Luxury Good Demand

Author: Kimberly Caserta

Luxury Good Demand

Kim Caserta
Adviser: Robert Murphy

1. Introduction

Luxury goods account for a growing share of consumer expenditure. The luxury good industry, which produces and sells clothes, leather goods, shoes, silk scarves and neckties, watches, jewelry, perfume, and cosmetics, reached the $157 billion mark in 2007 [Thomas (2007) p. 5]. A strengthening economy plus more disposable income among other things has led this market to realize significant growth in recent years. Consistently with the empirical evidence on the faster increase of the income and wealth of the top 1% relative to the rest of the population, the growth rate of the luxury goods market has far exceeded that of aggregate consumption over the past decade [see Aït-Sahalia, Y., Parker, J. and Yogo, M. (2003)]. Consumers are buying up everything from expensive clothes and diamond-encrusted handbags to private jets and designer toilets. The desire for luxury goods in America has reached a point that consumers will use any and all resources to get their hands on them. Despite the emotional trauma and economic devastation, "in September 2005, victims of Hurricane Katrina used their Red Cross cards to buy $800 bags at the Louis Vuitton boutique in Atlanta" [Thomas (2007) p.169]. As economist Robert Frank has pointed out, Americans are in the grip of "Luxury Fever." Although there has been much observation of the consumer luxury good trend in the United States, it is not clear what factors are causing this trend which is what I tend to explore.

Since 1970 real household income in America has risen by thirty percent [Thomas (2007) p. 139]. By definition, a luxury good is a good for which demand increases more than proportionally as income rises. Luxury goods are said to have high income elasticity of demand. In other words, as people become wealthier, they will buy more and more of

the luxury good. It can be supposed that the demand for luxury goods would be positively related to income as a rise in average household income would lead to an increased demand for luxury goods holding all other variables constant. Therefore, household income might be a useful predictor of luxury good spending in my economic model.

In recent years the income and wealth of the top tiers of the American population has grown significantly; in the period between 1979-2003, household income grew 1% for the bottom fifth of households, 9% for the middle fifth, and 49% for the top fifth with household income more than doubling (up 111%) for the top 1% (State of Working America 2006/2007). A graphical representation of this is shown in Tables 5 and further visualized with Tables 1, 3, and 6. Although the economy exhibited productivity growth throughout these years, growing inequality meant that those at the top of the income scale claimed increasingly bigger slices of the economic pie. Essentially, "the rich have gotten richer, and the poor have gotten poorer" [Frank (1999) p.15]. In 2005 there were 8.3 million millionaires, an increase of 7.3 % over 2004 who possessed $30.8 trillion in assets according to the 2006 "World Wealth Report" [Thomas (2007) p. 11). Currently, the top 1% of the U.S. population controls more than 30% of the country's wealth [Betts (2004)]. By definition, the wealthier allocate higher proportions of their expenditures to luxuries than the poorer do. According to the standard price theory, this can be explained by the fact that the rich have more wealth than the poor and thus consume more luxuries. With the notion that high income households spend more on luxury goods than do low income households, it can be suggested that income distribution impacts the demand for luxury goods. The higher the inequality of income distribution within the population, and

thus the higher the proportion of wealthy individuals, translates to a higher demand for luxury goods.

Study of classical economics and logical reasoning would suggest that an increase in the real interest rate would decrease the demand for luxury goods. This notion is based off of the premise that changes in consumption due to changes in the real interest rate depend upon the elasticity of intertemporal substitution. In general as real interest rates rise the marginal cost of consumption becomes relatively more expensive, ceteris paribus; therefore, consumers tend to defer consumption and substitute it for saving. Luxury goods have higher elasticities of intertemporal substitution than necessity goods [see Aït-Sahalia, Parker and Yogo, (2001), and Ikeda (2004)]. Therefore, a rise in the real interest rate would make the marginal cost of consuming a luxury good even higher. The literature on consumption views consumers as maximizing the expected value of an intertemporal utility function so it would be expected that rational individuals would choose to hold consumption of luxury goods and place money in the bank as interest rates rise because they can earn a higher return on their money. However, in 2004, despite rising interest rates, U.S. sales of high-end goods grew 27.7% in the first five months [Betts (2004)]. Thus, it would be interesting to test how sensitive luxury good consumption is to changes in real interest rates, ceteris paribus.

Textbook economics defines the wealth of a person as the value of assets owned net of liabilities owed at a point in time. The assets include those that are tangible, such as land and capital, and financial such as money, bonds, etc. Economists often define changes in consumer consumption caused by changes in wealth "wealth effects." Economists believe people spend more as their wealth rises. In 2005 four million

American households had a net worth of more than $ 1 million [Thomas (2007) p. 139]. In James B Twitchell's *Living It Up: Our Love Affair with Luxury* he accurately describes the possible effects of such an increase in net worth, "this psychological phenomenon, which economists call the wealth effect, has driven the down-marketing of high-end objects with a vengeance. When stock prices rise and when people observe the spending of others, consumers feel rich and go shopping, often consuming such positional goods as those sold at Cartier, Louis Vuitton, and Bulgari while redoing their bathrooms or adding an entertainment center or a home gym" [Twitchell (2002) p. 71]. As Twitchell points out, increases in wealth allow consumers to allocate their assets towards either consumption or reinvestment, which in most cases is decidedly the former. Ikeda, in her exploration of luxury goods and wealth accumulation, found that "when current wealth holding falls short of the long-run required level, consumers usually accumulate wealth by holding down spending on luxuries more than on necessities" [see Ikeda (2006)]. She attributed this tendency to a lower time preference for luxury consumption and/or a higher IES. However, there has also been empirical evidence that shows most changes in wealth are transitory and are uncorrelated with consumption [see Lettau and Ludvigson (2003)]. Therefore, it would be interesting to test whether changes in wealth have a significant effect on luxury good demand. It can be proposed that luxury good demand is positively related to increases in wealth; in other words, as wealth rises the consumption of luxury goods rises as well holding other things constant.

In general, very rich households hold most equity and most hold equity (refer to table 2). In 2004 the top 1% of the population held 36.9% of all net worth with the average value of stock holdings valued at $3.3 million compared to the holdings of the

average 20% of the population which was valued at $7,500 (State of Working America 2006/2007). It has been found that for wealthy households, the consumption of luxury goods responds to wealth shocks due to stock returns, consistent with a more discretionary aspect of luxuries (see Aït-Sahalia, Yacine., Jonathon, Parker A., and Yogo, Motohiro [2001]). It has also been found that the relative risk aversion for basic consumption goes to infinity as wealth rises and marginal utility falls. Thus high-wealth households maintain relatively stable basic consumption and choose to have luxury consumption react to market returns. Therefore, because the consumption of luxuries covaries significantly more with stock returns than aggregate consumption does, return on equity might be an interesting variable to test in explaining luxury good demand. It would be predicted that higher returns in the stock market would increase the demand for luxury goods holding other things constant.

With the rise of industrial fortunes in the late nineteenth century, luxury became the domain of elite American families such as the Vanderbilts, the Astors, and the Whitneys. Luxury was a natural and expected element of upper-class life. Although throughout most of history luxury goods have been seen as possessions exclusively for the rich, over the past few decades changes in social barriers and major demographics have allowed the possession of these goods to trickle down the social ladder. In the 1970's a new generation of executives swept into several of the industries top companies and set them on an ambitious new course: to market to the mass middle class [Twitchell (2002) p. 126]. "Luxury is crossing all age, racial, geographic and economic brackets," Daniel Piette, an LVMH executive, told Forbes in 1997. "We've broadened the scope far beyond wealthy segments" [Thomas (2007) p.17]. LVMH, Comité Colbert, and other luxury

brand conglomerates started marketing to middle-market customers with lower-priced, entry-level items such as wallets, handbags, sunglasses and other accessories. As Dana Thomas points out in *Deluxe: How Luxury Lost Its Luster*, "items such as these allow people who can't afford the more expensive things to "own a piece of the brand's dream" [Thomas (2007) p.5]. An article in TIME Magazine touched on this point exactly reporting, "this market—known as new luxury—is composed of the forty-eight million U.S. households that make between $50,000 and $150,000, and it's growing at a rate of 10% to 15% a year," according to Michael Silverstein, senior vice president of the Boston Consulting Group and co-author of *Trading Up: The New American Luxury* [see Betts (2004)]. As is clearly shown, the result of down-marketing by luxury retail firms was a mass class of upscale consumption.

Although at first look the rise in upscale consumption by a larger class would seem overly beneficial to the gatekeepers of luxury retail, it would not come without its consequences. The luxury industry, which in the past may have been deemed impervious to the health of the economy, now became more vulnerable to economic downturns and recessions. Before its global expansion to the middle market, luxury was immune to economic cycles. The companies were small and catered to a limited old-money clientele who were rich enough not to be affected by short-term drops in the stock market or economic downturns, and who shopped consistently and bought well. However, with a wider target audience the luxury industry now exhibited financial instability, which was clearly shown with the terrorist attacks on September 11, 2001. LVMH's net income plunged from 722 million euros in 2000 to a mere 20 million euros in 2001 [Thomas (2007) p. 265]. Furthermore, Sean D. Campbell and Canlin Li, in their paper on *Per*

Capita Consumption, Luxury Consumption and the Presidential Puzzle: A Partial Resolution, show that differences in luxury consumption growth across the presidential cycle are directly related to the business cycle [see Campbell and Canlin (2003)]. Therefore, it would be interesting to see whether the health of the economy as measured by GDP significantly affects luxury good demand. It would be predicted that luxury good demand is positively related to GDP. In other words, as GDP rises the demand for luxury goods rises holding other things constant. In addition, it would also be interesting to see the effect a full out recession has on luxury good demand. The National Bureau's Business Cycle Dating Committee maintains a chronology of the U.S. business cycle. The Committee defines a recession as a significant decline in economic activity spread across the economy, lasting more than a few months. In addition to real GDP, the Committee measures a recession based off of numerous economic factors. It can be suggested that luxury good demand would be negatively related to economic recessions.

