ADULT CLOTHING EXPENDITURES IN 2006 AND 2010: HOMEOWNERS AND RENTERS BEFORE AND AFTER THE GREAT RECESSION

by

KATHRYN ANNE HOLLAND

(Under the direction of Diann Moorman and Robert Nielsen)

ABSTRACT

While extensive research on U.S. clothing expenditures in past economic cycles has occurred, currently researchers know little about clothing expenditures around the recent Great Recession and even less about the relationship between housing tenure and clothing expenditures. Copious studies using the Consumer Expenditure Survey data have used demographic and socio-economic factors (age, gender, race, geographic location/region, urban/rural housing, income, consumer unit composition, parental education, and parental occupation) to measure business cycle variation and clothing expenditures. Likewise, this study used the Consumer Expenditure Survey and ordinary least squares (OLS) regression to answer the question “Were household clothing expenditures in the spring of 2006 and the spring of 2010 different? If so, what household characteristics are associated with those differences?” The findings implied that housing tenure was insignificant in relation to clothing expenditures. However, once adjusted for inflation, year was highly significant in relation to clothing expenditures.

INDEX WORDS: Clothing expenditures, Systems Theory, Great Recession, Housing tenure, Multiple regression, Consumer Expenditure Survey, Business cycle, United States.
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ADULT CLOTHING EXPENDITURES IN 2006 AND 2010: HOMEOWNERS AND RENTERS BEFORE AND AFTER THE GREAT RECESSION

by

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The University of Georgia
December 2014
DEDICATION

To my family, friends, and college who helped me get through this marathon with support, love, and encouragement. Thank you for believing in me when I didn’t believe in myself. To my Lord and Savior Jesus Christ who set me on this path in the first place.
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CHAPTER 1
INTRODUCTION

Background

Throughout the life course individuals typically purchase various clothing items in any given year. The drive for most of these clothing consumption decisions is a desire to improve one’s personal or household utility (Cynamon & Fazzari, 2008). When researchers explore buyer behavior, apparel remains a key consumer spending category for several reasons, not the least of which is the tremendous discounting, couponing, and other price promotions designed to entice consumers into stores and onto e-commerce sites. One reason economic research focuses frequently on apparel purchases is that, for most consumers and/or households (technically referred to as the consumer unit), purchasing apparel for one’s self or one’s household members clearly meets a consumer unit need. For example, a recent college graduate entering the workforce must have the appropriate work-related wardrobe, a young child who has outgrown last year’s school uniform must purchase a larger size uniform, and the Midwesterner who has misplaced his or her down jacket must acquire a new winter coat. For other consumer units, in some instances new apparel purchases satisfy a want—such as the desire for designer dresses, bags, and shoes.

When studying consumers’ spending behavior it is important to put the behavior into the appropriate economic context. To that end, research has shown that economic business cycles affect consumer unit consumption decisions in the United States.
According to Merriam-Webster (2014), a country’s business cycle is defined as the “periodic fluctuation in the rate of economic activity, as measured by levels of employment, prices, and production.” The steps in a business cycle are growth (expansion), peak, recession (contraction), trough and recovery. An example of a business cycle is the growth in the 1920’s, the negative shock of the stock market crash contributed to contraction and the Great Depression (which could be seen as the trough), then the slow recovery through the World War II years. A business cycle looks much like a sound wave when illustrated because it has high and low points along the continuum of the cycle. Previous studies have demonstrated that clothing expenditures and economic fluctuations are linked (Jacobs & Shipp, 1990; Norum, 1990; Petev, Pistaferri, & Eksten, 2011); an increase in consumer spending is often observed when the economy is expanding and spending is frequently curtailed during contraction.

Historically, consumer unit clothing expenditures have received significant attention in the literature because of their importance to the business cycle specifically as the business cycle relates to why people spend the amount of money they do on nondurable goods. Nondurable goods are those goods whose life expectancy is less than three years, such as clothing. For example, during the Great Depression, many Americans could barely afford to spend money on food to feed their families, much less on the luxury of new clothing. As a result, women began repurposing large flour and feed sacks made from durable, white, cotton fabric by cleaning, bleaching, dyeing and sewing them into items of clothing. Therefore, families who appeared to allocate very few dollars to new clothing purchases could easily be understood—they were essentially repurposing food expenditures for clothing.
In a more recent yet similar context, current research indicates that there are distinct features to the most recent economic contraction, such as duration. Though not as long as the Great Depression--according to the National Bureau of Economic Research Business Cycle Dating Committee--the Great Recession began in December 2007 and ended in June 2009 (NBER, 2012). It was the longest recession since the Great Depression (U.S. Bureau of Labor Statistics, 2012d; NBER, 2012). Per capita consumption fell from the last quarter of 2007 through at least the first half of 2009. The deep negative effects the recession had across age, race, education, and income groups continued even after the Great Recession ended (Petev, Pistaferri, & Eksten, 2011).

When a country experiences such dramatic expansions and contractions within its economy, it is important to frame research within the context of this particular business cycle to understand how this volatility affects consumer unit purchases.

Setting the stage for research into U.S. clothing expenditures within the frame of the business cycle is extremely beneficial. Equally important is putting consumer spending in the context of the housing market. It is vital that researchers understand the impact that the U.S. housing bubble had on consumer spending. According to Garber (1990) and Krugman (2013), an economic bubble can be described as a situation in which asset prices appear to be based on implausible or inconsistent views about the future—typically extremely positive views about the future. The United States’ housing bubble affected many sectors of the U.S. housing market. During the bubble, housing prices peaked in the first half of 2006, began to decline in 2006 and 2007, and reached historic lows by 2012 unseen in the post-war period (S&P Dow Jones Indices, 2014, p. 2). The financial crisis that resulted from the housing bubble bursting is, according to Krugman
(2013), one of the primary causes of the Great Recession. In turn, the Great Recession prompted a decrease in consumer spending on both housing and apparel (U.S. Bureau of Labor Statistics, 2012e). Therefore, this study examined if consumer unit clothing expenditures changed across spring quarters, which were March through May, in 2006 and 2010 for American home renters and homeowners before and after the Great Recession.

A discussion of expenditures around the time of the Great Recession cannot take place without considering the housing market during that time. Historically homeownership rates have increased since the 1940s. Homeownership rates in 2006 were 67% and dropped to 66% in 2010 (U.S. Bureau of Labor Statistics, n.d.b; U.S. Bureau of Labor Statistics, n.d.c). This may be due to foreclosures and consumers losing their homes thereby transferring from homeowners to renters.

House prices rose quickly in 2004-2005 then fell roughly 30% from their peak in early 2006 and continued to decline through 2010 which lead to loan/mortgage defaults and delinquencies (Amromin & Paulson, 2010; Krainer & LeRoy, 2010). There were sections of the United States in 2012 that were still waiting to recover in the housing market. By 2010 house prices had decreased by $5,300 to $179,900 according to the U.S. Census Bureau’s 2010 American Community Survey (U.S. Census Bureau, n.d.d). The median home value from 2010 through 2012 was $174,600 which was a difference of $10,600 from the 2006 home value of 185,200. This dramatic decline in housing prices lead to issues with mortgages, defaults and delinquencies (failing to pay the mortgage payment or being 30 days or more late on a payment, respectively), and foreclosures.
From 2005 to 2006 defaults in the first 12 months on prime mortgages almost doubled. Subprime loan defaults significantly increased from 16.2% in 2005 to 23.8% in 2006 (Amromin & Paulson, 2010). Defaults, especially on subprime and adjustable-rate mortgages (ARM), soared in 2006 and helped lead to a new season of foreclosures. These defaults were often helped along by the decrease in house prices and equity loss creating a situation where homeowners could not sell their house to pay off their mortgages, but neither could they afford to pay the monthly payments. This situation created a challenging economic and financial situation for consumers which apparently left many homeowners feeling as if default or foreclosure was their only option (Ellen & Dastrup, 2012; Kiff & Mills, 2007; Krainer & LeRoy, 2010).

Foreclosure starts quadrupled through the Great Recession and began to decrease in the fall of 2010. This increase was a larger spike than the last several recessions, and had a severe impact on minority groups (Ellen & Dastrup, 2012). According to the BLS, although foreclosures were beginning to decrease America was still feeling the effects of the Great Recession in 2010 with an additional 2.9 million foreclosure filings (U.S. Bureau of Labor Statistics, 2011b). Clearly the U.S. business cycle has not fully recovered from the negative shock of the housing market bubble bust.

According to Ellen and Dastrup (2012), homeowners had lost more than 7 trillion dollars in home equity since the first quarter of 2006. However, according to the life cycle hypothesis, homeowners would still spend marginally more than renters. This loss of equity negatively impacted Americans’ ability to sustain consumption. The growth and subsequent loss of home equity is unprecedented since before the 1970’s. Although there was often a slight downturn in home equity in the previous four recessions, the severe
decline in home equity associated with the housing bubble bust experienced by Americans going into the Great Recession was a negative shock to the business cycle unseen in the previous four recessions.

Many homeowners transitioned to renting, and many renters were severely rent burdened (50% or more in income spent on housing) since rent increased faster than inflation since 2000, which left less income for other goods and services (Ellen & Dastrup, 2012). It is not surprising that the disadvantaged and low-income were more severely affected by the housing crisis. As more consumer units transitioned from owning to renting, which increased demand for rental units; upward pressure was applied to rents further increasing the strain on the low-income and disadvantaged, as well as the rental market in general. The above mentioned trends coupled with inflation and the Great Recession reduced consumer spending power and in many cases affected how consumers made consumption choices.

