and Modigliani (1963) were the first to establish that consumption was not only a function of income, but also of wealth. Over the past decades, the stock market came to represent an increasing proportion of total household wealth in the United States. Despite the fact that the average market investor today is less wealthy, the increase of market participation caused overall net growth in stock market wealth. From 1989 to 1997 the percentage of U.S. Households invested in the stock market grew from 31.6% to 48.9% (Hong, et. al). The increased popularity of stocks as a form of investment amongst the middle class caused people to recognize the stock market as a key indicator of the state of the economy.

On average, the stock market and economy move in stride. The market, however, tends to fluctuate much more than the economy as a whole. Throughout the booming economy of the 1990's, the market did more than boom, it exploded (see Figure 2 below). Today, over two years after the market reached its height, most financial analysts and economist agree that at the end of 2000, the market was considerably overvalued.

The stock market is more volatile and unpredictable than other assets such as savings, real estate, or automobiles. Since the stock market, over the time period of this study, was more volatile than ever before, people likely viewed market changes with greater skepticism and therefore did not respond as much to changes in the market as they did over previous time periods. This assumption implies that the growth rate of consumer spending would still be negatively affected by the recent stock market decline, but to a lesser degree than previous research suggests.

Figure 2

Consumer Spending vs. the Wilshire 5000
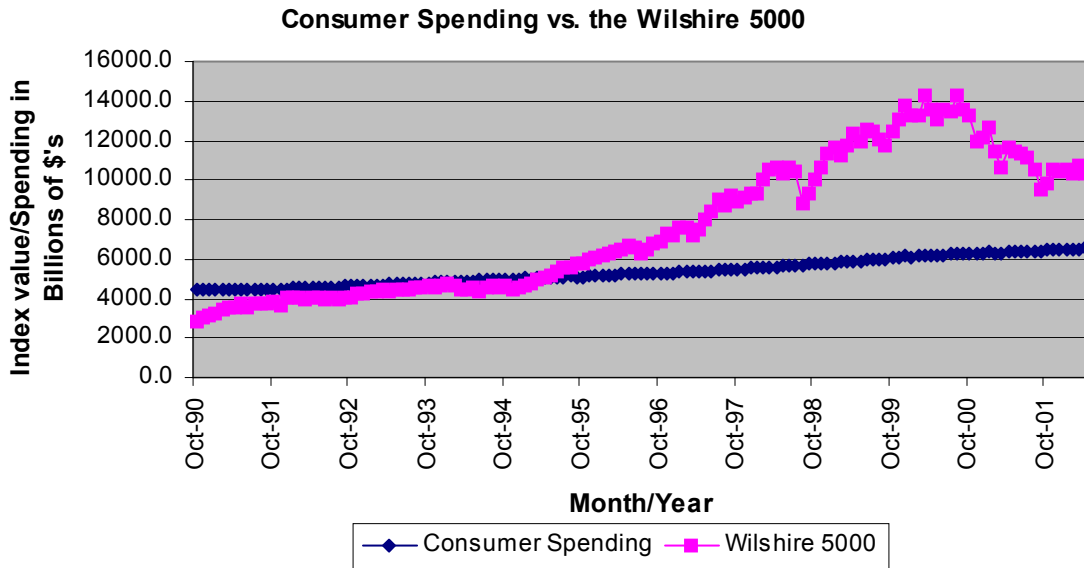
In consideration of recent changes: the declining income of the average investor, the popularity of the market as a whole, the market's overvaluation prior to the recession, and its extreme volatility throughout the past decade, it is my prediction that the average marginal propensity to consume out of stock market wealth declined over the past decade. This hypothesis implies that consumers approaching and entering into the 21st century gave little consideration to the level of the stock market when making spending decisions.

III. VARIABLES

In order to test my hypothesis of a declining stock market effect on consumer spending, I investigated the following equation where consumer spending is a function of real personal disposable income, stock market wealth, consumer sentiment, interest rates, the consumer price index, and personal household wealth (see Appendix A for data):

(1)   RPCEA = f (RPDI, W5000, CSENT, BPLR, CPI, HW)

Real Consumer Expenditures (RPCEA) represents the dependent variable, and includes consumer expenditures on durables, non-durables, and services. A number of other studies consider only non-durables or only durables. Because durables, non-durables, and services are all normal goods purchased by consumers, this study includes all three of them.

Real Personal Income (RPDI) measures the total income of all individuals living and working in the United States. Simple laws of economics imply that, as disposable income increases, so will consumer spending. A proven positive relationship exists between consumer spending and disposable income, and this study should find the same positive relationship.

The Wilshire 5000 (W5000) measures stock market wealth. It indexes the top 5,000 publicly traded companies on the market (ranked by net worth of the company). The Wilshire 5000 index was established in 1990 and potentially serves as a better representation of the actual U.S. stock market. In comparison to the DOW, NASDAQ, or Russell 3000, this index captures a larger number and variety of stocks. The Wilshire 5000 includes more stocks than other leading

indices, but does not include the more vulnerable small business stocks. The Wilshire 5000 represents stocks purchased by common investors and thus serves as an ideal measure of the stock market as perceived by the majority of investors. This model predicts a positive relationship between the level of the stock market and consumer spending.