Although the economic variables discussed above may significantly affect luxury good demand, an individual does not buy a $2000 Chanel handbag simply because his or her income or wealth rises, which leads to the idea there may be sociological motives driving this demand as well. In contrast to neoclassical economic theory which assumes that a person's utility depends solely on the absolute level of personal consumption, individuals live in an interactive society, and many of their consumption decisions are observed by others which may affect consumers' behavior, as they both observe other consumers and are aware of being observed by them. Thorstein Veblen in his *Theory of the Leisure Class* observed a development of competition in goods in society. He argued that goods were not wanted for their physical or functional aspects but rather for their

honorific qualities. With wealth serving as a basis of repute and social esteem, a system of individual distinction arises from which people position themselves in society by consuming status goods. He argued the wealthy set the standard of class through a process of conspicuous consumption that allowed them to signify their pecuniary strength to the lower classes through these status goods. Consumption becomes a trickle-down process in which the poor then react to this display of wealth by trying to emulate the rich. There is evidence to suggest that Veblen's observations still have ramifications in contemporary consumer culture and can partly explain the consumer trend in luxury consumption as the desire for prestige continues to influence the demand for certain consumer goods.

In a recent poll by the NY Times, it was found that eighty-one percent of Americans feel pressure to buy high priced goods [see Steinhauer (2005)]. Upon reflection, one might consider this finding of today's population to be a parallel to the society from which Veblen based his theory. However, in an interview with the NY Times, Juliet B. Schor, points out that when Veblen first wrote his *Theory of the Leisure Class* he based his observations off of social competition that was largely played out at the neighborhood level among people roughly in the same class, which is not the case in present day America.. She explains that in the last thirty years or so people have become increasingly isolated from their neighbors and instead are increasingly influenced by magazines and TV which constantly idolize the lifestyles of celebrities and the super rich. Schor says the "horizontal" desire to covet a neighbor's goods has been replaced by a "vertical" desire to emulate the rich and powerful as seen on TV. She cleverly notes that instead of "keeping up with the Joneses," people are actually trying to "keep up with the

Gateses" [see Steinhauer (2005)]. What Schor is observing provides evidence that the consumer trend toward increased luxury good consumption in the United States cannot be entirely explained by economic variables.

Veblen's idea of conspicuous consumption is applicable to the recent consumer trend of an increase in luxury good consumption because luxury goods convey wealth and thus convey status. Because individuals desire status, which is affected by perceptions of wealth, they will conspicuously consume luxury goods in order to signal their level of wealth and position themselves in the social hierarchy. In a survey involving U.S. participants the data revealed that cars and jewelry, which are most often seen as luxury items, rank among the top categories of consumption expenditures that convey high visibility [see Heffetz (2007)]. With Veblen's theory serving as a basis, various studies have been done in the exploration of the premise that utility derived from a good is positively related to its price. [See Lebenstein (1980) Braun and Wicklund (1989) or Creedy and Slottje (1991)]. Creedy and Slottje in their essay on conspicuous consumption found that "conspicuous consumption, or Veblen effects, are said to occur when individuals increase their demand for a good simply because it has a higher price" [see Creedy and Slottje (1991)]. These so called "Veblen effects" have implications to the consumer trend in luxury goods as they could possibly serve as a factor in explaining their increased demand, which is exactly what I wish to explore.

Luxury goods exhibit high prices compared to necessity goods and thus signal an individual's wealth and position in society when they are conspicuously consumed. This would suggest an individual consumer receives higher utility from consuming a luxury good over a necessity good simply because it has a higher price. To the extent that

consumption of a luxury good generates Veblen effects it can be proposed that the more the consumer places importance on status or materialism, the larger the Veblen effect from consuming a luxury good. Thus, if there was some exogenous increase in the desire to increase status through material wealth there should also be an increase in the demand for luxury goods. I will attempt to test this hypothesis by determining the relationship between luxury good demand and price.

However, in classical economics the demand for any given good decreases as prices increases. This notion is based off of the premise that as the price of a given good rises, holding other things constant, the marginal utility of consuming this good declines. Rational consumers would choose to substitute this good for one of lower price depending on its elasticity. By definition, luxury goods are more elastic than necessity goods, meaning they are more easily substituted. This would make sense as luxury goods are not integral to an individual's every day needs. Therefore, as the price of a given luxury good rises it would be expected that the demand for this good would decrease even more so than an equal rise in price for a necessity good. However, as described above, luxury goods are often consumed despite functional equality to non-luxury goods because they convey pecuniary wealth and social status. Therefore, changes in prices of luxury goods may not have the same effect on demand as they would for a non-luxury good. It would be interesting to test whether the decrease in utility from a rise in price is offset enough by Veblen effects to see if the demand for luxury goods is positively related to price, ceteris paribus, and thus exhibits an upward sloping demand curve.

Although the demand for luxury goods may partly be explained by Veblen effects, there are other sociological variables that may also depict luxury good

expenditure of consumers in the United States. Individuals live in a society where many of their consumption choices are observed by others. In many cases, an individual will receive utility from a good simply because others will know about it. This is often an important factor in luxury good consumption. As Twitchell points out, "the business of modern luxury goods, like most successful enterprises these days, is all about adding value to machine-made products of the same inherent value" [Twitchell (2002) pg. 124]. However, as Schor points out, "social visibility is not something that is purely inherent in goods. Companies expend enormous effort to make products identifiable, through branding, packaging, marketing, and advertising"[Schor (1995) p. 45]. Advertising is a means of identifying to the public the quality and value of luxury brands. This creates a basis for consumers to allocate social status based on relative consumption. Therefore, in addition to price, the label or brand of a good conveys wealth or status when it is visibly consumed.

Throughout history, luxury brands never had to advertise but this gradually changed over time. As the industry grew in the 1990's, so did advertising. Gucci nearly doubled its ad expenditure from $5.9 million in 1993 to $11.6 million in 1994. By 1999 Gucci's advertising and communication budget had grown to 7%, or about $86 million of its 1.2 billion sales turnover. In 2000, advertising for the entire group reached approximately $250 million. However, this increase in advertising spending was not exclusive to the Gucci group. LVMH spent more than $1 billion advertising in 2002 making it the largest advertising buyer of fashion magazines [see Thomas (2007) pgs.101-102]. It therefore can be suggested that advertising might have a significant affect on luxury good demand. It can be proposed that an increase in advertising spending

by luxury good brands will have a positive impact on the demand for luxury goods, ceteris paribus.

One obstacle in attempting to determine the variables that drive luxury good demand is that no good measures of luxury good consumption exist, which may affect the reliability of the results when evaluating my hypotheses. Few studies have focused on the actual purchasing behavior of individual households on luxury goods and the factors driving those behaviors. Most of the studies I have encountered that are relevant to my topic have proposed models that test few variables at a time. I attempt to address this in my model by testing the demand for luxury goods with a wide range of variables.

2. Related Literature

The functional relationship of aggregate consumer expenditures to economic variables is one of the central elements of macroeconomic dynamics. Much of the literature on consumption is related to the most famous consumption models such as the Keynesian Consumption Function, the Permanent Income Hypothesis, the Life Cycle Hypothesis, and the C-CAPM, and has explored the validity of these models and/or applied them to new ideas. Although there is not much literature on luxury good consumption, I will formulate my model and base my predictions off of previous work on aggregate consumption.

There is certainly no shortage when it comes to data and work related to consumption. Hall (1985) investigates how consumption changes relative to expected changes of real interest rates. He defines the expected real interest rate as the market nominal rate for an instrument of suitable term, adjusted for taxes, less the expected rate

of change of the price level. Actual movements of consumption differ from planned movements and if expectations of real interest rates shift, then there should be a corresponding shift in the rate of change in consumption. He attempts to measure the intertemporal elasticity of substitution by regressing the rate of change of consumption on expected real interest rates. He concludes that the intertemporal elasticity of substitution is unlikely to be much above 0.1, and may well be zero.

Michael Darby (2003) develops a model to show that consumer expenditures are determined primarily by permanent income, transitory income, the real money stock, the long-term interest rate, relative price of durables and the stock of consumers' durable goods. He finds that private sector income is significantly better than disposable personal income for explaining consumer expenditures. He finds that the marginal propensity to spend (excess) real money balances is somewhat larger than the marginal propensity to spend current income for a one-year period. He also finds that the narrow M_1 definition of money is an important determinant of consumer expenditures and significantly better in explanatory power than either broad definition M_2 or M_3. Finally, he found that the weight of current income in the formation of permanent income lies somewhere in the range from 0 to about 20% per annum.