Across various business cycles, demographic and socio-economic variables play enormous roles in determining U.S. clothing expenditures and help explain the changes in the overall expenditure numbers (American Express Business Insights, 2011; Courtless, 1988; Erickson, 1968; Lino, 2001; Nelson, 1989; Norum, 1990; Paulin, 1995). Over the decades, Erickson (1968), Magrabi, Chung, Cha, and Yang (1991), Nelson (1989), and Paulin (1995) all used the Consumer Expenditure Survey (CE) to examine age, gender, race, geographic location/region, income, and consumer unit composition to explain variations in clothing expenditures and consumption within the consumer unit.
Statement of Problem

While research on clothing expenditures in past economic cycles has occurred, researchers know little about clothing expenditures during the recent Great Recession and even less about the relationship between homeownership and clothing expenditures (Kamakura & Du, 2012; Petev, Pistaferri, & Eksten, 2011). There exists a gap in the research regarding clothing expenditures and housing type and composition in the later part of the last decade. Given the importance of clothing expenditures to the U.S. business cycle, and the importance of the influence of the business cycle on clothing consumption, discovering and understanding the factors that affect clothing expenditure decisions is important to the housing sector of the economy as well as to consumer researchers, and for future research examining expenditures during a recession and/or housing crisis. In addition to bolstering the current body of knowledge about clothing expenditures, a better understanding of factors influencing apparel expenditure decisions may aid family resource management specialists when assisting families with budgeting (Pentecost & Andrews, 2009; Viljoen, 1998).

This exploratory research differs from previous research in that it focuses on how differences in income, race, gender, age, education, and occupation are related to clothing expenditures in owned and rented households. Investigating factors associated with clothing expenditures in the expansion phase of the business cycle will provide an understanding of the correlates of clothing consumption choices. For this study, I employed the 2006 and 2010 Consumer Expenditure Survey (CE) in which the Bureau of Labor Statistics (BLS) defines a consumer unit as:
“(1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their income to make joint expenditure decisions…” (U.S. Bureau of Labor Statistics, 2008b; U.S. Bureau of Labor Statistics, 2012a).

Across the decades, the body of consumer spending research has focused on aggregate consumer spending (Erickson, 1968; Kamakura & Du, 2012; Norum, 1990; Park & Widdows, 2001; Paulin, 1995; Petev, Pistaferri, & Eksten, 2011; U.S. Bureau of Labor Statistics, 2006; Winakor, 1962). In this study, I attempt to identify the differences between homeowners and renters due to housing’s role in the Great Recession. I do this controlling for related demographic and economic characteristics that may have influenced clothing expenditures in the spring of 2006 and in the spring of 2010 during the expansion phase of the two respective business cycles.

**Research Question**

The purpose of this study is to understand if consumer unit’s clothing expenditures differed between the spring quarter of 2006 and spring quarter of 2010 for American homeowners and renters. Spring quarter consists of months March through May. Because of my interest in the effects of the Great Recession on the business cycle and because of limited funding, I decided to bookend the Great Recession by selecting one year before the Great Recession began (2006) and one year after the Great Recession officially ended (2010) to examine if there was a change in consumer unit clothing
Sung and Yu\textsuperscript{1} (as cited in Park & Widdows, 2001) found that clothing expenditures differed between seasons of the year. Therefore, this research examines the spring quarters of 2006 and 2010 to assure comparability of expenditures during similar seasonal cycles. The spring quarter of 2006 was in the expansion phase of the business cycle before the peak in December of 2007. The spring quarter of 2010 was also in the expansion phase after the trough was reached in June of 2009. Comparing two quarters in the same part of the business cycle will add continuity for both the business and seasonal cycles.

To examine expenditures, I used the Consumer Expenditure Survey (CE). Likewise, this study sought to compare clothing expenditures by housing tenure (owned versus rented). Systems theory guided the comparison of clothing expenditures for 2006 and 2010 and is discussed in detail in Chapter 3. This study may help reveal how clothing expenditures changed over the last half of this decade for owned and rented American consumer units.

Because of the number of economic and environmental factors (climate, weather, location) influencing clothing purchase decisions, it is key to include all relevant variables available in the data to help answer the question. This study addressed the question: Were consumer unit clothing expenditures in the spring of 2006 and the spring of 2010 different? If so, what consumer unit characteristics along with housing tenure are associated with those differences? Examined are the following hypotheses.

\[ H_{01} = \text{There is no difference in the inflation-adjusted consumer unit clothing expenditures between spring 2006 and spring 2010, ceteris paribus.} \]

\textsuperscript{1} All reasonable attempts were made with the aid of multiple librarians to locate said document.
Ha₁ = There is a difference in the inflation-adjusted consumer unit clothing expenditures between spring 2006 and spring 2010, ceteris paribus.

Ho₂ = There is no difference in the inflation-adjusted consumer unit clothing expenditures of homeowners and home renters, ceteris paribus.

Ha₂ = There is a difference in the inflation-adjusted consumer unit clothing expenditures of homeowners and home renters, ceteris paribus.

This thesis used the consumer unit as the unit of analysis. The effects on clothing expenditures of the age, gender, and race of the consumer unit head; the composition, location, and total income of the consumer unit; and the education and occupation of the reference person are compared and contrasted against homeowner versus renter status. I expected that renters’ spending on clothing would differ from homeowners’ spending as a result of differences in lifetime wealth. I analyzed these factors using ordinary least squares regression, as well as additional appropriate statistical tests.

**Summary**

The rest of this thesis proceeds as follows. In Chapter 2, I present the literature review and provide the context for what previous scholars have learned about U.S. clothing expenditures and why the selected variables were chosen. The 21st century has been a time of rapid change, development, and economic upheaval; thus, understanding expenditures in 2006 and 2010 will provide a baseline for future comparison of clothing expenditures.

The methodology is presented in Chapter 3. I describe the methods used to conduct this research, and the sources of information utilized. I explain the relevant variables, the theoretical framework utilized, the selected model, and why the chosen
methods are appropriate. This thesis is a quantitative approach using statistical analysis to analyze the data and draw a cross-sectional estimate. In Chapter 4 I describe the results of the statistical analysis and the step-by-step process used to analyze the data. In Chapter 5 I present the discussion, contributions, and limitations of this study, as well as recommendations for future research.
CHAPTER 2

LITERATURE REVIEW

The purpose of this study is to understand if consumer unit’s clothing expenditures in spring 2006 differed from consumer unit’s clothing expenditures in spring 2010 for American home renters and homeowners. The reviewed literature relates to the history of the first decade of the 21st century and past research on clothing expenditures. It also relates to homeowners versus renters and consumer spending, and past research on appropriate variables. Finally it relates to the theories used in past research, justification for retained variables, and information about the Consumer Expenditure Survey.

History of U.S. Clothing Expenditures

Clothing expenditures have been the subject of multiple studies over time. One of the issues with clothing expenditure research is the inconsistency in measurement. In Jacobs and Shipp’s (1990) *How family spending has changed in the U.S.*, they noted that previous surveys tended to use only data collected from employed persons and traditional urban family types, but eventually data collection expanded to include retired persons, single individuals, and rural dwellers.

Research has demonstrated that apparel expenditures are a smaller share of the consumer unit budget today than in the past. According to Jacobs and Shipp (1990) as a percentage of household budgets, apparel and services\(^2\) (such as dry cleaning and

\(^2\) Apparel and services were combined in this historical review paper and jointly reported which impeded separating them.
(tailoring) expenditures for urban wage earners increased from 14.7% in 1901 to 17.6% between 1917-1919, arguably because of the supply and distribution constraints of World War One (WWI). The Jacobs and Shipp paper reported a combination of apparel and services, so I have no way to separate them and report only clothing expenditures. Expenditures then decreased to 10.9% from 1934-1936 and increased to 11.6% in 1950, accounting for constraints during the Great Depression and an increase in household income post World War Two (WWII). In the last half of the 20th century, apparel and services dipped again in the 1960-1961 survey from 10.3% to 8.4% in 1972-1973 and down to 5.2% in 1986-1987 (Jacobs & Shipp, 1990, p. 22). Finally, it dropped to a low of 4.5% in 1998 (Johnson, Rogers, & Tan, 2001). However, during those decades apparel prices did not rise as quickly as the overall inflation rate, thus, decreasing the total budget share without necessarily decreasing the quantity purchased. Contributing factors were increases in inexpensive apparel imports, casual inexpensive fashions, increased durability of clothing, and the decrease in the overall price of synthetic fibers, which had claimed a larger market share (Courtless, 1988; Fan, Lee, & Hanna, 1996; Laughlin, 1996; Park & Widdows, 2001).

To understand the importance and logistics of measuring clothing expenditures, it is useful to review how previous researchers have measured clothing expenditure trends. This chapter concludes with a description of the dataset and theoretical framework.

**Previous Research about the Trends of Clothing Expenditures**

There is great variety in the trends of clothing expenditures. Erickson (1968) examined ready-to-wear clothing purchased by the family for its use. Using data from the Survey of Consumer Expenditures (1960-1961), Erickson (1968) discovered variations in
clothing expenditures and types of clothing purchased by age, gender, location, and family composition. Erickson found that girls 16 to 17 years old spent more on sweaters, footwear, and gloves; and women 18 to 24 spent more for suits, dresses, undergarments, nightwear, hosiery, and accessories. Erickson suggests that this may have been due to the change in both physical and professional status with those in the 18 to 24 age group requiring clothing for college and careers while the 16 to 17 age group was maturing physically and likely still in high school. Expenditures for both genders were slightly less for the 25 to 64 year age group than the 16 to 24 year olds. Erickson suggests that this was due to the 25 to 64 year group purchasing more durable and conservative styled clothing than the 16 to 24 year age group. Clothing expenditures for men, which decreased up to age 64, reflected a decrease in quantity purchased as opposed to purchase price. Erickson stated that average expenditures represented both price paid and quantity purchased.