Consumer Sentiment (CSENT) measures the level of confidence consumers hold in the economy and in the potential for economic growth. The University of Michigan conducts the Survey of Consumers and reports its findings monthly. Their survey interviews a sample of households and asks questions in regard to spending, investments, reactions to current economic conditions, and expectations based on current economic conditions. Consumer Sentiment takes the form of an index number where March of 1997 equals 100.

The six-month certificate of deposit rate (CDR), and the bank primary loan rate (BPLR) serve as two different measures of interest rates. The CDR applies to the interest rate paid to consumers on their investments, and the BPLR is similar to the federal funds rate. A rate applying to consumer loans was not available, but since interest rates move together over time, these rates serve as close substitutes. Because higher interest rates mean that it is more expensive to finance consumer expenditures, a negative relationship should exist between consumption expenditures and both interest rates (CDR and BPLR).

The Consumer Price Index (CPI) is the most widely accepted measure of inflation. An increase in the CPI indicates an increase in prices. When prices rise, and all else remains the same, the level of consumer spending should also rise.

Household Wealth (HW) measures the total assets minus liabilities of households in the United States and also includes HW held in the form of stocks. The Federal Reserve measures HW and reports it under the flow of funds accounts, but only on an annual basis. Therefore, the HW data in this study relies on yearly growth rates such that each consecutive month represents the value of the previous month multiplied by the monthly growth rate for that year. As personal household wealth rises, consumption spending will likely also rise because greater total assets indicate potential for greater future income. However, household assets, including stocks, are less liquid than disposable income, so the effect of HW on consumer spending should be less than the effect of personal disposable income (RPDI) on consumer spending.

IV. EMPIRICAL RESULTS

This study uses an Ordinary Least Squares regression analysis to explain the model of consumer spending. Table 1 below shows the regression analysis results of multiple different equation models.

Table 1: Regression Results

	Equations									
	Eq1	**Eq2**	**Eq2a**	**Eq2b**	**Eq3**	**Eq1**	**Eq2**	**Eq2a**	**Eq2b**	**Eq3**
Variables	Coefficients					T-statistics				
C	-1106*	-997.4*	-1468*	-1369*	612.1*	-10.61*	-9.641*	-5.622*	-5.272*	1.393*
RPDI	0.6878*	0.6029*	0.2316*	0.2262*	0.1293*	17.54*	13.83*	4.726*	4.716*	2.889*
CDR	-0.6176	2.3717	-13.646	N/A	N/A	-0.196	0.7627	-1.563	N/A	N/A
W5000	0.0140*	0.0218*	0.0202*	0.0211*	0.0053	4.115*	5.675*	3.804*	4.012*	1.001
CPIA	15.058*	18.330*	33.957*	34.166*	17.493*	10.03*	10.97*	12.49*	12.92*	4.426*
CSENT	N/A	-2.1619*	0.7450	0.7460	0.5041*	N/A	-3.791*	1.079	1.139	0.871*
BPLR	N/A	N/A	N/A	-22.92*	-29.81*	N/A	N/A	N/A	-2.560*	-3.484*
HW	N/A	N/A	N/A	N/A	0.0451*	N/A	N/A	N/A	N/A	5.379*

Equation statistics	Eq1	Eq2	Eq2a	Eq2b	Eq3
R^2	.9960	.9964	.9984	.9985	.9988
Adjusted R^2	.9959	.9962	.9984	.9984	.9987
F-statistic	8305*	7309*	13897*	14347*	15584*
Durbin Watson	.7515	.756	2.51	2.52	2.51

*Denotes Significance at the 99% confidence level
N/A represents a variable not included in the particular equation

Equation 1 identifies Real Personal Consumer Expenditures as a function of Real Personal Disposable Income, the Wilshire 5000, Consumer Sentiment, the six-month Certificate of Deposit Rate, and the Consumer Price Index: Equation 1: RPCEA = f (RPDI, W5000, CSENT, CDR, CPI)). The results for Equation 1 appear good at first glance. Three of the four independent variables are significant at the 99% confidence level and the R2 and F-stat are both very high. However, the Durbin Watson indicates a high level of positive autocorrelation or a trend in the magnitude of the residuals over time. In addition to autocorrelation, examination of the correlation matrix of independent variables indicates severe multicollinearity. However, multicollinearity is expected in this equation because many of the variables follow the same trend over time.

It is true that the variables move together over time, but changes in each separate variable can have specific effects on Consumer Spending. Eliminating any one of the variables to reduce the amount of multicollinearity would make the other variables appear to have a greater impact on consumer expenditures than they actually do, so I left the variables as they were, and accepted the fact the model contained multicollinearity. Before correcting for autocorrelation, I determined that something was missing from the equation. The opinions of consumers as to the current state of the economy, and their expectations for the future are important factors that could have potentially affected the level of consumer spending. If consumers gain confidence in the economy (as CSENT increases), the level of spending should also rise.

Equation 2 accounts for consumer opinions by adding Consumer Sentiment (CSENT) to the model. The results of Equation 2 show that CSENT was statistically significant at the 99% confidence level. The adjusted R2 also increased from Equation 1 to Equation 2. The negative sign on the coefficient of CSENT, however, did not make sense because consumers should spend more if they are more confident in the economy. In hopes of obtaining a more realistic coefficient on CSENT, I corrected for autocorrelation using the inverted autoregressive roots correction formula.