Lettau and Ludvigson (2003) develop a model to reevaluate the wealth effect on consumption. Although typical macroeconomic models relate consumption to wealth, Lettau and Ludvigson point out that movements in asset values often seem disassociated with important movements in consumer spending. They find a small fraction of the variation in household net worth is related to variation in aggregate consumer spending and conclude that conventional estimates of the wealth effect greatly overstate the

response of consumption to a change in wealth. Although they note that permanent changes in wealth do affect consumer spending, most changes in wealth are transitory and are uncorrelated with consumption.

Although there is an overwhelming amount of literature on consumption, there also is a significant amount of work on a narrower topic of consumption: the consumption of luxury goods. Ikeda, in her work *Luxury and* Wealth, develops a dynamic theory of luxury consumption from a model of dynamically optimized consumers focusing on the bilateral relationship between luxury good consumption and wealth accumulation. Ikeda found that when current wealth holding fell short of long run needs, luxury consumption was more easily postponed than necessity consumption due to a lower time preference for luxury and/or a higher intertemporal elasticity of substitution. She also found that preferences for luxury promote wealth accumulation because people have to earn the money to be able to consume the luxury; therefore, a preference for luxuries leads to a higher steady-state value of wealth or capital. She further concludes then that a luxury tax, by restricting consumption, would harm wealth accumulation.

Aït-Sahalia, Parker and Yogo, (2003) explore the relationship between luxury goods and the equity premium. They develop a model to test whether the covariance of returns and marginal utility measured by luxury consumption is sufficient to justify the equity premium. They find that the intertemporal elasticities of consumption are on average larger for luxury consumption than for aggregate consumption. They show that using luxury good sales data instead of per capita consumption results in a significant improvement in the fit and plausibility of the expected return-beta relationship relative to models that employ per capita consumption data. Their estimates of risk aversion imply

the risk faced by wealthy households is sufficient to justify the typical ROE. Finally, they find high wealth households maintain relatively stable basic consumption and choose to have luxury consumption react to market returns. They point out that no extant datasets measure consumption of high-end luxury goods so they construct a time series data on luxury consumption from sales data for luxury goods. This will serve as a basis from which I will gather necessary data to test my own hypothesis. It also provides evidence that luxury good consumption is related to wealth shocks due to stock returns.

Campbell and Li (2003) explore differences in excess returns on the stock market between Democratic and Republican presidential administrations. They find that while both per capita consumption and luxury good consumption rise and fall with the business cycle, luxury consumption growth is considerably more sensitive to the business cycle as it more than doubled over Democratic presidencies. They show differences in luxury consumption growth across the presidential cycle as directly related to the business cycle. They conclude that large and unexpected differences in fundamentals over the presidential cycle are an important source of the large and observed differences in excess returns.

In addition to studies of luxury goods, there has also been a substantial amount of work exploring the consumption of positional goods and in many cases relates this consumption to luxury goods. Ori Heffetz, in his *Conspicuous Consumption and Expenditure Visibility: Measurement and Application* analyzes the results of a survey he constructed designed to quantify the relative "cultural" visibility of different consumer expenditures. He applies his findings to explore the extent to which a simple 'signaling by consuming' model à la Veblen can explain estimated total expenditure elasticities of

demand in a cross-section of U.S. households. He finds that the most "visible" consumption categories are dominated by durable and nondurable goods, while the "least visible" consumption categories are dominated by services. Analysis of his data and results also shows that the empirical measures of visibility and luxuriousness are positively correlated. He concludes that there is a strong correlation between visibility and elasticity within the data but only for the top quintiles. He suggests that the social effects that underlie the correlation are only economically significant at higher income levels.

Extensive work has been done on the role of advertising in signifying value or quality; however, there is one existing model that I will build upon in developing my own model to test the significance of advertising expenditures on luxury good demand. Milgrom and Roberts, in their *Price and Advertising Signals of Product Quality,* attempt to explain why advertising might affect customer's choices and thus why firms might choose to advertise. They based their exploration off of Nelson's idea that the mere fact that a particular brand of an experience good was advertised could be a signal to customers that the brand was of high quality. They note that if high quality brands advertise more and if advertising expenditures are observable then rational informed consumers will respond positively. For my own analysis, this suggests that the demand for luxury goods can partly be explained by advertising expenditures of luxury brands if consumers can observe those expenditures and are rational in their consumption patterns. Consumers who view the advertising will perceive it as a signal that the brand is of high quality and demand will increase.

Milgrom and Roberts offer a model based on the repeat sales mechanism in which both price and advertising are decision variables that may be used as a signal of quality. They argue that firms use both variables to signal quality in order to achieve differentiation from a low quality brand at a minimal cost. The model presented by Milgrom and Roberts will differ from my own as they study the role of advertising and pricing on newly introduced goods. I wish to study the role of these variables on luxury good demand and assume that these goods have been well established in the market place for a significant period of time.[1] They assume advertising has no direct effect on demand and that it only influences pre-purchase perceptions. However, in my model if advertising influences pre-purchase perceptions of luxury brand value and/or desirability in society demand will rise. This model is still useful because it provides analysis of multiple variables being used simultaneously to signal for a single unobservable variable, which is similar to what I plan to do as well.

Kaya (2004) proposes a dynamic model of prices and advertising as signals of product quality in a monopolistic environment. The model makes use of the fact that the quality of production is corollated over time and thus advertising and prices in earlier periods contain information about the current level of quality. Customers observe the history of prices and advertisements and make inferences about the actual quality, which will determine whether they buy the product at the given price. She shows that as a product diffuses into the market, prices become a relatively less efficient tool of signaling in comparison to advertising.

[1] I base this assumption off of the premise that repeated advertising allows a company to build brand reputation and value. The perceived value of luxury brand goods is not merely a function of current advertising but of a culmination of all previous advertising expenditures.

3. Methodology

My analysis will depend on the model I develop for the variables I deem to be most important in determining luxury good demand. The model is intended to offer a broader in-depth analysis of the factors driving luxury demand than has been previously tested. The following factors to be considered are: price, income, income distribution, the real interest rate, real GDP, excess returns on the stock market, wealth holding, the state of the economy (whether it is in a recession or boom) and advertising spending.

There are multiple measures of variables that can be used in the attempt to determine luxury good demand, as shown above. I will examine several of these and hopefully be able to determine which ones have a relatively small effect (or no effect) and which ones have a strong effect on demand. I will estimate my models via the OLS method and run a regression between my time series data on luxury good consumption as approximated by luxury retail sales and economic variables such as price, household income, GDP, interest rates, income distribution, excess returns, advertising spending, and wealth holding, which will all be measured by time series data. In addition, I thought it would be useful to use a different variable as an overall measure of the health of the economy as it would be likely that GDP would be highly correlated with some of my other variables so I will run another regression with the same variables excluding GDP and including a dummy variable to represent whether the economy was in a recession or boom for each corresponding year. At this point I should be able to determine if these variables have a significant effect on luxury good demand. I will also be able to determine the relative effects of each variable on demand, as in which one has the most significant effect.

The regression equations that I intend to use for each of my models are as follows:

(Eq 1) $$y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \delta_1 R_{t+1} - \lambda_1 I_t$$

(Eq 2) $$y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \delta_1 R_{t+1} - \lambda_1 I_t + \gamma_1 Rec_t$$

where y_t represents luxury consumption on an annual basis in millions of dollars. A time series will be constructed for the variable from real aggregate sales growth of the luxury retailer Tiffany & Co. I assume that expenditures on any category of luxury goods move in proportion to those on all luxury goods. Thus I can use observations on a subset of luxury goods to evaluate the model. This measure of consumption of luxuries captures more purely expenditures that give utility to the extremely wealthy.

X_1 is a measure of real disposable income. Disposable income is measured annually in billions of dollars. The series is deflated by the implicit price deflator for personal consumption expenditures. β_1 is the ceteris paribus effect of disposable income on luxury consumption growth.

X_2 is a measure of the distribution of income. This variable represents the share of household income held by the top five percent of the population. β_2 is the ceteris paribus effect of income distribution on luxury consumption growth.

X_3 represents real gross domestic product measured in billions of dollars. β_3 is the ceteris paribus effect of gross domestic product on luxury consumption growth.

X_4 is a measure of real, per capita household net worth in billions of dollars, which includes both stock and non-stock wealth, while subtracting off any liabilities. The wealth data is deflated by the personal consumption expenditure chain-type deflator (2000=100), seasonally adjusted. β_4 is the ceteris paribus effect of real net worth on luxury consumption growth.

X_5 represents a measurement of price. A time series will be constructed using a ratio of the annual price index of expenditures on jewelry and watches over the total price index for consumer expenditures. This will account for changes in prices for jewelry and watches relative to the prices of all consumption goods. β_5 is the ceteris paribus effect of price on luxury consumption growth.

X_6 is a measure of advertising spending by Tiffany in millions of dollars. The series is deflated by the implicit price deflator for personal consumption expenditures. β_6 is the ceteris paribus effect of advertising spending on luxury consumption growth.