Courtless (1988) found that in 1986 the Consumer Price Index (CPI) rose 7.3% for apparel commodities. Clothing with the highest price increases were: women’s dresses, suits, coats and jackets, separates and sportswear, and men’s shirts. This increase was the third year that clothing prices increased faster than overall prices. Norum (1990) found that personal consumption expenditures (including apparel) increased annually at 7.15% per year. In contrast apparel expenditures fell 4% between 2006 and 2007, and 5% between 2009 and 2010 likely, due to the Great Recession (U.S. Bureau of Labor Statistics, 2007; U.S. Bureau of Labor Statistics, 2010).

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3 The 1986 CPI reports were not archived and available; therefore, a secondary source was referenced.
Homeowners versus Renters and Consumer Spending

In 2006 there were approximately 36.5 million renter occupied homes and 75 million owner occupied housing units. In 2010 there were approximately 40.7 million renter occupied houses and 76 million owner occupied housing units showing a greater rate of change or increase for renter occupied housing than owner occupied housing (U.S. Census Bureau, n.d.b; U.S. Census Bureau, n.d.c). Benito, Thompson, Waldron, and Wood (2006) examined how house prices and consumer spending changed over time in the 1980s and 1990s and highlighted the roles of common factors and causal links in the decreasing association between house prices and consumer spending. They argued that the causal links between these factors are increasingly subtle over time. Some reasons for this decreasing association are that the connection between changes in house prices and consumer spending depends on the reason house prices have changed, the time period of consumption (present versus future), and how future discounting affects consumer spending. Finally, the consumer’s individual traits may have an impact on consumer spending. A desire for precautionary savings may lead to less spending. Overall, Benito, Thompson, Waldron, and Wood (2006) found that the correlation between housing prices and consumer spending decreased over time, even when they considered income and wealth. They concluded that the effect of an increase in house price relies on the “why” of the price increase.

The Economist Online (2011) highlighted Bureau of Labor Statistics data which suggested that U.S. consumers spent less on clothing and eating out and more on necessities between 2007 and 2010. Annual per consumer unit spending fell by 3.1% while prices increased 5.2% during the recent recession and economic downturn thus,
reducing consumer buying power. Spending on household utilities and services increased more than 20%, and clothing expenditures decreased approximately 8 to 10% in the 2007 to 2010 period, although women’s apparel fared better; thus, suggesting some gender durability. Conversely, between 2003 to 2006 (before the recession) consumer spending rose 8.2% above the previous year’s consumer spending. This gave a clear juxtaposition between the pre-recession, housing-bubble economy, and the post-recession, housing-bust economy.

In a different vein, Paulin (1995) investigated the link between housing tenure and consumer unit expenditures using the Consumer Expenditure Survey (CE). He compared homeowner and renter expenditures, excluding condominium owners since the BLS definition of “homeowner” excluded condominiums, and he wanted to reduce ambiguity since condominiums have properties of both owned single family detached housing and apartments. He examined whether differences in certain expenditures regarding housing tenure are because of diverse demographics, or due to differences in consumer units themselves, which are reflected in their housing tenure choice. Paulin (1995) found significant differences across tenure between homeowners and renters, which illustrated that tenure is a meaningful factor worthy of consideration. His results indicated that owner-occupied units had increased markedly as a percentage of all housing units from 44% in 1940 to 64% in 1990. As expected, the income distribution between homeowners and renters differed substantially with, 30% of homeowners in the bottom two income quintiles (quintiles divide the object into five equal portions), compared to 50% of all renters. In contrast, more than one-half of homeowners were in the top two income quintiles while approximately 25% of renters were in that range.
Not surprisingly, Paulin (1995) found that homeowners were older and reported higher incomes than renters. Also, homeowners generally had higher total quarterly expenditures than renters. However, renters spent a larger share of total expenditures on basic goods and services (50.5%) compared to homeowners who expended an average of 45.2%. Not surprisingly he found that homeowners without mortgages spent more on other items than did homeowners with mortgages.

Surprisingly, when examining the link between housing tenure and consumer expenditures, Paulin (1995) found that homeowners and renters spent similar amounts on apparel and services (5.0% and 5.3%, respectively). One could suppose that renters would have had more clothing expenditures without mortgage, property tax, and maintenance expenses, but that did not appear to be the case. Clothing expenditures differences were statistically, but not practically, significant. Apparel and services were expected to decline at a decreasing rate for renters and at an increasing rate for homeowners, which was the only nod to the difference in homeowner status. I wanted to examine more recent years and selected a particular quarter (spring) to learn if my findings differed from Paulin’s regarding housing tenure and clothing expenditures.

Factors Considered in Prior Research

Demographic and socio-economic variables play a large role in U.S. clothing expenditures and help explain the changes in the overall expenditure trends (American Express Business Insights, 2011; Courtless, 1988; Erickson, 1968; Lino, 2001; Nelson, 1989; Norum, 1990; Paulin, 1995). Erickson (1968); Magrabi, Chung, Cha, and Yang (1991); Nelson (1989); and Paulin (1995) all used the Consumer Expenditure Survey to examine age, gender, race, geographic location/region, income, and family
type/household composition to explain variations in clothing expenditures and consumption within the household. Erickson (1968) also studied specific clothing items measured in the Consumer Expenditure Survey, as well as ready-to-wear clothing purchased for family members only. Erickson (1968) investigated characteristics such as increased clothing requirements for growing children and style preferences. Nelson (1989) examined location as a variable in her study; thus, reflecting the differences in expenditures between urban and rural areas and geographical region. Consumers living in the North likely require expensive winter wear whereas consumers living in the South do not.

Wagner and Hannah (1983) included age, income, marital status, employment status, occupation, and geographic region when examining the effectiveness of family life-cycle variables in consumer expenditure research. Magrabi, Chung, Cha, and Yang (1991) utilized many of the above variables such as household size and family type/household composition when they examined household consumption.

Copious studies using the Consumer Expenditure Survey data have used demographic (age, gender, race, geographic location/region, urban/rural housing, parental education, household composition) and socio-economic factors (income, and parental occupation) to measure business cycle variation and clothing expenditures (American Express Business Insights, 2011; Courtless, 1988; Lino, 2001; Magrabi, Chung, Cha, & Yang, 1991; Nelson, 1989; Norum, 1990; Paulin, 1995). This study will likewise review and consider data about the same variables, as discussed below.
Year/Quarter

The years 2006 and 2010 bookend the Great Recession by being one year before the Great Recession began and one year after the Great Recession officially ended. Similarly, apparel expenditures fell 4% between 2006 and 2007, and by 5% between 2009 and 2010 reflecting the Great Recession (U.S. Bureau of Labor Statistics, 2007; U.S. Bureau of Labor Statistics, 2010). However, this study compared 2006 to 2010, not the adjoining years, and examined one quarter of each year versus the entire year. Just as business cycles are measured quarterly, so seasonal cycles change quarterly as weather changes. I therefore selected the spring quarter (March through May) of each year to maintain continuity for both the business and seasonal cycles. Table 2.1 illustrates the start and end dates of the business cycle phases as determined by NBER. The above-mentioned trends coupled with the Great Recession and inflation, which increased 8% between 2006 and 2010, reduced consumer spending power and in many cases affected how consumers spent on clothing (U.S. Bureau of Labor Statistics, n.d.a).

American Express Business Insights (2011) compared the first half of 2011 with the same period in 2010, and found that older consumer units exhibited significant interest in online discount shopping. Hager and Bryant (1977) used winter quarter apparel purchases in 1970, 1971, and 1972 to examine clothing expenditures for rural low income consumer units. Also, seasonal differences may impact results especially in spring and fall when consumer units typically make the majority of clothing purchases.

Table 2.1 Relevant Business Cycle Reference Dates

<table>
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<tr>
<th>Date</th>
<th>Stage</th>
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<tr>
<td>June 2009</td>
<td><strong>Trough</strong>: End of recession; beginning</td>
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December 2007

November 2001

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<th>of expansion</th>
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<tr>
<td><strong>Peak</strong>: End of expansion; beginning of recession</td>
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<tr>
<td><strong>Trough</strong>: End of recession; beginning of expansion</td>
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**Housing Tenure**

Homeownership rates increased during the 1940s, peaked in 2006 at 67% and dropped to 66% in 2010 (Flanagan & Wilson, 2013; U.S. Bureau of Labor Statistics, n.d.b; U.S. Bureau of Labor Statistics, n.d.c). House prices fell approximately 30% from their peak in 2006 and the resulting loss of equity and wealth contributed to defaults and delinquencies (see description on page 4). Defaults in the first 12 months on prime mortgages almost doubled from 2.4% in 2005 to 4.3% in 2006, and subprime loan defaults increased from 16.2% in 2005 to 23.8% in 2006 (Amromin & Paulson, 2010). Defaults, especially on subprime and adjustable rate mortgages (ARM), soared in 2006 and helped lead to a season of foreclosure rates unseen in the post-World War II era (Kiff & Mills, 2007; Krainer & LeRoy, 2010). From the first quarter of 2006 to 2010 U.S. homeowners lost over 7 trillion dollars in home equity. Foreclosure starts quadrupled which was a larger spike than previous recessions, and had a severe impact on minority groups. Many homeowners transitioned to renting, and many renters were severely housing cost burdened (50% or more of income spent on housing) because rent increased faster than inflation from 2000 to 2011 among urban households which left less income for other goods and services (Ellen & Dastrup, 2012). These trends, coupled with inflation and the Great Recession, reduced consumer spending power and in many cases affected how consumers spent their dollars.
Regarding housing status and expenditures, Benito, Thompson, Waldron, and Wood (2006) explored many common factors affecting housing prices and consumer spending, such as interest rates, access to credit, income expectations, and demand for housing. Housing tenure and whether consumers planned to trade up or down in housing also affected spending patterns since the higher the housing price, the more collateral was available to consumers. They argued the key factor was more likely expected income because consumers, whether homeowners or renters, who had higher expected incomes were likely to increase spending. Evidence on spending with age, however, was not clear-cut. They found that wealth and consumer spending were highly linked. Since housing is a major component of wealth, it is reasonable that house prices are linked with consumer spending.