Equation 2a shows the results of Equation 2 after correcting for autocorrelation (all forthcoming equations contain autocorrelation corrections). Equation 2a shows that the autocorrelation correction changed the negative coefficient on CSENT, and increased the T-statistics of CSENT and CDR to the point of significance. Although the coefficient of CDR indicated a negative relationship between CDR and RPCEA, the T-statistic of CDR indicated that it was not significant. Since I believed that interest rates do significantly affect consumer spending, I substituted CDR with another interest rate.

Equation 2b replaces the CDR in Equation 2a with the Bank Prime Loan Rate (BPLR). The BPLR represents the interest rate banks pay on short-term loans to one another. The BPLR is much lower than the interest rate that consumers pay on loans, and more closely mirrors the federal funds rate. Although lower in percentage points, the BPLR moves together with other interest rates over time. The results of Equation 2b indicated that the BPLR had a greater effect on consumer spending than did the CDR. The BPLR had a higher T-stat than did CDR and the adjusted R2 increased after replacing CDR with BPLR. These changes indicated that BPLR did a better job than CDR at explaining the variation of consumer spending about its mean over the given time period. All subsequent equations include BPLR as the measure of interest rates.

The change from CDR to BPLR helped the model, but there was still something missing. The model did not include changes in wealth other than stock market wealth. Although consumer investment in the stock market over this period was greater than any time period before, it still did not compose the majority of wealth in the United States. Individuals and families hold wealth in their homes, cars, retirement accounts, bonds, and other investments. Household Wealth (HW), as measured by the Federal Reserve Board, includes the total net worth (assets minus liabilities) of households in America. Because only about half of all American households own stocks, people consider more than just stock market wealth when assessing their net worth. Household wealth, which includes stock market wealth, should have a more significant affect on the level of consumer spending than does the stock market alone.

Equation 3 adds Household Wealth (HW), as an additional independent variable, to the equation. The significant T-statistic of HW in Equation 3 confirmed that HW was relevant to the model of consumer spending. Since (HW) includes the total value of stock market wealth in America, the addition of HW to the equation reduced the T-stat and coefficient on W5000. The coefficient on W5000 fell from .021104 in Equation 2b, to .005330 in Equation 3. The reason for the fall in W5000 components was that HW incorporates more forms of wealth than W5000, and therefore better explained changes in consumer spending over time. Although the inclusion of HW led to an insignificant W5000 variable, HW includes stock market wealth, so it accounts for a portion of the potential effect the stock market had on consumer spending. Although the variable that represented the stock market in this equation was not significant by itself, the inclusion of the stock market effect within HW might take away from the significance of W5000. Since both HW and W5000 include stock market wealth, the insignificance of W5000 in Equation 3 is refutable.

The new coefficient of .005330 on W5000 says that, all other variables held constant, a one point increase in the Wilshire 5000 resulted in a .00533 billion, or $5,330,000 increase in consumer expenditures. In order to calculate a marginal propensity to consume out of stock market wealth over the given time period (October, 1990 to April, 2002), the coefficient was applied to the size (level and wealth) of the market. The approximate total value of stock market wealth in the U.S. at the end of this study was about $10 trillion. The value of Wilshire 5000 at the end of this study was 10,318.45. Considering an approximate total stock wealth of $10 trillion, and an approximate W5000 value of 10,000, a one-point increase in the W5000 represents a one billion dollar increase in total stock market wealth. Therefore, the W5000 coefficient of .00533 means that for every one-point or $1,000,000,000 ($1 billion) increase in stock market wealth, consumer expenditures rose by $5,330,000 ($5.33 million).

A look at the actual change in RPCEA, W5000 and RPDI over a given time period can help to interpret the expected change in RPCEA based on the changes in W5000 and RPDI. See Table 2 below for the actual values of W5000, RPCEA, and RPDI over the period of market decline (August, 2000-April, 2002).

Table 2

	W5000	**RPCEA**	**RPDI**
August, 2000	14,280	$6,247.9 billion	$6,683.0 billion
April, 2002	10,318	$6,533.2 billion	$6,983.3 billion
Total change over period	-3,962	+$285.3 billion	+ $300.3 billion
Percentage change	-27.7%	+4.6%	+4.5%

The model predicted a $5.33 million dollar decrease in RPCEA for every one-point increase in W5000. Multiplying $5.33 times the associated decline in W5000 of, 3,962 points leads to an expected decline $21.117 billion in RPCEA. As the table shows, RPCEA did not fall at all, but rather rose by $285.3 billion over this time period. The reason that RPCEA did not decline is that the expected decline based on W5000 assumes that all other variables remain constant, but this is never the case. RPDI plays the largest role in determining RPCEA, and it rose by $300.3 billion over the same time period. A marginal propensity to consume out of income (RPDI) is necessary in order to calculate the expected increase in RPCEA as a direct result of the increase in RPDI (over the period from October, 1990 to April, 2002). Table 3 below shows the results of an OLS regression analysis of RPCEA (dependent variable) versus twelve independent variables of RPDI (each with a lag one-unit greater than that before it). The sum of the coefficients of the twelve variables equals the average marginal propensity to consume out of RPDI from October of 1991 to April of 2002.