R_{t+1} represents the gross real excess returns in the stock market between time t and $t + 1$. The excess returns are calculated as the return on the S&P 500 less the return on the 3-month Treasury bill at the end of the fiscal year. δ_1 is the ceteris paribus effect of return on equity on luxury consumption growth.

I_t is a measure of the real long-term interest rate as calculated by the yield on long-term U.S. government bonds (average of monthly data). λ_1 is the ceteris paribus effect of the real long-term interest rate on luxury consumption growth.

Rec_t is a dummy variable taking the value of one whenever there is a recession as defined by National Bureau's Business Cycle Dating Committee and zero otherwise. γ_1 is the ceteris paribus effect of a recession on luxury consumption growth.

4. Data

Disposable Income

The data on disposable household income comes from the Bureau of Economic Analysis' (BEA) which provides National Economic Accounts data on real total disposable personal income in billions of chained 2000 dollars. I use annual data from 1971 through 2006.

Income Distribution

The data on income distribution comes from the Economic Policy Institute which provides national data on various economic trends. The EPI provides a time series on the share of aggregate family income received by quintile and top five percent of families from 1947-2006. However, only the data regarding the share of income of the top five percent of families will be used in my model.

GDP

The data on GDP comes from the Bureau of Economic Analysis' (BEA) which provides National Economic Accounts data on real gross domestic product in billions of chained 2000 dollars. I use annual data from 1971 through 2006.

Luxury Good Consumption

I will use annual sales data from luxury retail companies as a measure for my dependent variable. In this study I will use the same data analyzed in Aït-Sahalia, Parker

and Yogo, (2001). The authors retrieved the data from the COMPUSTAT database and a bundle of annual financial reports of luxury good retailers defined as companies listed by Morgan Stanley and Merrill Lynch in analyst's reports on luxury good retail sector. From the annual reports and COMPUSTAT data they constructed time series data on luxury consumption based off of U.S. sales data for the luxury retailer Tiffany & Co. Tiffany & Co. is a publicly traded company on the NYSE and reports on a common fiscal year ending in January. Since jewelry is the main line of business for the luxury retailer, they used the price index for retail sales of jewelry stores (using the BEA as a source) to deflate nominal sales. I use annual data from 1971 through 2006. I will rely solely on the Tiffany's sales data as a measure of luxury good consumption which ultimately proxies as a measure of the consumption of wealthy households.

The BEA does provide a table of personal consumption expenditures by type of product dating back to 1959, which could provide data on luxury good consumption; however, the only two categories relevant to my model are jewelry and watches, and boats and planes. Consumption data on these categories could serve as a subset approximating aggregate luxury consumption; however, the National Economic Account categories contain aggregate information of mostly non-luxury goods so this data would be biased. The minimal information regarding luxury good consumption requires use of other data sources

Advertising

Using the database COMPUSTAT I will create a time series of U.S. annual advertising spending as approximated by advertising spending for the luxury retailer

Tiffany & Co. I use annual data from 1971 through 2006. The advertising data is deflated by the personal consumption expenditure chain-type deflator (2000=100), seasonally adjusted. The source is the BEA.

Price

The BEA provides price indexes for personal consumption expenditures by type of product dating back to 1929. I will use this data to create a times series of annual prices for "jewelry and watches" in chained 2000 dollars from 1971 through 2006.

Excess Returns on the Stock Market

The official Standard and Poor 500 website which provides data on historical returns on the S&P 500 will be used to construct a time series consisting of excess returns, defined as return on the S&P 500 minus the return on three month treasury bills. Historical data on the return for the three month treasury bill will be gathered from the Board of Governors of the Federal Reserve System. This method for calculating excess returns is the same as that used by Aït-Sahalia, Parker, and Yogo in their study of luxury goods and the equity premium.

Recessions Data

Data on U.S. business cycle expansions and contractions will be gathered from the National Bureau of Economic Research. The National Bureau's Business Cycle Dating Committee maintains a chronology of the U.S. business cycle. The chronology identifies the dates of peaks and troughs that frame economic recession or expansion. The

period from a peak to a trough is a recession and the period from a trough to a peak is an expansion. The Business Cycle Dating Committee of the NBER defines a recession as a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales.

Interest Rates

Data on the long-term interest rate will be gathered from the Board of Governors of the Federal Reserve System. The real long-term interest rate will be defined in this model as the yield on the long-term government bonds (the 10 year treasury) and will be an average of monthly data as followed by Darby (1975). I use annual data from 1971 through 2006.

Wealth

Total wealth is household net worth in billions of current dollars, measured at the end of the period. Stock market wealth includes direct household holdings, mutual fund holdings, holdings of private and public pension plans, personal trusts, and insurance companies. Nonstock wealth includes tangible/real estate wealth, nonstick financial assets (all deposits, open market paper, U.S. Treasuries and Agency securities, municipal securities, corporate and foreign bonds and mortgages), and also includes ownership of privately traded companies in noncorporate equity and other. Subtracted off are liabilities, including mortgage loans and loans made under home equity lines of credit and secured by junior liens, installment consumer debt and other. The time series will be

calculated using "flow of funds" data from the Board of Governors of the Federal Reserve System. This is the same method for calculating wealth as seen in Lettau and Ludvigson (2003). I use annual data from 1971 through 2006. The wealth data is deflated by the personal consumption expenditure chain-type deflator (2000=100), seasonally adjusted. The source is the BEA.

5. Results

In this section I present the results of analyzing two regression models of luxury good consumption with various independent variables.

For my first regression, analysis of the data suggests that increases for the following variables will have a positive effect on luxury consumption: advertising spending, the real long term interest rate, net worth, and real GDP. While further analysis shows that income distribution, real disposable income, excess returns, and price have a negative effect on luxury consumption.

The regression data confirms that each variable in the model is statistically different from one another as indicated by the F statistic with a value of 456.614 and a p-value of .000 shown in Table 9. This also suggests that a significant relationship does exist between the independent variables and luxury consumption. Upon analysis of the Durbin-Watson statistic, which has a value of 1.31 (see Table 8), it is apparent that my model for luxury consumption exhibits no autocorrelation which means the model satisfies the OLS assumption that the error terms are statistically independent.

Real Disposable Income and its Effect on Luxury Consumption:

Table 7 shows the results of the regression of the independent variables on luxury good consumption. It was found that real disposable income has a negative effect on luxury good consumption with a beta value of -.006. This means that a $1 billion increase in real disposable income will decrease luxury good consumption by $6,000. This result does not confirm the hypothesis that an increase in income would translate to a higher demand for luxury goods. This does not make sense according to the standard economic definition which designates a luxury good as a good for which demand increases more than proportionally as income rises due to a higher income elasticity of demand over normal goods. As table 7 shows this variable was not found to be statistically significant at the five percent level with a t-value of -.025 and a p-value of .980. Therefore, it cannot be concluded that real disposable income has a statistically significant effect on luxury consumption.

Real GDP and its Effect on Luxury Consumption:

It was found that real gross domestic product has a positive effect on luxury good consumption with a beta value of .061. This means that a $1 billion increase in real gross domestic product translates to a $61,000 increase in luxury consumption. This result confirms the hypothesis stated in the introduction section. However, as shown in Table 7, this variable is not statistically significant at the five percent level with a t-value of .753 and a p-value of .458. Therefore, it cannot be concluded that real GDP has a statistically significant effect on luxury consumption.

Total Net Worth and its Effect on Luxury Consumption:

It was found that total net worth has a positive effect on luxury consumption with a beta value of .016. This means that a $ 1 billion increase in real net worth will increase luxury consumption by $16,000, ceteris paribus. This confirms the expected relationship between wealth and luxury good consumption as stated in the introduction. As table 7 shows, this finding was not statistically significant at the five percent level with a t-value of .1.434 and a p-value of .163. Therefore, it cannot be concluded that net worth has a statistically significant effect on luxury good demand.

Long-term Real Interest Rate and Its Effect on Luxury Consumption:

It was found that the long-term real interest rate has a positive effect on luxury consumption with a beta value of 13.035. This means that a 1% increase in the long-term interest rate translates to a rise in luxury good consumption by $13,035,000, holding other things constant. This finding does not make sense as it would be expected a rise in interest rates would decrease luxury good consumption due to its higher intertemporal elasticity of demand. As table 7 shows this finding was not significant at the five percent level with a t-value of .041 and a p-value of .283. Therefore, it cannot be concluded that long-term interest rates have a statistically significant effect on luxury consumption.

Price and its Effect on Luxury Consumption:

It was found that price has a negative effect on luxury consumption with a beta value of -7.435. This means that a $1 increase in price, ceteris paribus, translates to a decrease in luxury consumption by $7,435,000. Although the relationship of price to luxury consumption makes sense according to standard economics, the relative effect

seems over-estimated. However, as table 7 shows this finding was statistically significant even at the one percent level with a t-value of -4.112 and a p-value of .000. Therefore, it can be concluded that price has a statistically significant effect on luxury consumption.

Upon analysis of these findings it can be suggested that luxury goods are not subject to Veblen effects as the regression model resulted in a negative relationship between luxury consumption and price. It can be said that luxury goods follow standard economic theory where demand decreases as price increases as the marginal utility of consuming that good decreases.