The life cycle hypothesis (LCH) posits that consumers make consumption decisions based on perceptions of the net present value of their expected lifetime stock of wealth. As a result, if a consumer unit owns a home they reasonably have a greater expectation of their lifetime stock of wealth relative to renters and would, therefore, consume more than a comparable renter. The LCH also posits that consumers attempt to smooth the marginal utility of their consumption over their life course, either saving or borrowing in a given period based on their expectations about their expected lifetime stock of wealth. As a result, differences in present-day consumption between homeowners and home renters are to be expected, with homeowners spending more than comparable renters. These tenets are consistent with the findings of Benito, Thompson, Waldron, and Wood (2006).
Park and Widdows (2001) hypothesized that homeownership would be positively and significantly related to clothing expenditures. In both of their models homeownership was a highly significant predictor of total clothing expenditures at the <0.001 p-value. Their findings supported that homeownership had a positive impact on clothing expenditures for all clothing categories with the exception of children’s clothing and under garments. Paulin (1995) found that renters spent a larger share of total income on basic goods and services [which are food at home, primary housing and related services, and apparel and services] (50.5%) compared to homeowners who expended an average of 45.2%. Paulin found that renters and homeowners were likely to have differing expenditure patterns even if their other contributing factors were the same. Research showed that homeowners without mortgages spent more on other items than did homeowners with mortgages. Finally, Paulin (1995) examined income (by quintile), race, family, type, employment status, region of country, urban versus rural residence, age of the reference person, family size, educational attainment, tenure status (homeowner with or without mortgage versus renters), marital status, and apparel and services and found that dissimilar variables accounted for much of the variety in expenditure patterns, not just housing tenure choice.

Age

Age traditionally had a nonlinear relationship with apparel expenditures; meaning, expenditures rose in childhood and adolescence, peaked in early adulthood, and declined during maturity and older adulthood (Dardis, Derrick, & Lehfeld, 1981; Erickson, 1968; Fan et al., 1996; Frisbee, 1985; Hager & Bryant, 1977; Norum, 1989; Wagner and Hannah, 1983; Yang, 1996). In 2004, both income and spending rose until age 45 to 54
and then declined (Marcus, 2006; Viljoen, 1998). American Express Business Insights (2011) reported that Baby Boomers’ spending on discount and “flash sales” [a short period of time, typically one day or less, where a store sells merchandise at a greatly reduced price (“Cambridge Dictionary,” 2014)] increased by 25%. Following the nonlinear trend Erickson (1968) stated, “Clothing expenditures for the urban American family member generally increase from infancy to the late teens and early twenties and then decline. But at all ages, a woman’s clothing bills are larger than a man’s” (p.14). Supporting this were her findings that gender differences in clothing expenditures increased with age up to age 18. Clothing expenditures then continued to increase into early adulthood for both genders. This may have been due to the change in both physical and professional status with the 18 to 24 age group requiring clothing for college and careers, while the 16 to 17 age group were maturing physically and may still have been in high school. However, this difference narrowed as age increased. Erickson (1968) argued that expenditures increase the most between the ages of six to 11, and 12 to 15 for both males and females.

Viljoen (1998) also found that the greatest variation in clothing expenditures occurred in the middle-age categories of 25-44 years which is when income and spending would have been peaking and may have reflected occupational and social demands. Likewise, adults over age 65 spent less than half the amount spent by 25-64 year olds of the same gender. Clothing expenditures for men, which decreased as age increased through age 64, reflected a decrease in quantity purchased as opposed to purchase price. This may reflect fewer clothing requirements because of retirement and lower income levels. Overall, clothing expenditures were highest in infancy and the mid-teen years.
Since the traditional retirement age has been somewhere between 62 and 67 (Pernot, 2006; U.S. Social Security Administration, n.d.), it makes sense that clothing expenditures for consumer units over the age of 55 would be lower than younger consumer units’ expenditures.

**Gender**

Gender affects the amount and type of clothing expenditures. Wagner and Hannah (1983) found that clothing expenditures were greater for females in all age categories. The 2004 BLS consumer spending data found that American households spent nearly twice as much on women’s clothing by household (Marcus, 2006). Pentecost and Andrews (2009) found that females purchased clothing more frequently and differed from males in the amount of yearly expenditures. Results indicated that males may not have shopped as frequently as females, but were likely to spend more money per episode than females when they did shop. Weekes (2004) found that women would continue to spend on clothing and would incur debt to purchase more expensive items. Yang (1996) examined clothing expenditures with the CE data by occupation and found no significant relationship between clothing expenditures and gender. Frisbee (1985) found that female-headed households spent a larger share of the budget on clothing than male-headed households.

**Composition of the Consumer Unit**

Researchers discovered variations in clothing expenditures and type of clothing purchased by family composition (Erickson, 1968; Fan et al., 1996; Lin & DeVaney, 1996; Wagner & Hannah, 1983). Erickson (1968) found that single consumer units possessed the highest clothing bills. Clothing expenditures were lowest for households
with children under 18 and/or single-parent homes; likely illustrating budget constraints due to dependent children. A consumer likely had more available income if he or she had no dependents. Inversely, parents, especially single parents, likely had less available income; and in the case of single mothers, perhaps also had a lower relative wage rate. Park and Widdows (2001) found that female-headed households spent more overall on clothing than other household types.

Paulin (1995) incorporated number of earners his research on housing tenure to see if expenditures differed between single earner and multiple earner families. He found that number of earners was less predictive of expenditures than age, income, and family composition. Working heads of household predictably spent more on clothing than unemployed or retired heads of household. Paulin (1995) also used the CE to examine family type/household composition. Family size and size squared were incorporated to account for potential economies of scale in expenditures (p. 178). Likewise, Magrabi, Chung, Cha, and Yang (1991) utilized many of the above variables such as household size and family type/household composition when they examined household consumption. According to Wagner and Hannah (1983), life cycle and family composition variables are related because family composition changed as it progressed through the life cycle. These family life cycle variables were age, employment, marital status of the household head, and age of the youngest or oldest child. Using these variables, Wagner and Hannah (1983) found no significant differences between different family types and clothing expenditures. The findings about marital status and clothing expenditures were inconsistent (Lin & DeVaney, 1996; Viljoen, 1998).
Race

In several research projects race was classified as White, Black, Asian, and Other or some combination of those four categories. A portion of studies found race insignificant. Dardis et al (1981) and Hager and Bryant (1977) found race to be an insignificant variable. Nelson (1989) and Viljoen (1998) had mixed results regarding race. Nelson (1989) posed that the personal characteristics examined physiological needs such as greater clothing requirements for growing children and style preferences, which may have differed based on race/ethnicity. Paulin (1995) used the CE to examine race as a factor to help measure variation in clothing expenditures and consumption within the household by tenure status. He examined ready-to-wear clothing purchased for family members only and found race to be a significant predictor variable. The BLS (U.S. Bureau of Labor Statistics, 2012e) using CE data identified race as a factor that affects spending patterns, particularly with the Hispanic population. Both Hispanic and Non-Hispanic groups decreased total spending between 2009 and 2010, but Hispanics decreased by half of the non-Hispanic levels.

Urban/Rural and Region

There is a strong precedent that urban areas spend more on clothing than rural areas of the country. In Jacobs and Shipp’s (1990) *How family spending has changed in the U.S.*, they noted that previous Consumer Expenditure surveys tended to use only data collected from employed persons and traditional urban family types, but eventually the CE expanded to include rural dwellers. Urban wage earner expenditures on apparel and services increased as a percentage of household budgets from 14.7% in 1901 to 17.6% in
the 1917-1919 survey, arguably because of supply and distribution constraints of WWI. Expenditures then decreased to 10.9% from 1934-1936.

For the purpose of this study it is important to note that in 2006, the first year in this study, rural (non-metro) population growth from net migration peaked then migration declined sharply and shifted geographically in the following years. This was likely in response to rising unemployment, housing-market challenges, and other factors. Population growth in rural areas has been slower than in urban areas since the 1990s. From 2006 to 2013 the rural annual population change rate plummeted from 0.7% to below zero (negative percentage) while urban rates only fell one-tenth of a point from 1% to 0.9% during that same period (U.S. Department of Agriculture, n.d.a). According to the Census Bureau in 2010, 80.7% of the Americans lived in urban areas and 19.3% resided in rural areas (U.S. Census Bureau, n.d.a.).

Erickson (1968), Nelson (1989), and Fan et al. (1996) all used versions of the CE to examine location as a variable reflecting the differences in expenditures between urban and rural areas, and geographic region and found that the highest area of expenditures was in the Northeast and the lowest in the South and West. This may have reflected the contrast between large Western rural farm areas, the Southern mixture of urban/rural living, and the primarily urban Northeast. I believe this expenditure difference may have reflected the cost of living/per capita income, unemployment rates, social, physical, and cultural variables. These differences may also have been due to climate differences where Northern consumers required expensive winter wear when compared to the warmer Southern and Western regions. Finally, these differences may also have been due to changes in tastes and preferences.
When examining expenditure differences, geographic location and income are often correlated. According to Hawk (2013) in 2011, roughly 92% of American households were urban and 8% rural. Cost of living played a role. It is not surprising that urban consumer units spent 18% more on total household expenditures than rural consumer units since it costs more to live in an urban area than a rural area (Hawk, 2013). Other researchers found that consumers in urban locations typically spent more on clothing than consumers in rural locations, and those dollars were mainly spent on females. Arguably fashion consciousness, style and preference played a role especially in densely populated areas such as New York City (Nelson, 1989; Park & Widdows, 2001; Paulin, 1995).