Table 3

Variable	**Coefficient**
RPDI	.363139
RPDI(-1)	.081593
RPDI(-2)	.196264
RPDI(-3)	.119587
RPDI(-4)	.097805
RPDI(-5)	-.022517
RPDI(-6)	.018451
RPDI(-7)	-.071997
RPDI(-8)	-.060808
RPDI(-9)	.040904
RPDI(-10)	.149802
RPDI(-11)	.206985
Sum of Coefficients (marginal propensity to consume)	*1.119208*

The result of this regression suggests that the average marginal propensity to consume out of personal income was 1.119208. To consume 112% of one's income seems impossible, but the time period is relatively small, and the inflated values on the coefficients of the lagged RPDI variables assume that all other variables in the model

remained constant. Such was clearly not the case. The variation of other independent variables and the small time frame of the model provide possible explanations as to why the actual marginal propensity to consume over this period was lower than the model suggests.

When applied to the $300.3 billion increase in RPDI (Table 2) from August, 2000 to August, 2002, the marginal propensity to consume out of RPDI (1.119- Table 3) predicts an increase in RPCEA of $336 billion. RPCEA over this period actually increased only $285.3 billion. When combining the expected decrease in RPCEA as a result of W5000 with the expected increase in RPCEA as a result of RPDI, the net effect predicts an increase in RPCEA of $314.9 billion. This figure is closer to the $285.3 billion increase in RPCEA that actually occurred between August of 2000 and April of 2002. If the effects of the other independent variables were also incorporated into the equation, the expected change in RPCEA would likely approach its actual value of $285.3 billion.

V. INTERPRETATION OF RESULTS

Equation 3 represents the final model because it produced the highest R^2 and adjusted R^2, indicating that it best explains the variation in consumer spending over the given time period. The R^2 of .9988 indicates that the equation explains 99.88% of the variance in RPCEA (October, 1990 to April, 2002) about its mean. The adjusted R^2 indicates that, after taking into account the six independent variables used to explain RPCEA, the equation explains 98.87% of the variance of RPCEA about its mean. The F-statistic of 15,584 is statistically significant at the 99% confidence level and indicates that the equation as a whole is significant.

The signs and magnitudes of the T-statistics and coefficients are all reasonable and realistic. RPDI, BPLR, CPI, and HW are all significant variables at the 99% confidence level. CSENT and W5000, although not statistically significant, are still included in the model because theory, previous research, and personal intuition indicate that these variables did affect consumer spending. As mentioned above, the insignificance of W5000 in not conclusive because a portion of the potential W5000 effect on consumer spending might be taken away by the additional inclusion of market wealth within HW.

Assuming all other variables held constant, the coefficient of each variable in Equation 3 suggests the following impact on RPCEA:

RPDI: A one billion dollar increase in real personal income will cause RPCEA to rise by $129,317,000 (129.3 million).

W5000: A one-point increase in the Wilshire 5000 index ($1 billion dollar increase in total U.S. stock market wealth) will cause real personal consumption expenditures to rise by $5,330,000 ($5.33 million).

CSENT: A one-point increase in the level of consumer sentiment will cause real personal consumption expenditures to rise by $504,137,000 ($504 million).

BPLR: A one-percentage point increase in the bank primary loan rate will cause real personal consumption expenditures to fall by $29,805,030,000 ($29.8 billion).

CPI: A one-point increase in the level of the consumer price index will cause real personal consumption expenditures to rise by $17,492,920,000 ($17.49 billion).

HW: A one billion dollar rise in household wealth will cause real personal consumption expenditures to rise by $45,144,000 ($45.1 million)

The implications predicted above by the model suggest reasonable relationships between consumer spending and each independent variable.

VI. FURTHER IMPLICATIONS

In addition to looking only at the sum of Real Personal Consumption Expenditures, I also briefly examined the implication of separate stock market effects on the three individual components of consumer expenditures: durables, non-durables, and services. Figure 3 below shows the individual components of consumer spending, as well as the sum of consumer spending as a whole.

Figure 3

Consumer Expenditures (Nov.1991:April 2002)
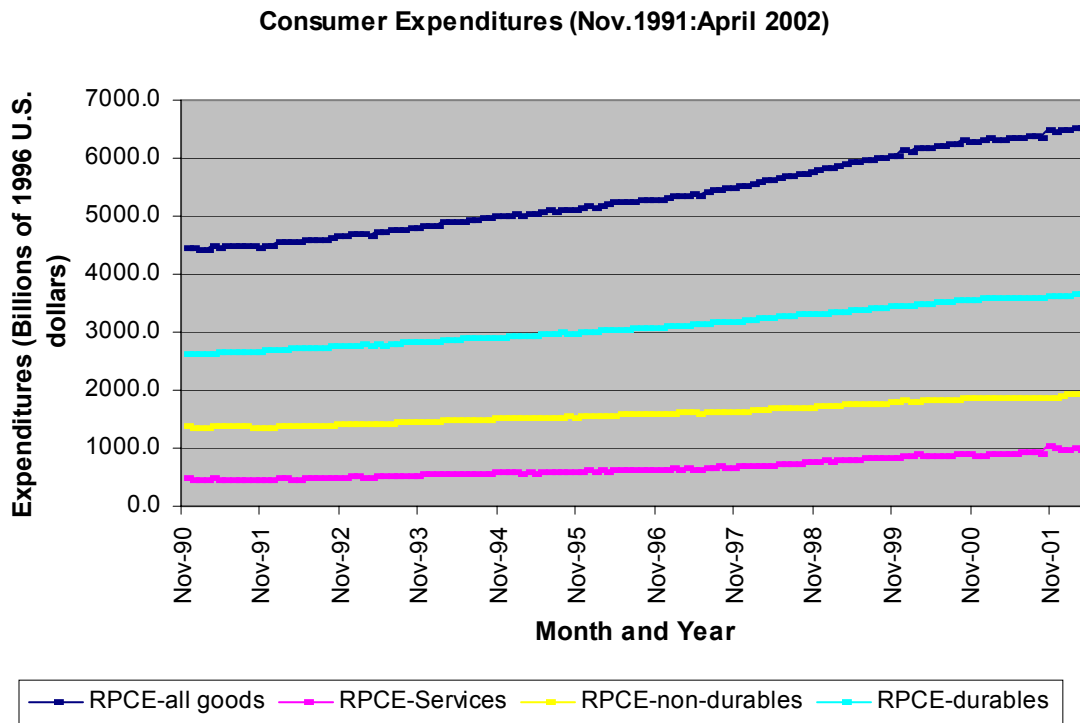
Although the graph demonstrates relatively stable trends in consumer spending over time, the sum of consumer expenditures (RPCEA) begins a more rapid increase in