However, despite these findings there is evidence to suggest that the results were biased. The price index for jewelry and watches that was obtained from the BEA includes many non-luxury items. For instance, most of the PCE-measured consumption of watches is unlikely to represent high-end luxury. Therefore, the overall price index may be biased downwards which would have an effect in determining the relationship between price and luxury good consumption. Perhaps if the price index only included data for extremely high-priced jewelry and watch goods we would have seen a positive relationship between the two variables indicating that luxury goods do in fact exhibit Veblen effects.

Advertising Spending and its Effect on Luxury Consumption:

It was found that advertising has a positive effect on luxury consumption with a beta value of 10.423. This means that a $1 million increase in advertising spending translates to a $10,423,000 increase in luxury consumption, holding other things constant. As table 7 shows this finding is statistically significant at the five percent level with a t-

value of 6.359 and a p-value of .000. Therefore it can be concluded that advertising spending has a statistically significant effect on luxury good consumption.

Income Distribution and its Effect on Luxury Consumption:

It was found that income distribution has a negative effect on luxury consumption with a beta value of -12.88. This means that a 1 % increase in the share of income held by the top 5% of the populations will decrease luxury consumption by $12,880,000, holding other things constant. This fails to confirm the hypothesis that an increase in the share of income held by the top income holders over all others would translate to a higher demand for luxury goods. However, as shown in Table 7 this finding is not statistically significant at the five percent level with a t-value of -.497 and a p-value of .628. Therefore, it cannot be concluded that the distribution of income has a statistically significant effect on luxury good demand which may account for the seemingly extreme over-estimate of the effect that income distribution has on luxury consumption.

Excess Returns and its Effect on Luxury Consumption:

It was found that excess returns in the stock market have a negative effect on luxury consumption with a beta value of -.493. This means that when excess returns in the stock market increase by 1%, ceteris paribus, luxury consumption goes down $493,000. This does not make sense as it has been found in previous studies that for wealthy households, the consumption of luxury goods responds to wealth shocks due to stock returns (refer to introduction). However, as shown in Table 7 this finding is not statistically significant at the five percent level with a t-value of -.355 and a p-value of

.725. Therefore, it cannot be concluded that excess returns have a statistically significant effect on luxury consumption. Estimates may be biased upward since the series on luxury goods is significantly shorter than data typically used to estimate excess returns.

Analysis of the Second Regression Using Recession as a Variable

For my second regression, analysis of the data suggests that increases for the following variables will have a positive effect on luxury consumption: real disposable income, advertising spending, the real long term interest rate, net worth and when the economy is in a recession. While further analysis shows that income distribution, price, and excess returns have a negative effect on luxury consumption.

The regression data confirms that each variable in the model is statistically different from one another as indicated by the F statistic with a value of 482.685 and a p-value of .000 shown in Table 12. This also suggests that a significant relationship does exist between the independent variables and luxury consumption. Upon analysis of the Durbin-Watson statistic, which has a value of 1.101 (see Table 11), it is apparent that my model for luxury consumption exhibits no autocorrelation which means the model satisfies the OLS assumption that the error terms are statistically independent.

Real Disposable Income and its Effect on Luxury Consumption:

Table 13 shows the results of the regression of the independent variables on luxury good consumption. It was found that real disposable income has a positive effect on luxury good consumption with a beta value of .155. This means that a $1 billion increase in real disposable income will increase luxury good consumption by $155,000.

This result confirms the hypothesis that an increase in income would translate to a higher demand for luxury goods. In contrast to the previous model, this lies in accordance with the standard economic definition of luxury goods. As table 7 shows this variable was found to be statistically significant at the five percent level with a t-value of 1.988 and a p-value of .057. Therefore, it can be concluded that real disposable income has a statistically significant effect on luxury consumption.

Total Net Worth and its Effect on Luxury Consumption:

It was found that total net worth has a positive effect on luxury consumption with a beta value of .022. This means that a $ 1 billion increase in real net worth will increase luxury consumption by $22,000, ceteris paribus. This confirms the expected relationship between wealth and luxury good consumption as stated in the introduction. As table 7 shows, this finding was statistically significant at the five percent level with a t-value of 2.66 and a p-value of .013. Therefore, it can be concluded that net worth has a statistically significant effect on luxury good demand.

Long-term Real Interest Rate and Its Effect on Luxury Consumption:

It was found that the long-term real interest rate has a positive effect on luxury consumption with a beta value of 8.623. This means that a 1% increase in the long-term interest rate translates to a rise in luxury good consumption by $8,623,000, holding other things constant. This finding does not make sense as it would be expected a rise in interest rates would decrease luxury good consumption due to its higher intertemporal elasticity of demand. As table 7 shows this finding was not significant at the five percent

level with a t-value of .721 and a p-value of .477. Therefore, it cannot be concluded that long-term interest rates have a statistically significant effect on luxury consumption.

Price and its Effect on Luxury Consumption:

It was found that price has a negative effect on luxury consumption with a beta value of -7.137. This means that a $1 increase in price, ceteris paribus, translates to a decrease in luxury consumption by $7,137,000. Although the relationship of price to luxury consumption makes sense according to standard economics, the relative effect seems over-estimated. However, as table 7 shows this finding was statistically significant even at the one percent level with a t-value of -4.097 and a p-value of .000. Therefore, it can be concluded that price has a statistically significant effect on luxury consumption.

Upon analysis of these findings it can be suggested that luxury goods are not subject to Veblen effects as the regression model resulted in a negative relationship between luxury consumption and price. It can be said that luxury goods follow standard economic theory where demand decreases as price increases as the marginal utility of consuming that good decreases. However, as similarly to the situation described above, despite these findings there is evidence to suggest that the results were biased.

Advertising Spending and its Effect on Luxury Consumption:

It was found that advertising has a positive effect on luxury consumption with a beta value of 10.370. This means that a $1 million increase in advertising spending translates to a $10,370,000 increase in luxury consumption, holding other things constant. As table 7 shows this finding is statistically significant at the five percent level with a t-

value of 6.504 and a p-value of .000. Therefore it can be concluded that advertising spending has a statistically significant effect on luxury good consumption.

Income Distribution and its Effect on Luxury Consumption:

It was found that income distribution has a negative effect on luxury consumption with a beta value of -4.956. This means that a 1 % increase in the share of income held by the top 5% of the populations will decrease luxury consumption by $4,956,000, holding other things constant. This fails to confirm the hypothesis that an increase in the share of income held by the top income holders over all others would translate to a higher demand for luxury goods. However, as shown in Table 7 this finding is not statistically significant at the five percent level with a t-value of -.218 and a p-value of .829. Therefore, it cannot be concluded that the distribution of income has a statistically significant effect on luxury good demand which may account for the seemingly extreme over-estimate of the effect that income distribution has on luxury consumption.

Excess Returns and its Effect on Luxury Consumption:

It was found that excess returns in the stock market have a negative effect on luxury consumption with a beta value of -.238. This means that when excess returns in the stock market increase by 1%, ceteris paribus, luxury consumption goes down $238,000. This does not make sense as it has been found in previous studies that for wealthy households, the consumption of luxury goods responds to wealth shocks due to stock returns (refer to introduction). However, as shown in Table 7 this finding is not statistically significant at the five percent level with a t-value of -.174 and a p-value of

.863. Therefore, it cannot be concluded that excess returns have a statistically significant effect on luxury consumption.

Overall Analysis of Luxury Consumption Models:

Given the variables in my model, there is reason to believe that the increase in luxury demand can largely be attributed to advertising spending. Out of all of the economic variables advertising spending had the largest statistically significant effect on luxury good consumption. This finding was consistent in both of my models.

In addition to advertising spending, the variables household income and wealth can be attributed to the increase in luxury demand over the years as the income of the wealthy has consistently risen in the past decade along with the proportion of wealthy held by higher income individuals. Although these two variables were found to be statistically insignificant in the first model, they are both nearly perfectly correlated with GDP, which may have had an effect on the results. Once GDP was removed from the model (as in the second model), these variables became statistically significant.

It was found that price has the second largest statistically significant effect on luxury good consumption after advertising. This finding was consistent in both of my models. However, despite the fact that price had a large significant effect on luxury consumption, it can be suggested that the combined effects of increases in advertising spending, income and wealth outweighed the effects of increases in prices which resulted in higher luxury consumption over the years.

Upon analysis of my two models, it is apparent that the rise in luxury consumption is not largely related to the health of the economy as the estimates for both

GDP and the dummy variable were found to be statistically insignificant. Although in the introduction I discussed the down-marketing of luxury goods to the middle-upper class as having the possible effect of decreasing luxury demand, this idea cannot be confirmed with this data.

Further analysis would suggest that the rise in luxury consumption is not related to excess returns in the stock market as this variable was found to be statistically insignificant in both of my models. However, the estimates in my models may be biased upward since the series on luxury goods is significantly shorter than data typically used to estimate excess returns. Perhaps, if I had a longer data set to estimate luxury consumption its relationship between excess returns would be more apparent.

6. Conclusion

The trend in increased luxury good consumption is worth exploring as it may have several outcomes on the economy and implications for the future. As Robert Frank points out, there has been an increased consumption of luxury goods with static or declining incomes of middle and low income families. Between 1990 and 1996 credit card debt doubled. In 1997 American household debt was $5.5 trillion; thus, American consumers have had to finance their higher spending through lower savings and sharply rising debt which could lead to a decline in the economic growth rate (Schor).