**Income**

Various researchers have established a strong and positive relationship between income and clothing expenditures. Clothing consumption greatly relies on the source and amount of income available, and the relative price of clothing (Nelson, 1989; Norum, 1990; Park & Widdows, 2001). Households in a lower socio-economic-status tend to view clothing expenditures as a luxury; whereas, higher socio-economic groups view it as a necessity. Results indicated that households with greater income spent more on apparel and services than other consumer units (Fan et al., 1996; Viljoen, 1998, p. 6). Nelson (1989) found that children earning income from part-time jobs or allowances generated increased clothing expenditures because the children had more freedom of choice due to the available revenue, and/or the children had clothing requirements for work. Clothing expenditures for all age-sex groups increased with income. Erickson (1968) posed that this increase represented a shift from less expensive to more expensive clothing. Erickson
also suggested this increase was due to greater quantities purchased and that the average 
expenditures represented both price paid and quantity purchased. Income and relative 
prices of clothing were two main factors that influenced the percentage of personal 
consumption expenditures allocated to clothing (Norum, 1990).

Nelson (1989) and Paulin (1995) used total household consumption expenditures 
as a proxy for household permanent income because respondents are likely to underreport 
actual income, and total expenditures reflect present and expected future income. Also 
some types of income, such as self-employment income, can be negative which may 
skew parameter estimates for income (Paulin, 1995). Another advantage to this approach 
is that total income was more effective than disposable income when explaining specific 
good expenditure categories (Fan et al, 1996).

Educational Attainment

Research has established a strong and positive relationship between expenditures 
and education. Nelson (1989) posited that a householder’s education may have influenced 
personal clothing tastes and preferences for themselves and their children. Nelson found 
that clothing expenditures were only significant regarding the mother’s education in that 
the lower the mother’s education level, the less was spent on her daughter’s clothing. 
Nelson also found that clothing expenditures for both the mother and father increased 
with education when the mother had obtained some college education or more.

Consumers with less than a high school or high school diploma spent less on 
clothing compared to those with a greater than high school education (Park & Widdows, 
2001). Fan et al. (1996) stated that higher levels of education correlated with more formal 
apparel choices for the male and higher-priced garments for the female.
**Occupation**

Occupation has been found to play a role in clothing expenditures. Parental occupation may influence clothing tastes and preferences for themselves and their children. White collar workers had higher clothing expenditures than blue collar workers, and white collar workers may have had to spend more on apparel than blue collar workers, a stay-at-home-mom, or college student (Fan et al., 1996; Kamakura & Du, 2012; Nelson, 1989; Nielsen, 1978). Park and Widdows (2001) found that those in professional occupations spent significantly more overall on clothing than non-professionals. Nelson (1989) found that mothers in blue collar jobs spent significantly less on apparel than mothers in white collar occupations but spent more on male children. Dardis et al. (1981) found that those employed in white collar occupations spent 14 to 18% more than blue collar occupations (craftsman, operators, unskilled laborers, and service workers).

**History of the Consumer Expenditure Survey**

The first Consumer Expenditure Survey (CE), according to Jacobs and Shipp (1990), was conducted from 1888-1891. Its purpose was related to the tariff negotiations between the U.S. and Europe. The 1917-1919 survey was created to develop the cost-of-living index, which eventually became the Consumer Price Index or CPI. These surveys helped illustrate how spending patterns changed and aided policy makers. In the 1934-1936 survey the CPI was revised but covered only the urban population until this too changed with the 1960-1961 survey. The 1950 survey was the first to 1) select a sample population utilizing scientific sampling methods, 2) use statistical measures to select participants from the entire population, and 3) coin the term "consumer unit," which we
use today (Jacobs & Shipp, 1990, p. 21, 24). The 1960-1961 survey, which also added the Diary portion to the survey to track daily purchases for two successive one week periods of time (U.S. Bureau of Labor Statistics, 2012c), marked the first time microdata became available to the public. The 1972-1973 survey was the first to separate the Quarterly Interview survey from the Diary survey. The new CE began in 1980 and continues through today. Data are collected over a five quarter period of time which is similar to a longitudinal survey. The Bureau of Labor Statistics (BLS) also added college and university-regulated housing to the survey format. Regarding terminology, there are four major categories of nondurable goods in the CE: food, clothing and shoes, gas and other energy sources, and other goods.

Beginning in April 2006 and continuing today, interviewers conduct the CE using a Computer Assisted Personal Interviewing (CAPI) computer program (Groves, 2006). The interviewer administers the questions and records responses on a laptop computer instead of the traditional paper and pencil format. The CAPI contains a case management system, which requires a manual override of unusually high or low participant responses so interviewers can confirm the information and add notes to explain unexpected responses. This program allows for more detail, tracks long lists of items, and reduces error. Today, the CE is the most inclusive and detailed continual source of expenditure and income information about the U.S. population relating to socio-economic and demographic factors.

**Past Models and Measurements for Clothing Expenditures**

While there is consistency in the data set utilized to examine clothing expenditures in that, the following authors use the CE, Erickson, 1968; Garner, Janini,
Passero, Paszkiewicz, & Vendemia, 2006; Jacobs & Shipp, 1990; Lino, 2001; Lundy, 2012; Nelson, 1989; Paulin, 1995; Wagner, 1986; Wagner and Hannah, 1983, there is inconsistency in the statistical analysis used on the CE clothing expenditure data. Previous researchers have demonstrated that there are several ways to analyze the CE.

There are at least three acceptable methods to measure expenditures in consumer economics. Researchers can measure expenditures as a percent of total income, which accounts for savings and investments as well as budget shares. Researchers can measure expenditures by percent of the budget, which breaks expenditure categories into percentages of the budget for the period of examination [week, month(s), and year(s)]. Finally, researchers can measure by total expenditures in a given category. Researchers have used each of these, as illustrated by Park and Widdows (2001), Wagner and Hanna (1983), and Winakor (1962) who used the total expenditure method; Hawk (2013), Jacobs and Shipp (1990), Kamakura and Du (2012), Norum (1990), and Paulin (1995) who used the percent of budget method; and Kamakura and Du (2012) and Petev, Pistaferri, and Eksten (2011) who used the percent of income method.

Within these alternative methods of measuring expenditures a variety of multivariate methods have been used to assess the nominal and/or real (in the case of simple expenditure data method) or the proportion or share (in the case of percent of expenditures or percent of income method). Several studies utilized Tobit regression (Nelson, 1989; Park & Widdows, 2001; Wagner, 1986). Wagner (1986) used t-tests and maximum likelihood techniques to examine the effects of her chosen independent variables on individual clothing expenditures, and Wagner (1986) used log likelihood functions to test model significance. Nelson also used likelihood ratio tests to examine
the significance of the joint influence of groups of variables. In contrast, Bryant and Wang (1990) and Norum (1990) conducted time series analysis of U.S. clothing expenditures.

**Theoretical Framework**

There are two prevailing theories in the field of consumer economics; consumer demand theory and systems theory. Demands theory’s main purpose is to understand and predict how an aggregate of households maximizes their satisfaction with the demand of goods and services given income and market constraints. Along with income, this theory also takes into account household preferences and market price. Several concepts in demand theory are: budget constraints, indifference curves, substitutions and complements, normal goods and inferior goods, the law of diminishing marginal utility, income elasticity/inelasticity, and own price effect. Demand theory categorizes the examination of preferences as a good of interest under examination and all other goods, and evaluates data in this manner.

Concerning income or budget constraints, Bryant and Zick (2006) state that in this theory the higher the income, the more preferences can be achieved. Likewise, the lower the income the less of all other goods can be obtained. The indifference curve shows all possible combinations of goods and services to income. The indifference curve illustrates the inverse relationship between the good of interest and all other goods; as the amount of income spent on one good increases the amount spent on all other goods decreases creating a downward sloping line.

Since this theory divides information into a good of interest and all other goods for analysis, research utilizing it has to consider elasticity and inelasticity. Elastic goods
are considered less-essential goods—such as eating out and recreation—whereas inelastic goods are necessities that tend to have few readily available substitutes such as food, clothing, and electricity. Elastic goods respond inversely with income, and this concept feeds into the own price effect, which is how the demand for a good changes in response to a change in that goods price ceteris paribus (Bryant & Zick, 2006, p. 47). Although clothing as a broad category is generally inelastic, there are still substitution possibilities within the clothing category that may be elastic. If a consumer’s favorite brand of jeans increases in price, they can purchase another brand of jeans or slacks. Also, certain items within clothing are more inelastic than others. A winter coat may be more inelastic than formal dresses, and graphic T-shirts may be more elastic than work slacks.

Park and Widdows (2001) used demand theory to examine Korean household clothing expenditures by category and confirmed that socio-economic and demographic variables influence the demand for various clothing categories. Likewise, Wagner (1968) utilized Engle curve analysis to examine household textile expenditures and found that many of the socio-economic and demographic variables previously discussed influence those expenditures.