1997. The growth rate of RPCEA then declines back to its previous rate starting in early 2001, at the beginning of the most recent recession. The decline in growth of RPCEA also follows shortly after the initial decline in the stock market.

Over the one-month period from August of 2001 to September of 2001, RPCEA fell almost $50 billion as RPDI fell $40 billion, HW, $74 billion, and the W5000, almost 1,000 points. The following month, between September and October of 2001, RPDI fell another $170 billion, HW another $75 billion, but the W5000 rose slightly.   Despite a downfall in most economic indicators over this short period, consumer expenditures on durables from September to October of 2001 increased more than 10%, or $100 billion. The rise in durables despite a decline in the economy suggests that durable expenditures are less vulnerable to factors such as income and the stock market, but highly vulnerable to variables such as interest rates.

An ordinary least squares regression analysis of RPCEND versus the same independent variables (RPDI, W5000, CSENT, BPLR, CPI, and HW) found a negative relationship between the stock market (W5000) and consumer spending (RPCEA). Although the relationship was not statistically significant, it was interesting to note that the individual components of consumer spending reacted differently to changes in the stock market.

VII. CONCLUSION

Consistent with other studies, this study found a positive relationship between consumer spending and the level of the stock market. The magnitude of this relationship and the significance of the market on consumer spending, however, differ from previous studies. This study was unable to conclude that the stock market had a significant impact on consumer spending between the period of October, 1990 and April, 2002. It found a marginal propensity to consume out of stock market wealth of slightly less than $.01. This marginal propensity to consume of $.01 was much lower than the average $.03-.07 found in previous studies. The primary reason that this study found a lower marginal propensity to consume was the time period and the surrounding market conditions. This study encompassed a period of increased market investment and extreme market volatility.

Prior researchers estimated the long-term marginal propensity to consume out of stock market wealth, and therefore, only found an average marginal propensity to consume. This study, on the other hand, focused on the period that included the stock market's most rapid increase in size and popularity. Due to the rapid increase in the size of the market, the subsequent decline also occurred faster and more furiously than in previous downturns.

The volatility of the market over this time period also contributed to the lower marginal propensity to consume out of stock market wealth determined by this study. Tremendous volatility led people to view the market as a temporary, rather than permanent, form of wealth. According to the lifecycle model of spending, people do not react to temporary changes in income or wealth, and thus did not significantly reduce their spending based on the market downfall.

Despite the relatively low marginal propensity to consume over the past decade, the considerable size of the market prior to its downturn suggested that it might still cause a significant decline in the growth rate of consumer spending. Based on this study's

finding of a marginal propensity to consume of $.01, the one-year decline of 3,765 points in the Wilshire 5000 (from August of 2000 to August of 2001) caused real personal consumption expenditures to fall by $20.1 billion, or more than 3%. Although consumer spending did not react as strongly over this period than it did in the past, increased market participation accompanied by a substantial decline in the values of stocks caused a small, but noticeable decline in consumer spending.

This study encompassed a period over which stock market conditions were more irregular and extreme than in previous studies.   In addition, this study limited the time period to approximately 10 years. A shorter time period was necessary to determine the most recent effect of the market on consumer spending. As noted by the smaller ($.01) marginal propensity to consume out of stock market wealth in this study, people in recent years reacted less to changes in the stock market than in the past. Over the time period of this study, permanent and predictable assets such as income and household wealth played a larger role in determining consumer spending than did transient assets such as stocks.

My findings provide evidence that there is no such thing as a concrete marginal propensity to consume out of stock market wealth. The marginal propensity to consume out of stock market wealth depends on the time period and external factors of the market during that given period. The percentage of the population participating in the market, its recent volatility, and the average age, income, and opinions of individual investors are factors that help determine the marginal propensity to consume for a given period.