Furthermore, if everyone is trying to "keep up with the Joneses" an increase in status from consumption will be immediately offset if your neighbor does it as well and thus will result in the "Red Queen" effect. It has been found that in a more affluent society, individuals spend a higher proportion of their income on positional (luxury)

goods, which leads to a reduction in utility at each income level, but in a more equal society those with lower incomes spend more on conspicuous consumption and are worse off [see Hopkins 2002]. This suggests that not only could this goods competition have potentially harmful effects on the economy, but it won't even increase overall welfare.

This paper may also provide insight into the complicated inter-workings of consumer culture and its effect on the economy. Sociological ideas of consumption in combination with classical economics create a broader explanation for what drives consumer behavior in the United States. The ability to quantify socio-cultural aspects of commodities is a necessary step in economists' quest to better understand consumption. To the extent that individuals rarely live in social isolation, consumption and other domains of economic behavior will never be independent from one another and will remain in the domain of socio-cultural phenomenon.

5. References

Aït-Sahalia, Y., Parker, J. and Yogo, M. (2003), "Luxury Goods and the Equity Premium," Manuscript, Princeton University.

Amaldoss, W. and S. Jain (2004), "Conspicuous Consumption and Sophisticated Thinking," Working Paper, Duke University.

Attanasio, Orazio P. (1998), "Consumption Demand." NBER Working Paper No. 6466.

Attanasio, Orazio P., and Martin Browning, (1993), "Consumption Over the Life Cycle and Over the Business Cycle." NBER Working Paper No. 4453.

Bagwell, Laurie Simon and Bernheim, B. Douglas (1992), "Conspicuous Consumptionn, Pure Profits, and the Luxury Tax," NBER Working Paper.

Bagwell, Laurie Simon and Bernheim, B. Douglas (1996), "Veblen Effects in a Theory of Conspicuous Consumption." American Economic Review 86(3), 349-373.

Basmann, R. et al., 1988. "A Note on Measuring Veblen's Theory of Conspicuous Consumption," Review of Economics and Statistics, 531±535.

Betts, Kate. "Style and Design – Luxury Fever." TIME Magazine. 2004. 08 Nov 2007. <http://www.time.com/time/2004/style/090604/article/luxury_fever_consumers_13a.html>

Bikhchandani, Sushil, Hirshleifer, David and Welch, Ivo (1992). "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," Journal of Political Economy, 18 100(5), 992–1026.

Braun, O. L. & Wicklund, R. A. (1989), "Psychological Antecedents of Conspicuous Consumption." Journal of Economic Psychology, 10, 161-87.

Browning, M., and T. F. Crossley (2000), "Luxuries are Easier to Postpone: A Proof," Journal of Political Economy, 108(5), 1022—26.

Campbell, John Y., and John H. Cochcrane, (1999), "Explaining the Poor Performance of Consumption-Based Asset Pricing Models." NBER Working Paper 7237.

Campbell, Sean D., and Canlin Li. "Per Capita Consumption, Luxury Consumption and the Presidential Puzzle: A Partial Resolution," September 2003.

Chao, Angela and Juliet B. Schor (1996), "Empirical Tests of Status Consumption: Evidence from Women's Cosmetics," Journal of Economic Psychology 19(1998) 107-131.

Christiano, Lawrence J., Martin Eichenbaum, and David Marshall, (1987), "The Permanent Income Hypothesis Revisited." NBER Working Paper No. 2209.

Corneo, G. and O. Jeanne, (1995), "Conformism and Snobbism in a Signaling Model of Conspicuous Consumption," Working Paper, Ceras 95-04.

Corneo, G. and O. Jeanne (1997) "Conspicuous Consumption, Snobbism and Conformism," Journal of Public Economics, 66, 55-71.

Corneo, G., and O. Jeanne (1998): "Social Organization, Status, and Savings Behavior," *Journal of Public Economics*, 70, 37–51.

Cote, H.L, Mailath, and GJ., Postlewaite, A.,(1992), "Social Norms, Savings Behavior, and Growth." Journal of Political Economy 100, I092-1125.

Creedy, John and D. J. Slottje, (1991), "Conspicuous Consumption in Australia," Research Paper Number *307*, University of Melbourne.

Darby, Michael (1975), "The Consumer Expenditure Function," NBER Working Paper, University of California, Los Angeles.

Deaton, Angus, (1986), "Life-Cycle Models of Consumption: Is the Evidence Consistent With the Theory?" NBER Working Paper No. 1910.

Duesenburry, J. S. (1952), "Income, Saving and the Theory of Consumer Behavior." Harvard University Press.

Fershtman, C., and Y. Weiss, (1993). "Social Status, Culture and Economic Performance." Economic Journal 103, 964-969.

Frank, Robert H. Luxury Fever: Why Money Fails to Satisfy in an Era of Excess. New York: Free Press, 1999.

Frank R.H., (1985). "The Demand for Unobservable and Other Non-positional Goods." American Economic Review 75, I01-116.

Futagami, K., and A. Shibata, "Keeping One Step Ahead of the Joneses: Status, the Distribution of Wealth, and Long Run Growth," *Journal of Economic Behavior and Organization* 36 (1998), 109–26.

Gal´i, Jordi (1994), "Keeping up with the Joneses: Consumption Externalities, Portfolio Choice, and Asset Prices," Journal of Money, Credit, and Banking 26 (1): 1-8.

Grossman, G. and C. Shapiro (1984) "Informative Advertising with Differentiated Products," The Review of Economic Studies, 51, 1 ,63-81.

Hall, Robert E (1985), "Real Interest and Consumption," NBER Working Paper No. 1694.

Harbaugh, Richmond (1996), "Falling Behind the Joneses: Relative Consumption and the Growth-Savings Paradox", Economics Letters 53: 297-304.

Heffetz, Ori (2004). "Conspicuous Consumption and the Visibility of Consumer Expenditures." Working Paper, Princeton University.

Heffetz, Ori (2007). "Conspicuous Consumption and Expenditure Visibility: Measurement and Application." Working paper, Cornell University.

Hopkins, Ed. and Tatiana Korneinko, (2002), "Running to Keep in the Same Place: Consumer Choice as a Game of Status," Journal of Economic Literature C72, D11, D31, D62.

Ikeda, Shinsuke (2006), "Luxury and Wealth," International Economic Review, Vol. 47, No. 2.

Ireland, Norman J. (1994). "On Limiting the Market for Status Signals." Journal of Public Economics 53, 91–110.

Ireland, Norman J. (1998). "Status-seeking, Income Taxation and Efficiency." Journal of Public Economics 70, 99–113.

Kaya Ayça (2004), "Price and Advertising Signals of Quality: A Dynamic Approach," University of Iowa.

Kihlstrom, Richard E, and Michael H. (1984) "Advertising as a Signal." J.P.E. 92, 427-450.

Laurent Linnemer. (2002). "Price and Advertising as Signals of Quality When Some Consumers Are Informed." International Journal of Industrial Organization, 20(7):931–47.

Leibenstein, Harvey (1950), "Bandwagon, Snob, and Veblen Effects in the Theory of Conspicuous Demand." Quarterly Journal of Economics 64, 183-207.

Lettau, Martin and Sydney C. Ludvigson, (2003), "Understanding Trend and Cycle in Asset Values: Reevaluating the Wealth Effect on Consumption," National Bureau of Economic Research.

Milgrom, P., Roberts, and J. Roberts, (1986). "Price and Advertising Signals of Product Quality". Journal of Political Economy 94, 796-821.

Mulligan, Casey B. (2002), “Capital, Interest, and Aggregate Intertemporal Substitution.” NBER Working Paper 9373.

Nelson, Phillip. “Advertising As Information.” J.P.E. 81 (July/August 1974): 729-754.

Nelson, Phillip. (1978), “Advertising As Information Once More.” In *Issues in Advertising: The Economics of Persuasion*, edited by David G. Tuerck. Washington: American Enterprise Inst.,.

Parker, Jonathan A., (1999), “Spendthrift in America? On Two Decades of Decline in the U.S. Saving Rate.” NBER Working Paper No. 7238.

Schmalensee, Richard.(1978), “A Model of Advertising and Product Quality.” J.P.E. 86: 485-503.

Steinhauer, Jennifer. "When the Joneses Wear Jeans." New York Times 29 May 2005. Factiva.

Thomas, Dana. Deluxe: How Luxury Lost Its Luster. New York: The Penguin Press, 2007.

Twitchell, James B. Living It Up: Our Love Affair with Luxury. New York: Columbia University Press, 2002.

Veblen, Thorstein (1899). “The Theory of the Leisure Class.” Reprint 1965, MacMillan, New York.