The other prevailing theoretical framework in consumer economics is systems theory. Systems theory provides a holistic approach to examine families and individuals in relation to their environment (Nickols, 2003). It provides a framework to understand how the family interacts with and within the natural, human built, and human behavioral environments. Physical resources such as land, water, air, and weather comprise the natural environment. Humans are inextricably linked with and affected by the natural environment. The human built, or human constructed environment, is comprised of
different systems that convert energy and information into production and consumption, such as the technological, industrial, agricultural, and household systems. Finally, the human behavioral environment is comprised of rules, decisions, and policies designed to regulate human behavior and activities between human groups, the natural environment, social, economic, political, and religious systems.

One characteristic of systems theory is that the systems are interdependent and have various degrees of permeability to information outside of the family system, or the linkage between the family system and environments (Nickols, 2003; Whitchurch & Constantine, 1993). Systems have input, throughput, and output mechanisms and also provide and receive feedback. Systems input various resources, engage in processing said resources, and produce outputs. Feedback is the process of taking output and using that information to alter the following potential set of inputs to improve the system. Systems strive for equilibrium and are continually changing.

There are several key points to note within systems theory. One is to focus on the point of interaction between and within environments. For example, focusing on the interaction between the consumer and inflation rates, or how consumers allocate their clothing budgets within a household. Another point is that systems theory is by nature synergistic in that it assimilates across systems/environments (Nickols, 2003).

Systems theory assumes research is fairly comprehensive in nature; it sets the stage to conduct research comparing the positive and negative factors influencing family development and functioning, and it measures the impact of environments on individual and family development and quality of life (Whitchurch & Constantine, 1993). As a theoretical foundation, systems theory has a history of use in research dealing with
clothing expenditures; Nelson (1989) and Winakor (1962) both used systems theory to examine the relationship of clothing consumption to total expenditures. Nelson (1989) examined individual clothing consumption within the household, which falls within the human behavioral system. She examined various factors contributing to clothing expenditures and how those expenditures vary over the lifecycle. She found that clothing expenditures for children are typically higher than for parents, and clothing expenditures are usually higher for girls than boys. Winakor (1962) conducted a historical review of clothing expenditures from 1929 through 1958. Although she used Engle curves for her graphs, she discussed the data in a systems theory context. Wagner and Hannah (1983) tested the effectiveness of family life cycle (natural and human behavioral systems) variables in consumer research compared to family composition models and found the results to be similar.

By understanding the interconnectedness of systems theory, I may better illustrate how various factors, especially those correlated with the Great Recession, affect household clothing expenditures. The literature review and context of what previous research has said about U.S. clothing expenditures have been presented. Chapter 3 discusses the methodology selected to conduct this research, the sample data, and includes an explanation of how the data were coded, along with justification for the decisions made.
CHAPTER 3
METHODOLOGY

The purpose of this study is to understand if consumer unit clothing expenditures in spring 2006 differed from consumer unit clothing expenditures in spring 2010 for American home renters and homeowners. To examine the factors associated with consumer clothing expenditures, this study used data from the Consumer Expenditure Survey (CE) administered by the Bureau of Labor Statistics (BLS). The remainder of this chapter discusses the hypotheses, how this research was conducted, the components of the survey used, and why these selected methods are appropriate.

Data

The CE is the utilized data source for this study. The CE collects personal and financial information from the nation's consumer units and families about their expenditures, income, and consumer unit characteristics. According to the Bureau of Labor Statistics, “the terms consumer unit, family, and household are often used interchangeably for convenience. However, the proper technical term for purposes of the Consumer Expenditure Survey is consumer unit” [see definition on page 36] (U.S. Bureau of Labor Statistics, 2012a). Within the consumer unit is the reference person. The reference person of the consumer unit is the “first member mentioned by the respondent when asked to ‘Start with the name of the person or one of the persons who owns or rents the home.’ It is with respect to this person that the relationship of the other consumer unit members is determined” (U.S. Bureau of Labor Statistics, 2008b). A strength of the CE is
that it allows researchers to relate the expenditures and income of consumers to the various pertinent characteristics of those consumers including such characteristics as family composition, age, income, and occupation (U.S. Bureau of Labor Statistics, 2012b).

The CE sampling unit is postal addresses rather than individuals or consumer units. Thus, if a consumer unit moves away from an address and another consumer unit moves into that residence the BLS asks the new resident to participate in the survey. Therefore, the current consumer unit at a given address at the time of the sample is the unit of measurement. It is likely that a similar socio-economic status consumer unit will replace one who moved from the sample residence, especially since the value of the house is not likely to drastically change from its neighboring counterparts (Clarke, Deurloo, & Dieleman, 2003). As mentioned on page 35 of the BLS CE codebook (2008a) the BLS classifies a “homeowner” consumer unit as a consumer unit that either owns the home outright, or has a mortgage--excluding condominiums. Likewise, the BLS defines a “renter” consumer unit as a consumer unit with a lease for which rent is paid [excluding student housing] (U.S. Bureau of Labor Statistics, 2008a). However, unlike Paulin (1995) I did not have to exclude condominiums to examine homeowners and renters because when I set the subset parameters (18 to 64 years and spring quarter of each year) there were zero cases of condominiums in the 2010 survey, thus making a comparison of condominiums impossible.

As with many longitudinal data sets, there is an issue with attrition, especially with younger participants who do not wish to complete all five quarters of the survey. However, weighting adjusts for this attrition. The CE is the most comprehensive and
detailed resource about family and consumer unit expenditures and income as it relates to
the demographic and socio-economic factors of the U.S. population. The CE is
continually measured on a rotating quarterly basis with panels of approximately 5,000
consumer units who are interviewed for five consecutive quarters, thus, replacing
approximately one-fifth of the sample each quarter (Paulin, 1995).

The CE contains expenditure data for nondurable goods and clothing purchases
(Garner, Janini, Passero, Paszkiewicz, & Vendemia, 2006). Specifically, the CE contains
clothing expenditure information about shoes, women and children’s clothing and
accessories including infants’, men and boy’s clothing and accessories, as well as
standard clothing issued to military personnel. To enable ease of use, the CE assembles
questions into relevant sections; I pulled the data for this research from the following
pertinent sections of the survey. Section 1 collected general survey information. Section 9
contained data related to clothing and jewelry, and Section 22 provided information about
work experience and income. Section 1 and Section 22 contained general demographic
and income information. The questions this study utilized from Section 9 of the BLS
(2011a) CAPI are:

1. Since the first of the reference month, have you or has any member of
your household purchased any of the following items, either for members
of your household or for someone outside your household (coats, jackets,
furs; sport coats, or tailored jackets; suits; vests; sweaters or sweater sets;
pants, jeans, or shorts; dresses; skirts; shirts, blouses, or tops;
undergarments; hosiery; nightwear or loungewear)?
2. Have you or has any member of your household purchased any –
   (accessories; swimsuits or warm-up or ski suits; uniforms for which the
   cost is not reimbursed; costumes; footwear including athletic footwear;
   diapers; layettes; watches; jewelry)? What did you buy?
3. For whom was this purchased (male 16+; female 16+; male 2-15; female
   2-15; children under 2 years old)?
4. When did you purchase it?
5. How much did it cost?

This research utilized the FMLI (family) section of the CE since it measures
consumer unit level expenses, and Section 9 of the EXPN (expenditure) file containing
clothing expenditures. The BLS (2006) reports that the CE measures information about
the amount of the total budget consumer units allocated to clothing in 2006 and 2010, in
both dollar and percentage formats. Since the CE is a secondary data source, measures
have already been taken by the BLS to remove potentially identifying information about
participants from the data so Institutional Review Board (IRB) approval was not required.
As mentioned previously, the BLS collects CE data using the combination of a CAPI and
a participant compiled diary portion. However, the participant diary records only small
purchases made by the consumer unit and therefore is irrelevant to this study.

Wagner and Hannah (1983) assumed that future family clothing expenditures
could be inferred from their expenditures at the time of the survey. In this study I seek to
answer the question “Were consumer unit clothing expenditures in the spring of 2006 and
the spring of 2010 different? If so, what consumer unit characteristics along with housing
tenure are associated with those differences?” I used a cross-sectional approach where the
housing unit (the physical address of the sampled consumer unit) stayed the same in 2006 and 2010, but the actual consumers living in the non-mobile housing unit may have changed. The unit of analysis is the consumer unit in the spring quarter of 2006 and again in the spring quarter of 2010, which is part of the consumer unit, defined by the BLS (U.S. Bureau of Labor Statistics, 2008b; U.S. Bureau of Labor Statistics, 2012a) as:

(1) All members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their incomes to make joint expenditure decisions. Financial independence is determined by spending behavior with regard to the three major expense categories: Housing, food, and other living expenses. To be considered financially independent, the respondent must provide at least two of the three major expenditure categories, either entirely or in part.

I studied spring clothing expenditures using the consumer unit as the unit of analysis. Other factors considered were age, gender, race/Hispanic origin, region of country, urban/rural residence, income, parental educational attainment, occupation, housing tenure, composition of the consumer unit (consumer unit composition, marital status, number of earners). When combined, the 2006 and 2010 samples account for 71,130 consumer unit observations. After retaining only the cases from March through May to comprise spring 2006 and spring 2010 that contained complete reports, this larger pooled sample was reduced by 55,016 to 16,114. All clothing expenditures for each
consumer unit were combined across the monthly values for spring quarter of 2006 and
the monthly values for spring quarter of 2010. This means when a consumer unit had
multiple clothing expenditures for a quarter those expenditures were combined into one
summed consumer unit expenditure number for each quarter. By summing the consumer
unit clothing expenditures into one number per consumer unit, this further reduced the
observations from 16,114 to 5,007. Finally, 270 of the 5,007 observations contained
missing values pertaining to clothing expenditures due to a valid blank; in that, there
were no clothing expenditures listed; thus, leaving the final sample size for the two spring
quarters at 4,737.