APPENDIX A

UNITS	Real Consumption Expenditures- all goods	Wilshire 5000 Index	Consumer Price Index- all goods	Consumer Sentiment	Household Wealth
	Billions of chained 1996 dollars	Index	Index	Index	Billions of chained 1996 dollars
Month/year	**RPCEA**	**W5000**	**CPIA**	**CSENT**	**HW**
10/01/90	4466.2	2834	133.5	63.9	20313.47
11/01/90	4462	3015	133.8	66	20342.03
12/01/90	4444.8	3101.4	133.8	65.5	20373.8
01/01/91	4407.2	3245.5	134.6	66.8	20495.23
02/01/91	4429.1	3484.9	134.8	70.4	20617.38
03/01/91	4476.3	3583.7	135	87.7	20740.26
04/01/91	4463.1	3587.9	135.2	81.8	20863.88
05/01/91	4473.8	3719.3	135.6	78.3	20988.23
06/01/91	4472.9	3545.5	136	82.1	21113.32
07/01/91	4490.8	3705.9	136.2	82.9	21239.16
08/01/91	4481.6	3795	136.6	82	21365.74
09/01/91	4480.5	3744	137.2	83	21493.09
10/01/91	4461.4	3807.1	137.4	78.3	21621.19
11/01/91	4481.4	3650	137.8	69.1	21750.05
12/01/91	4481.7	4041.1	137.9	68.2	21943.2
01/01/92	4542.4	4027.8	138.1	67.5	22017.82
02/01/92	4542.6	4071.3	138.6	68.8	22092.7
03/01/92	4549.4	3961.6	139.3	76	22167.84
04/01/92	4549.8	4008.7	139.5	77.2	22243.23
05/01/92	4570.8	4021.5	139.7	79.2	22318.87
06/01/92	4579.5	3930.3	140.2	80.4	22394.77
07/01/92	4593	4083.9	140.5	76.6	22470.93
08/01/92	4576.5	3985	140.9	76.1	22547.35
09/01/92	4631.8	4024.4	141.3	75.6	22624.03
10/01/92	4649.7	4067.8	141.8	73.3	22700.97
11/01/92	4659.4	4223.4	142	85.3	22778.18
12/01/92	4688.6	4289.7	141.9	91	22876.8
01/01/93	4679.1	4336.9	142.6	89.3	22974.24
02/01/93	4687.7	4342.9	143.1	86.6	23072.1
03/01/93	4658	4444.3	143.6	85.9	23170.38
04/01/93	4709.6	4316.1	144	85.6	23269.07
05/01/93	4713.5	4438.6	144.2	80.3	23368.18
06/01/93	4741.5	4449.6	144.4	81.5	23467.72
07/01/93	4764.4	4443.3	144.4	77	23567.68
08/01/93	4773.4	4601.5	144.8	77.3	23668.06
09/01/93	4792.7	4601.8	145.1	77.9	23768.88

10/01/93	4807.8	4672.8	145.7	82.7	23870.12
11/01/93	4820.9	4583.8	145.8	81.2	23971.79
12/01/93	4838.2	4657.8	145.8	88.2	24109.1
01/01/94	4819.6	4798.1	146.2	94.3	24160.17
02/01/94	4887.6	4678.4	146.7	93.2	24211.34
03/01/94	4892.6	4457.7	147.2	91.5	24262.63
04/01/94	4898.2	4494.7	147.4	92.6	24314.02
05/01/94	4903.6	4525.5	147.5	92.8	24365.52
06/01/94	4921.8	4395.2	148	91.2	24417.14
07/01/94	4919.7	4519.8	148.4	89	24468.86
08/01/94	4953.7	4706	149	91.7	24520.69
09/01/94	4960.2	4605.8	149.4	91.5	24572.63
10/01/94	4984.8	4674.2	149.5	92.7	24624.68
11/01/94	4995.3	4490.6	149.7	91.6	24676.84
12/01/94	5000.7	4540.6	149.7	95.1	24737.9
01/01/95	5018	4631.4	150.3	97.6	24950.65
02/01/95	4995.2	4803.9	150.9	95.1	25165.23
03/01/95	5021.5	4920.4	151.4	90.3	25381.66
04/01/95	5018.8	5035.9	151.9	92.5	25599.94
05/01/95	5060.7	5192.8	152.2	89.8	25820.11
06/01/95	5099.3	5348.8	152.5	92.7	26042.16
07/01/95	5076.2	5561.9	152.5	94.4	26266.13
08/01/95	5118.1	5602.3	152.9	96.2	26492.02
09/01/95	5103.3	5806.6	153.2	88.9	26719.86
10/01/95	5095.6	5740.9	153.7	90.2	26949.66
11/01/95	5135.3	5970	153.6	88.2	27181.43
12/01/95	5165.6	6057.2	153.5	91	27584.7
01/01/96	5146.4	6211.8	154.4	89.3	27776.53
02/01/96	5186.7	6307.3	154.9	88.5	27969.7
03/01/96	5189.9	6365.9	155.7	93.7	28164.21
04/01/96	5224.9	6514.8	156.3	92.7	28360.08
05/01/96	5232.1	6677.4	156.6	89.4	28557.3
06/01/96	5231.4	6612.8	156.7	92.4	28755.9
07/01/96	5237.2	6247	157	94.7	28955.88
08/01/96	5261.1	6434	157.3	95.3	29157.25
09/01/96	5264.6	6765.6	157.8	94.7	29360.02
10/01/96	5279.5	6851.3	158.3	96.5	29564.2
11/01/96	5286.3	7292.2	158.6	99.2	29769.79
12/01/96	5309.7	7198.3	158.6	96.9	30096.3
01/01/97	5342.1	7575.8	159.1	97.4	30374.76
02/01/97	5351.2	7555.4	159.6	99.7	30655.79
03/01/97	5358.7	7213.5	160	100	30939.42
04/01/97	5368.2	7519.3	160.2	101.4	31225.68
05/01/97	5361.5	8038.5	160.1	103.2	31514.58