Changes in the distribution of wealth, 1962-2004

							Percentage-point change:			
Wealth class*	1962	1983	1989	1998	2001	2004	1962-83	1983-89	1989-2001	2001-04
Top fifth	81.0%	81.3%	83.5%	83.4%	84.4%	84.7%	0.4	2.2	0.9	0.2
Top 1%	33.4	33.8	37.4	38.1	33.4	34.3	0.3	3.6	-4.0	1.0
Next 4%	21.2	22.3	21.6	21.3	25.8	24.6	1.2	-0.8	4.2	-1.2
Next 5%	12.4	12.1	11.6	11.5	12.3	12.3	-0.2	-0.5	0.7	0.0
Next 10%	14.0	13.1	13.0	12.5	12.9	13.4	-0.9	-0.1	-0.1	0.5
Bottom four-fifths	19.1%	18.7%	16.5%	16.6%	15.6%	15.3%	-0.4	-2.2	-0.9	-0.2
Fourth	13.4	12.6	12.3	11.9	11.3	11.3	-0.8	-0.3	-1.0	0.0
Middle	5.4	5.2	4.8	4.5	3.9	3.8	-0.2	-0.4	-0.9	-0.1
Second	1.0	1.2	0.8	0.8	0.7	0.7	0.2	-0.3	-0.1	0.0
Lowest	-0.7	-0.3	-1.5	-0.6	-0.4	-0.5	0.4	-1.2	1.1	-0.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				

* Wealth defined as net worth (household assets minus debts).

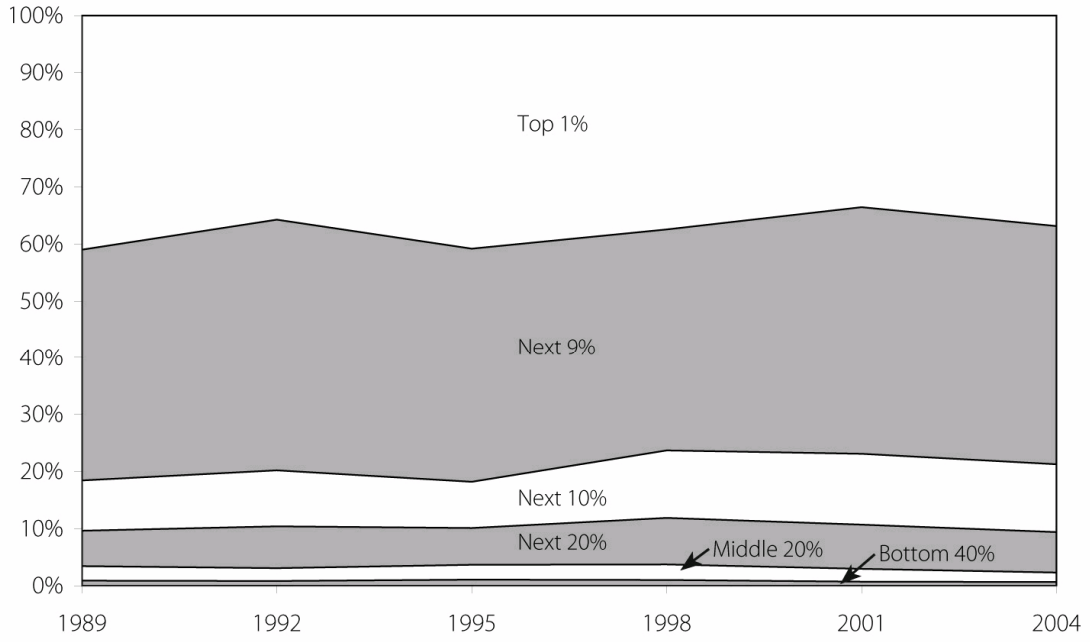
Source: Wolff (2006).

Table 5.3, taken from the Economic Policy Institute's *State of Working America 2006/2007*, available at www.epi.org

Table 1

Table 2

Distribution of stock market wealth by wealth class, 1989-2004

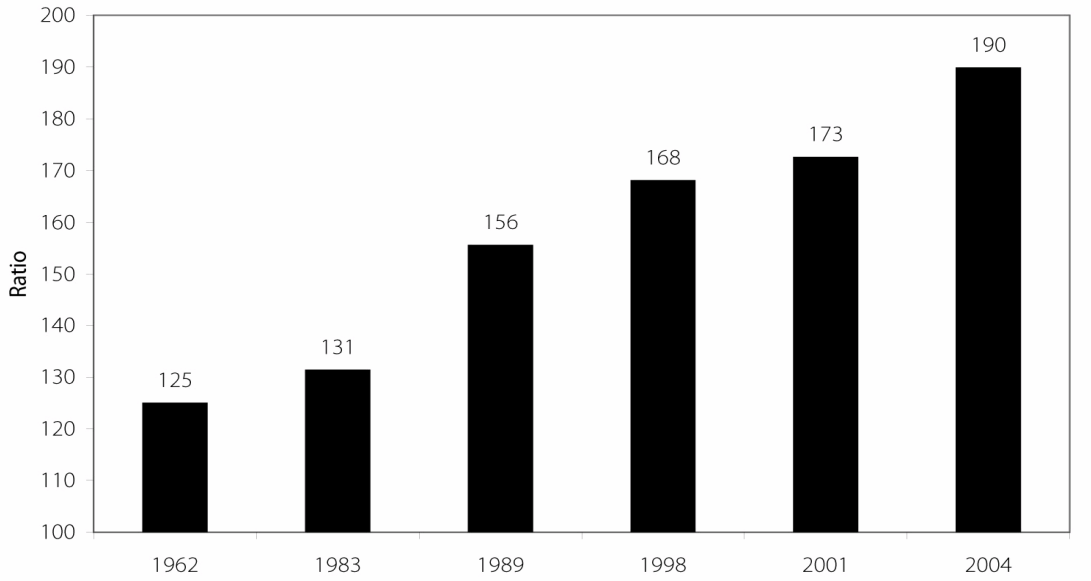


Source: Wolff (2006).

Figure 5G from: Mishel, Lawrence, Jared Bernstein, and Sylvia Allegretto, *The State of Working America 2006/2007*. An Economic Policy Institute Book. Ithaca, N.Y.: ILR Press, an imprint of Cornell University Press, 2007.

Tables 3 and 4

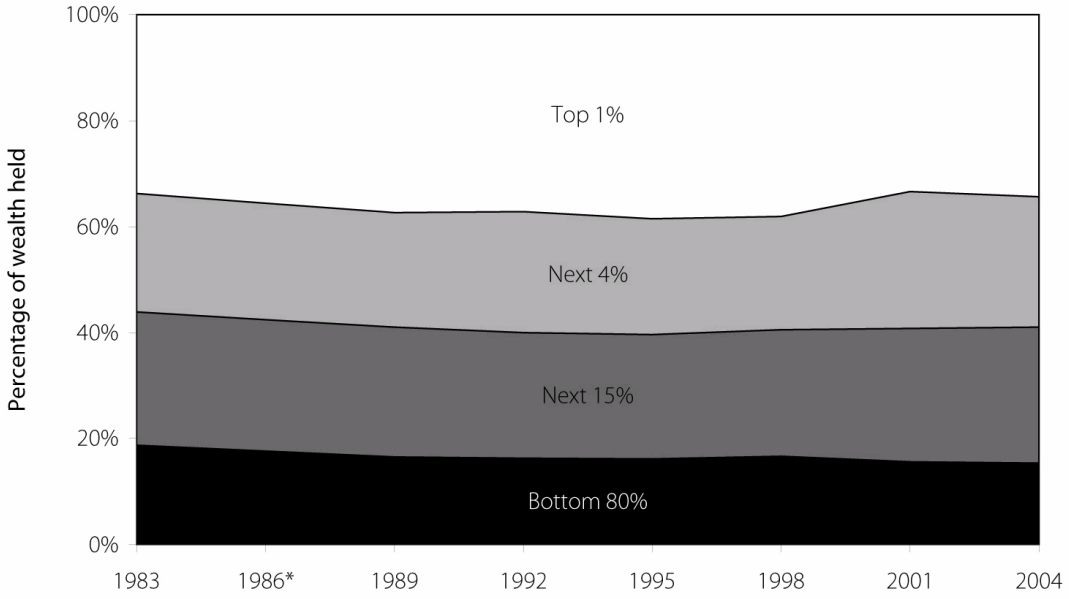
The ratio of the wealthiest 1% to median wealth in the U.S.



Source: Wolff (2006).

Figure 5B from: Mishel, Lawrence, Jared Bernstein, and Sylvia Allegretto, *The State of Working America 2006/2007*. An Economic Policy Institute Book. Ithaca, N.Y.: ILR Press, an imprint of Cornell University Press, 2007.

Distribution of wealth by wealth class, 1983-2004



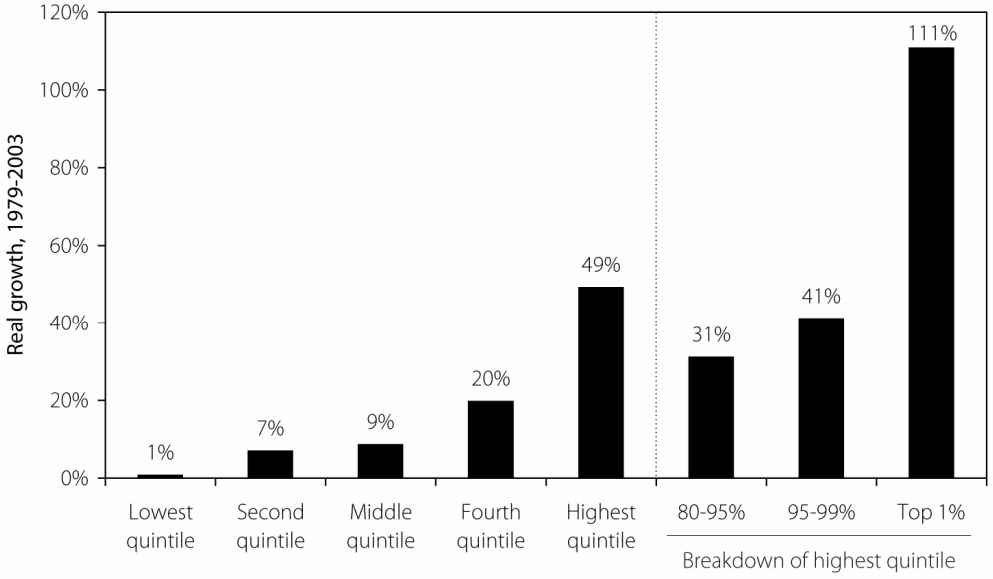
* See Figure Notes.