**Measurement of Variables**

The dependent variable for this study was the natural log of total consumer unit
clothing expenditures (excluding shoes, costumes, accessories, children and infant
clothing, and clothing for seniors over 65) for residents within the housing unit. The
dependent variable was constructed by first adjusting 2006 expenditures for overall
inflation. Inflation was adjusted by taking the clothing expenditures for 2006 and
multiplying them by 1.08 (the overall inflation rate from 2006 to 2010). This transformed
2006 dollars to 2010 dollars, and thereby made comparison between the two years
meaningful. I then compiled the clothing expenditure codes for the 2006 spring quarter
and the 2010 spring quarter expenditures, minus excluded categories (see above), to
create a summation of total consumer unit clothing expenditures yielding one inflation-
adjusted clothing expenditures dependent variable. Contrasting Paulin (1995) and Nelson
(1989), I used total income which is described by the BLS as the “weighted cumulative
percent income ranking” of the consumer unit to the total population, which is based on
pre-tax income for complete reporters (U.S. Bureau of Labor Statistics, 2008a). I made the decision to use total income per recommendation of G. Paulin (personal communication, March 7, 2014) in a phone conference. While there are multiple ways to measure clothing expenditures (percent of total income, percent of budget, or total expenditures), I chose to use the total dollar expenditure approach. When calculating consumer unit clothing expenditures, exclusions for this study included shoes, costumes, and accessories (such as scarves, belts, jewelry) as well as infant, children’s, and most senior adult clothing (due to the age parameters of 18 to 64). Table 3.1 presents both dependent and independent variables with a brief description of each variable’s operational definition and empirical measurement.

Table 3.1
Operational Definitions and Empirical Measurement of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Operational Definition</th>
<th>Empirical Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer unit clothing expenditure</td>
<td>Money spent on clothing items, (excluding shoes, costumes, and accessories) for residents within the housing unit in spring quarters 2006 and spring quarters 2010. All dollars are reported in 2010 dollars.</td>
<td>Inflation-adjusted natural log of total consumer unit clothing expenditures for spring quarters of 2006 and 2010.</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year/quarter</td>
<td>Spring quarter 2006 or spring quarter 2010.</td>
<td>Binary. Coded 2006 =0, 2010=1. 2006 is the reference group.</td>
</tr>
<tr>
<td>Composition of the consumer unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer unit composition</td>
<td>The relationship of other family members to the reference person.</td>
<td>Husband wife (HW) only, HW and minor child, HW and adult child, single parent, single, other. Categorical. HW with minor</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Number of earners</td>
<td>Number of earners in the consumer unit.</td>
<td>Number of earners in consumer unit. Zero, one, two, three or more. Categorical. Two earners is the reference group.</td>
</tr>
<tr>
<td>Age</td>
<td>The age of the reference person.</td>
<td>18 to 64 years of age. Categories are: 18-24, 25-34, 35-44, 45-54, 55-64. Categorical. 35-44 is the reference group.</td>
</tr>
<tr>
<td>Gender</td>
<td>Male/Female.</td>
<td>Binary. Coded 1 if male and 0 if female. Female is the reference group.</td>
</tr>
<tr>
<td>Level of education</td>
<td>The level of formal education completed by the reference person.</td>
<td>Last completed level of education. If enrolled at the time of the interview, the grade currently attended. Categorical. Less than high school, high school, some college or associate's, bachelor’s, graduate or higher degree. Categorical. Bachelor’s is the reference group.</td>
</tr>
<tr>
<td>Hispanic origin</td>
<td>Whether the reference person of the consumer unit is of Hispanic origin or not.</td>
<td>Binary. Coded 1 if Hispanic origin and 0 non-Hispanic. Non-Hispanic is the reference group.</td>
</tr>
<tr>
<td>Occupation</td>
<td>Occupation in which the reference person received the most earnings during the last 12 months.</td>
<td>Binary. White collar or blue collar Military is its own variable. Blue collar is the reference group.</td>
</tr>
</tbody>
</table>
I based independent variable and reference group selection on empirical and theoretical evidence as discussed in Chapter 2. The independent variables of interest are housing tenure (own vs. rent home) and year (2006 vs. 2010). A component of this analysis was the composition of the consumer unit configuration to gain some insight into the consumer unit as a whole. Composition of the consumer unit was constructed for each year by combining three components: marital status, consumer unit composition, and number of earners in the consumer unit (U.S. Bureau of Labor Statistics, 2008b; Erickson, 1968; Fan et al., 1996; Lin & DeVaney, 1996; Wagner & Hannah, 1983). Marital status included three categories: married, divorced/widowed/separated, and never married. Consumer unit composition comprised six categories: husband and wife only,
husband and wife with a minor child, husband and wife and adult child, single parent, single, and other. Stepchildren and adopted children are included with the reference person's own children. Number of earners in the consumer unit was coded into four categories: zero earners, one earner, two earners, and three or more earners. I compiled income into quintiles as is common practice in social science research (Kumcu & Kaufman, 2011, Paulin, 1995). Vernon (2013), referencing the 2011 CE, collapsed age into ten-year quartiles (four equal parts or percentages). In this study, I collapsed age into five categories since the parameter of interest was ages 18 to 64, I collapsed age into the following categories: 1) 18-24 years old, 2) 25-34 years old, 3) 35-44 years old, 4) 45-54 years old; and 5) 55-64 years old. Age 35-44 is the reference group.

The BLS categorized education into seven categories (U.S. Bureau of Labor Statistics, 2008a). For this study education level of the respondent was collapsed into five categories: 1) less than high school, 2) high school diploma/GED, 3) some college or associate’s degree, 4) bachelor’s degree, and 5) graduate or higher (masters, professional or doctorate degree). I combined several categories (some college and associates; and Masters, Professional, and Doctoral degree) because the individual means were small.

Gender, Hispanic origin, race, and occupation were also independent control variables. I coded gender as a binary variable with male set to one and female set to zero. Hispanic origin included several subsets for Hispanic origin (U.S. Bureau of Labor Statistics, 2008a). However, the subsets were so small that is was impractical to disaggregate them (see Table 3.2 for mean values), and, therefore, Hispanic origin was coded as a binary variable with Hispanic origin set to one and non-Hispanic set to zero.
Race is examined to help account for variation in expenditures due to differences in personal characteristics (Erickson, 1968; Paulin, 1995). Based on previous literature (Dardis et al, 1981; Hager & Bryant, 1977; Nelson, 1989; Viljoen, 1998; U.S. Bureau of Labor Statistics, 2012e) race was classified as White, Black, Asian, and Other or some combination of those four categories based on their sample proportions (0.83, 0.11, 0.04, 0.02 respectively). Likewise, occupation was coded into white collar and blue collar and military because some individual occupations returned such a small n that keeping them disaggregated was impractical (Kamakura & Du, 2012; Nelson, 1989; Nielsen, 1978; Park & Widdows, 2001). As a result, white collar included managerial and professional categories, teachers, administrative support, technical sales, and retail sales. Blue collar included sales positions for business goods/services, technicians, protective services, domestic services, factory workers, farming, forestry, fishing, and trades. Military had a small sample proportion (0.01). The reason it is separated into an individual occupation group is because it can be a combination of white and blue collar (officer, enlisted, and contractors) and since the military is often transitory and has access to commissaries those members may have different expenditure patterns than non-military personnel.

Finally, I included region and urban residence. Urban residence is a binary variable with one set to an urban residence and zero set to a non-urban residence. Region was coded into quadrants by the BLS: Northeast, Midwest, South, and West (U.S. Bureau of Labor Statistics, 2008a).

Based on the theoretical and empirical literature previously presented and the research question (“Were consumer unit clothing expenditures in the spring of 2006 and the spring of 2010 different? If so, what consumer unit characteristics along with housing
tenure are associated with those differences?”) the following hypotheses were investigated:

\[ H_{01} = \text{There is no difference in the inflation-adjusted consumer unit clothing expenditures between spring 2006 and spring 2010, ceteris paribus.} \]

\[ H_{a1} = \text{There is a difference in the inflation-adjusted consumer unit clothing expenditures between spring 2006 and spring 2010, ceteris paribus.} \]

\[ H_{02} = \text{There is no difference in the inflation-adjusted consumer unit clothing expenditures of homeowners and home renters, ceteris paribus.} \]

\[ H_{a2} = \text{There is a difference in the inflation-adjusted consumer unit clothing expenditures of homeowners and home renters, ceteris paribus.} \]

**Description of Sample**

As shown in Table 3.2 the weighted sample comprised approximately 69% homeowners. The mean value for year was almost evenly split between the two quarters with spring 2006 claiming 52%. The percentage or proportion of cases with a value of one for a particular variable is represented by the mean of that dummy variable (Garavaglia & Sharma, n.d.). The largest proportion of consumer unit types were single persons (22%) and the traditional husband and wife with a minor child (21%), which left the majority of marital statuses falling in the married categories (52%). Approximately 93% of consumer unit lived in urban regions, and the majority of participants were White (83%). The largest share of consumer units were two earner consumer units (42%) and 33% had some college. Females comprised 53% of the participants. Income and occupation do not sum to 1 because of the sample parameters. Income was pre-weighted by the BLS to reflect the total population, so when I restricted age and time of year
Likewise occupation dropped some cases because of these same parameters and sums to 85%. A small portion (6%) of the sample had zero earners in the consumer unit. Consumer units with zero earners included those who were unemployed, public assistance recipients, recent college graduates living with parents, those with trust funds, and those who live off of investments (unearned income). Taking that into account increases the sample from 85% to 91%. The remaining 9% are from any workers under the age of 18 or over 64 who were removed. For example, a high school student working after school or a senior citizen working to supplement retirement were not included in this which reduced the sum of the means from 1.