06/01/97	5397.4	8396.9	160.3	104.5	31806.16
07/01/97	5454	9031.4	160.5	107.1	32100.44
08/01/97	5464.9	8680	160.8	104.4	32397.44
09/01/97	5467.3	9180.2	161.2	106	32697.18
10/01/97	5484.8	8865.2	161.6	105.6	32999.7
11/01/97	5506.5	9108.1	161.5	107.2	33305.02
12/01/97	5530	9298.2	161.3	102.1	33855.1
01/01/98	5537.6	9340.8	161.6	106.6	34118.84
02/01/98	5582.2	10006.4	161.9	110.4	34384.63
03/01/98	5608.9	10494.7	162.2	106.5	34652.49
04/01/98	5616	10609.6	162.5	108.7	34922.44
05/01/98	5671.6	10314.2	162.8	106.5	35194.49
06/01/98	5693	10663.6	163	105.6	35468.66
07/01/98	5689.4	10420.3	163.2	105.2	35744.96
08/01/98	5711.9	8785.7	163.4	104.4	36023.42
09/01/98	5739.9	9346.8	163.6	100.9	36304.05
10/01/98	5759.8	10072.2	164	97.4	36586.87
11/01/98	5777.2	10650.2	164	102.7	36871.88
12/01/98	5817	11317.6	163.9	100.5	37346.3
01/01/99	5811.1	11620.8	164.3	103.9	37715.41
02/01/99	5852	11286.1	164.5	108.1	38088.16
03/01/99	5891.2	11707.7	165	105.7	38464.6
04/01/99	5917.5	12360.2	166.2	104.6	38844.76
05/01/99	5920.7	11976.8	166.2	106.8	39228.68
06/01/99	5960.1	12583.6	166.2	107.3	39616.4
07/01/99	5980.7	12470.4	166.7	106	40007.94
08/01/99	6004	12042.2	167.1	104.5	40403.35
09/01/99	6015.4	11713.8	167.9	107.2	40802.68
10/01/99	6038.7	12449.4	168.2	103.2	41205.94
11/01/99	6050.8	13078	168.3	107.2	41613.2
12/01/99	6131.4	13812.7	168.3	105.4	42371.6
01/01/00	6114.7	13230.6	168.8	112	42336.96
02/01/00	6159.6	13294.6	169.8	111.3	42302.36
03/01/00	6181.2	14296.2	171.2	107.1	42267.78
04/01/00	6179.8	13541.7	171.3	109.2	42233.22
05/01/00	6199.1	13053	171.5	110.7	42198.7
06/01/00	6215.8	13618.5	172.4	106.4	42164.21
07/01/00	6229	13495.4	172.8	108.3	42129.74
08/01/00	6247.9	14280	172.8	107.3	42095.3
09/01/00	6293.5	13613.3	173.7	106.8	42060.89
10/01/00	6279	13314.68	174	105.8	42026.51
11/01/00	6275.8	11976.24	174.1	107.6	41992.15
12/01/00	6311.6	12175.88	174	98.4	41960
01/01/01	6332.3	12647.31	175.1	94.7	41884.33

02/01/01	6326.4	11425.29	175.8	90.6	41808.8
03/01/01	6319.3	10645.85	176.2	91.5	41733.4
04/01/01	6334.7	11610.21	176.9	88.4	41658.14
05/01/01	6351.4	11412.38	177.7	92	41583.01
06/01/01	6357.9	11312.23	178	92.6	41508.02
07/01/01	6373.7	11100	177.5	92.4	41433.17
08/01/01	6392.3	10515.09	177.5	91.5	41358.45
09/01/01	6346.9	9529.5	178.3	81.8	41283.87
10/01/01	6472.3	9796.86	177.7	82.7	41209.42
11/01/01	6450.3	10531.45	177.4	83.9	41135.1
12/01/01	6469.3	10456.35	176.7	88.8	41071.2
01/01/02	6487.4	10564.69	177.1	93	40997.13
02/01/02	6526	10332.89	177.8	90.7	40923.2
03/01/02	6528.1	10775.74	178.8	95.7	40849.4
04/01/02	6533.2	10318.45	179.8	93	40775.73

	Real Personal Disposable Income	Certificate of Deposit Rate	Bank Prime Loan Rate
UNITS	Billions of chained 1996 dollars	Percentage	Percentage
Month/year	RPDI	CDR	BPLR
10/01/90	4990.7	8.05	10
11/01/90	4992.3	7.95	10
12/01/90	5004.5	7.64	10
01/01/91	4990.3	7.17	9.52
02/01/91	4999	6.51	9.05
03/01/91	5009.5	6.5	9
04/01/91	5023.8	6.16	9
05/01/91	5024.9	6.03	8.5
06/01/91	5051.3	6.26	8.5
07/01/91	5040.9	6.25	8.5
08/01/91	5044.2	5.79	8.5
09/01/91	5051.1	5.6	8.2
10/01/91	5038.7	5.32	8
11/01/91	5043.6	4.92	7.58
12/01/91	5079	4.41	7.21
01/01/92	5122.7	4.07	6.5
02/01/92	5145.2	4.13	6.5
03/01/92	5148.7	4.42	6.5
04/01/92	5160.1	4.13	6.5
05/01/92	5176.6	3.96	6.5
06/01/92	5180.8	3.97	6.5
07/01/92	5172	3.5	6.02
08/01/92	5167.1	3.4	6