Source: Authors' analysis of Wolff (2006).

Figure 5A from: Mishel, Lawrence, Jared Bernstein, and Sylvia Allegretto, *The State of Working America 2006/2007*. An Economic Policy Institute Book. Ithaca, N.Y.: ILR Press, an imprint of Cornell University Press, 2007.

Tables 5 & 6

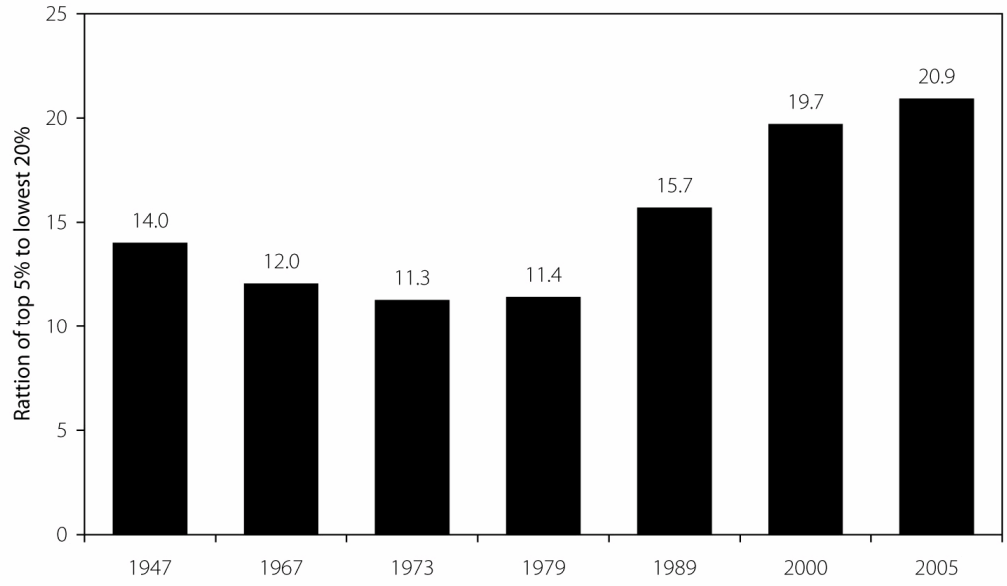
Growth in real household income, 1979-2003



Source: Authors' analysis of CBO data.

Figure 1O from: Mishel, Lawrence, Jared Bernstein, and Sylvia Allegretto, *The State of Working America 2006/2007*. An Economic Policy Institute Book. Ithaca, N.Y.: ILR Press, an imprint of Cornell University Press, 2007.

Ratio of family income of top 5% to lowest 20%, 1947-2004



Source: Authors' analysis of U.S. Census Bureau data.

Figure 1J from: Mishel, Lawrence, Jared Bernstein, and Sylvia Allegretto, *The State of Working America 2006/2007*. An Economic Policy Institute Book. Ithaca, N.Y.: ILR Press, an imprint of Cornell University Press, 2007.

Table 7

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-351.142	356.298		-.986	.333
	Advertising	10.423	1.639	.531	6.359	.000
	Income	-.006	.229	-.012	-.025	.980
	Rate	13.035	11.910	.041	1.094	.283
	Return	-.493	1.388	-.006	-.355	.725
	Price	-7.435	1.808	-.201	-4.112	.000
	Wealth	.016	.011	.217	1.434	.163
	GDP	.155	.207	.433	.753	.458
	Distribution	-12.888	25.910	-.040	-.497	.623

a. Dependent Variable: Sales

Table 8

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.997[a]	.993	.989	87.53451	1.312

a. Predictors: (Constant), distribution, price, return, advertising, rate, wealth, income, GDP

b. Dependent Variable: sales

Table 9

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.245E7	8	2805739.170	456.614	.000[a]
	Residual	165905.737	27	6144.657		
	Total	2.261E7	35			

a. Predictors: (Constant), Distribution, Return, Price, Advertising, Rate, Wealth, Income, GDP

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.245E7	8	2805739.170	456.614	.000[a]
	Residual	165905.737	27	6144.657		
	Total	2.261E7	35			

a. Predictors: (Constant), Distribution, Return, Price, Advertising, Rate, Wealth, Income, GDP

b. Dependent Variable: Sales

Table 10

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.6914	2716.7502	685.5341	800.81946	36
Residual	-182.54498	129.21808	.00000	68.84885	36
Std. Predicted Value	-.854	2.536	.000	1.000	36
Std. Residual	-2.329	1.648	.000	.878	36

a. Dependent Variable: Sales

Table 11

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.997[a]	.993	.991	76.25668	1.101

a. Predictors: (Constant), Recession, Price, Return, Advertising, Rate, Distribution, Wealth, Income

b. Dependent Variable: Sales

Table 12

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.245E7	8	2806851.486	482.685	.000[a]
	Residual	157007.208	27	5815.082		
	Total	2.261E7	35			

a. Predictors: (Constant), Recession, Price, Return, Advertising, Rate, Distribution, Wealth, Income

b. Dependent Variable: Sales

Table 13

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-402.406	334.677		-1.202	.240
	Advertising	10.370	1.594	.528	6.504	.000
	Income	.155	.078	.315	1.988	.057
	Rate	8.623	11.962	.027	.721	.477
	Return	-.238	1.363	-.003	-.174	.863

	Price	-7.137	1.742	-.193	-4.097	.000
	Wealth	.022	.008	.295	2.662	.013
	Distribution	-4.956	22.733	-.015	-.218	.829
	Recession	52.655	36.087	.026	1.459	.156

a. Dependent Variable: Sales

Table 14

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.6921	2708.2075	685.5341	800.97819	36
Residual	-167.85847	139.73466	.00000	66.97701	36
Std. Predicted Value	-.850	2.525	.000	1.000	36
Std. Residual	-2.201	1.832	.000	.878	36

a. Dependent Variable: Sales

Table 15

Correlations

		Advertising	Income	Rate	Return	Price	Wealth	GDP	Distribution	Recession
Advertising	Pearson Correlation	1.000	.918**	-.680**	-.076	.327	.920**	.915**	.809**	-.217
	Sig. (2-tailed)		.000	.000	.659	.052	.000	.000	.000	.204
	N	36.000	36	36	36	36	36	36	36	36
Income	Pearson Correlation	.918**	1.000	-.618**	.010	.639**	.985**	.999**	.926**	-.250
	Sig. (2-tailed)	.000		.000	.953	.000	.000	.000	.000	.142
	N	36	36.000	36	36	36	36	36	36	36
Rate	Pearson Correlation	-.680**	-.618**	1.000	.008	-.087	-.653**	-.632**	-.739**	.408*
	Sig. (2-tailed)	.000	.000		.963	.615	.000	.000	.000	.013
	N	36	36	36.000	36	36	36	36	36	36

Return	Pearson Correlation	-.076	.010	.008	1.000	.137	.005	.012	.041	-.151
	Sig. (2-tailed)	.659	.953	.963		.425	.975	.945	.814	.379
	N	36	36	36	36.000	36	36	36	36	36
Price	Pearson Correlation	.327	.639**	-.087	.137	1.000	.579**	.637**	.632**	-.131
	Sig. (2-tailed)	.052	.000	.615	.425		.000	.000	.000	.447
	N	36	36	36	36	36.000	36	36	36	36
Wealth	Pearson Correlation	.920**	.985**	-.653**	.005	.579**	1.000	.990**	.931**	-.262
	Sig. (2-tailed)	.000	.000	.000	.975	.000		.000	.000	.122
	N	36	36	36	36	36	36.000	36	36	36
GDP	Pearson Correlation	.915**	.999**	-.632**	.012	.637**	.990**	1.000	.937**	-.255
	Sig. (2-tailed)	.000	.000	.000	.945	.000	.000		.000	.134
	N	36	36	36	36	36	36	36.000	36	36
Distribution	Pearson Correlation	.809**	.926**	-.739**	.041	.632**	.931**	.937**	1.000	-.329
	Sig. (2-tailed)	.000	.000	.000	.814	.000	.000	.000		.050
	N	36	36	36	36	36	36	36	36.000	36
Recession	Pearson Correlation	-.217	-.250	.408*	-.151	-.131	-.262	-.255	-.329	1.000
	Sig. (2-tailed)	.204	.142	.013	.379	.447	.122	.134	.050	
	N	36	36	36	36	36	36	36	36	36.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).