09/01/92	5183.6	3.17	6
10/01/92	5213.7	3.27	6
11/01/92	5220.1	3.6	6
12/01/92	5380.3	3.55	6
01/01/93	5188.7	3.33	6
02/01/93	5185.8	3.22	6
03/01/93	5169	3.2	6
04/01/93	5251.7	3.16	6
05/01/93	5264	3.2	6
06/01/93	5260.3	3.36	6
07/01/93	5255.7	3.34	6
08/01/93	5274.6	3.32	6
09/01/93	5270.1	3.24	6
10/01/93	5275.6	3.25	6
11/01/93	5289.3	3.39	6
12/01/93	5450.7	3.35	6
01/01/94	5245.3	3.29	6
02/01/94	5307.6	3.62	6
03/01/94	5326.8	4.03	6.06
04/01/94	5331.1	4.38	6.45
05/01/94	5409	4.9	6.99
06/01/94	5403.5	4.85	7.25
07/01/94	5404.7	5.15	7.25
08/01/94	5416.5	5.17	7.51
09/01/94	5441.8	5.4	7.75
10/01/94	5486.4	5.79	7.75
11/01/94	5486.1	6.11	8.15
12/01/94	5507.7	6.78	8.5
01/01/95	5515.3	6.71	8.5
02/01/95	5513.6	6.44	9
03/01/95	5517.2	6.34	9
04/01/95	5471.5	6.27	9
05/01/95	5521.3	6.07	9
06/01/95	5534.2	5.8	9
07/01/95	5538.8	5.73	8.8
08/01/95	5542.2	5.79	8.75
09/01/95	5559	5.73	8.75
10/01/95	5568.9	5.76	8.75
11/01/95	5587.4	5.64	8.75
12/01/95	5599.7	5.49	8.65
01/01/96	5593.4	5.28	8.5
02/01/96	5629.4	5.03	8.25
03/01/96	5643.3	5.3	8.25
04/01/96	5594	5.42	8.25

05/01/96	5661.3	5.47	8.25
06/01/96	5692.7	5.64	8.25
07/01/96	5691.9	5.75	8.25
08/01/96	5710.8	5.57	8.25
09/01/96	5726.3	5.71	8.25
10/01/96	5715	5.51	8.25
11/01/96	5727.9	5.43	8.25
12/01/96	5746.8	5.47	8.25
01/01/97	5755.4	5.54	8.25
02/01/97	5767.5	5.47	8.25
03/01/97	5792.6	5.69	8.3
04/01/97	5802.2	5.9	8.5
05/01/97	5822.2	5.87	8.5
06/01/97	5839.3	5.78	8.5
07/01/97	5853.1	5.7	8.5
08/01/97	5882.1	5.71	8.5
09/01/97	5896.5	5.71	8.5
10/01/97	5919.9	5.72	8.5
11/01/97	5950.4	5.78	8.5
12/01/97	5972.2	5.82	8.5
01/01/98	6019.1	5.56	8.5
02/01/98	6063.7	5.55	8.5
03/01/98	6110.8	5.61	8.5
04/01/98	6128.1	5.63	8.5
05/01/98	6152.7	5.67	8.5
06/01/98	6180.1	5.65	8.5
07/01/98	6193.2	5.65	8.5
08/01/98	6210.5	5.61	8.5
09/01/98	6226	5.33	8.49
10/01/98	6235.2	4.99	8.12
11/01/98	6251.6	5.07	7.89
12/01/98	6252.9	5.01	7.75
01/01/99	6276.7	4.9	7.75
02/01/99	6286.3	4.95	7.75
03/01/99	6302.1	4.98	7.75
04/01/99	6285.7	4.94	7.75
05/01/99	6299.3	5.03	7.75
06/01/99	6318.2	5.31	7.75
07/01/99	6312.5	5.58	8
08/01/99	6347.4	5.83	8.06
09/01/99	6314.9	5.89	8.25
10/01/99	6359.8	6.04	8.25
11/01/99	6399	5.97	8.37
12/01/99	6439.2	6.07	8.5

01/01/00	6508.5	6.15	8.5
02/01/00	6527.7	6.26	8.73
03/01/00	6555	6.36	8.83
04/01/00	6575.2	6.5	9
05/01/00	6616.9	6.94	9.24
06/01/00	6630.8	6.91	9.5
07/01/00	6661.9	6.86	9.5
08/01/00	6683	6.76	9.5
09/01/00	6685.5	6.68	9.5
10/01/00	6700.9	6.65	9.5
11/01/00	6702.8	6.63	9.5
12/01/00	6715	6.3	9.5
01/01/01	6703.7	5.45	9.05
02/01/01	6698.4	5.12	8.5
03/01/01	6710.7	4.74	8.32
04/01/01	6708.8	4.41	7.8
05/01/01	6686.5	4.01	7.24
06/01/01	6689.1	3.74	6.98
07/01/01	6796.5	3.7	6.75
08/01/01	6917.5	3.49	6.67
09/01/01	6878.2	2.84	6.28
10/01/01	6706.9	2.26	5.53
11/01/01	6718.7	2.03	5.1
12/01/01	6761.9	1.9	4.84
01/01/02	6938.8	1.85	4.75
02/01/02	6965.7	1.95	4.75
03/01/02	6978.3	2.16	4.75
04/01/02	6983.3	2.11	4.75

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