**Data Analysis**

This study used descriptive statistics to present a general view of the sample and the weighted population that it represents. Then, bivariate analyses (t-test) were used to determine if there was an empirical relationship between clothing expenditures and the independent variable of interest (spring quarter or housing tenure). Then, a multivariate OLS regression model was specified to determine whether the bivariate relationships (if any) between clothing expenditures and housing tenure, and/or between clothing expenditures and year remained after controlling for all other theoretically and empirically relevant variables included in the model. The results of these analyses are presented in Chapter 4.

**Model**

An ordinary least squares (OLS) regression was used to determine the unique change in clothing expenditures given a one-unit change in each of the independent
variable. Of particular interest was the change in clothing expenditures resulting from a one-unit change in year (increase or decrease in expenditures in spring quarter 2010 relative to spring quarter 2006) and the change in clothing expenditures associated with being a homeowner instead of a renter. I also included an interaction variable to assess whether the combined effects of tenure and year informed expenditures. The model is noted below:

\[
\log_{10}\text{clothingexp} = b_0 + b_{1\text{tenure}} + b_{2\text{year}} + b_{3\text{sex}} + b_{4\text{age}} + b_{5\text{education}} + b_{6\text{income}} + b_{7\text{(consumer unit composition)}} + b_{8\text{Hispanic origin}} + b_{9\text{occupation}} + b_{10\text{race}} + b_{11\text{urban}} + b_{12\text{region}} + b_{13\text{(tenure x year)}} + e
\]

Table 3.2
Weighted Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable Sub-sample</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total clothing</td>
<td>$1</td>
<td>$10,284.84</td>
<td>$207.70</td>
<td>5.006</td>
</tr>
<tr>
<td>Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>$1</td>
<td>$10,284.84</td>
<td>$242.69</td>
<td>7.5554</td>
</tr>
<tr>
<td>2010</td>
<td>$1</td>
<td>$4,045.00</td>
<td>$164.33</td>
<td>6.0348</td>
</tr>
<tr>
<td>Home owner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>$1</td>
<td>$10,284.84</td>
<td>$263.73</td>
<td>10.1215</td>
</tr>
<tr>
<td>2010</td>
<td>$1</td>
<td>$4,045.00</td>
<td>$182.46</td>
<td>7.8738</td>
</tr>
<tr>
<td>Home renter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>$1</td>
<td>$2,322.00</td>
<td>$196.24</td>
<td>8.9566</td>
</tr>
<tr>
<td>2010</td>
<td>$1</td>
<td>$3,372.00</td>
<td>$123.41</td>
<td>8.3040</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Primary Variables</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Tenure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home owner</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0.69</td>
<td>0.0066</td>
</tr>
<tr>
<td>Home renter*</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0.31</td>
<td>0.0066</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 (n=2,622)*</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0.52</td>
<td>0.0071</td>
</tr>
<tr>
<td>2010 (n=2,115)</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0.48</td>
<td>0.0071</td>
</tr>
</tbody>
</table>
## Control Variables (of Consumer Unit Head)

### Gender
- **Male**
  - 0
  - 1
  - 0.47
  - 0.0071
- **Female***
  - 0
  - 1
  - 0.53
  - 0.0071

### Age
- **Age one (18-24)**
  - 0
  - 1
  - 0.07
  - 0.0036
- **Age two (25-34)**
  - 0
  - 1
  - 0.21
  - 0.0057
- **Age three (35-44)***
  - 0
  - 1
  - 0.24
  - 0.0061
- **Age four (45-54)**
  - 0
  - 1
  - 0.27
  - 0.0063
- **Age five (55-64)**
  - 0
  - 1
  - 0.21
  - 0.0057

### Educational Attainment
- **Less than high school**
  - 0
  - 1
  - 0.09
  - 0.0041
- **High school**
  - 0
  - 1
  - 0.22
  - 0.0058
- **Bachelor’s***
  - 0
  - 1
  - 0.23
  - 0.0059
- **Some college**
  - 0
  - 1
  - 0.33
  - 0.0066
- **Graduate or higher**
  - 0
  - 1
  - 0.13
  - 0.0048

### Hispanic
- **Hispanic**
  - 0
  - 1
  - 0.12
  - 0.0045
- **Non-Hispanic**
  - 0
  - 1
  - 0.88
  - 0.0045

### Marital Status
- **Married***
  - 0
  - 1
  - 0.59
  - 0.0070
- **Divorces, widowed, separated**
  - 0
  - 1
  - 0.19
  - 0.0056
- **Never married**
  - 0
  - 1
  - 0.22
  - 0.0059

### Occupation
- **White collar**
  - 0
  - 1
  - 0.50
  - 0.0071
- **Blue collar***
  - 0
  - 1
  - 0.34
  - 0.0068
- **Military**
  - 0
  - 1
  - 0.01
  - 0.0011
- **Zero earners**
  - 0
  - 1
  - 0.06
  - 0.0034

### Race
- **White***
  - 0
  - 1
  - 0.83
  - 0.0054
- **Black**
  - 0
  - 1
  - 0.11
  - 0.0028
- **Asian**
  - 0
  - 1
  - 0.04
  - 0.0044
- **Other**
  - 0
  - 1
  - 0.02
  - 0.0022

### Income of Consumer Unit
- **Quintile 1 (0-20%)**
  - 0
  - 1
  - 0.10
  - 0.0042
- **Quintile 2 (>20-40%)**
  - 0
  - 1
  - 0.12
  - 0.0046
- **Quintile 3 (>40-60%)***
  - 0
  - 1
  - 0.18
  - 0.0055
- **Quintile 4 (>60-80%)**
  - 0
  - 1
  - 0.21
  - 0.0058
- **Quintile 5 (>80-100%)**
  - 0
  - 1
  - 0.26
  - 0.0062

### Consumer Unit Composition
- **Husband wife only**
  - 0
  - 1
  - 0.20
  - 0.0057
- **Husband wife minor child***
  - 0
  - 1
  - 0.22
  - 0.0058
Note. \(N=4,737\). All dollar values expressed in 2010 dollars. The minimum expenditure was set to $1 to accommodate a natural log transformation of expenditure values due to its positively skewed distribution (skew = 9.86). *Denotes reference group.

\(^a\) Adding zero earners (6\%) to the occupation category increases the sum of the means from 85\% to 91\%. Any workers/occupations outside of the 18 to 64 year age parameter or spring quarter were dropped which account for the 9\% remainder under Occupation.

---

Since a natural log can only be calculated on a number greater than zero, observations with zero expenditures were set to $1 in order to calculate the natural log of the expenditures. Chapter 4 presents the results and discussion of the analysis.
CHAPTER 4
RESULTS AND DISCUSSION

In this chapter I present and discuss the results of the analyses. The bivariate analyses are discussed first, followed by the multivariate OLS regression results. The discussion section of this chapter presents evidence to support or reject the hypotheses.

Results

T-Test

I performed two bivariate t-tests to determine if there was an empirical relationship between clothing expenditures and the independent variable of interest (spring quarter or housing tenure). The first t-test assessed whether there was a difference in the mean inflation adjusted clothing expenditures of homeowners and renters. The second t-test assessed whether there was a difference in the mean inflation adjusted clothing expenditures of all consumer units in the spring quarters of 2006 and 2010. These tests in turn provided preliminary evidence regarding each of the hypotheses.

The results of the t-tests are presented in Tables 4.1 and 4.2. The first independent-sample t-test was conducted to examine the mean consumer unit clothing expenditures of homeowners and home renters. There was a statistically significant difference in the mean inflation adjusted clothing expenditures for homeowners (M=4.83, SD=1.13) and home renters (M=4.51, SD=1.12); t(4735)=-9.15, p = <0.0001 (“<” only appears when the p-value is less than 0.001). Likewise an independent-sample t-test was conducted to examine the mean inflation adjusted consumer unit clothing expenditures in
the spring quarter of 2006 and the spring quarter of 2010. There was a statistically
significant difference in the mean of clothing expenditures in 2006 (M=4.80, SD=1.12)
and 2010 (M=4.94, SD=1.11); t(4735)=13.95, p = <0.0001.

These results indicate that there was a difference in the means of consumer unit
clothing expenditures between homeowners and home renters (housing tenure) such that
homeowners spent more on clothing than renters. Therefore, I have preliminary evidence
that there is a difference in the inflation adjusted consumer unit clothing expenditures of
renter consumer units and homeowner consumer units. Likewise, there was evidence that
the inflation adjusted clothing expenditures differed between the two spring quarters.
Therefore, I have preliminary evidence that there is a difference in real clothing
expenditures in the spring quarters of 2006 and 2010 by housing tenure. This preliminary
evidence was tested more fully using a multivariate OLS regression model that controlled
for other theoretically and empirically relevant variables.

Table 4.1
Log T-Test Results: Housing
Unweighted T-Test

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>N=4,737</th>
<th>Mean</th>
<th>t-value</th>
<th>Std. Dev.</th>
<th>p-value</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalexplog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housetenureowned</td>
<td>3,275</td>
<td>4.8321 ***</td>
<td>-9.15</td>
<td>1.1342</td>
<td>&lt;0.0001 †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housetenurerent</td>
<td>1,462</td>
<td>4.5072 ***</td>
<td>-9.15</td>
<td>1.1157</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Mean expressed in natural log. † “<” only appears when the p-value is less than 0.001.
* p = .05. ** p = .01. *** p = .001.

Table 4.2
Log T-Test Results: Year
Unweighted T-Test

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>N=4,737</th>
<th>Mean</th>
<th>t-value</th>
<th>Std. Dev.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalexplog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year: 2006</td>
<td>2,622</td>
<td>4.4800 ***</td>
<td>13.95</td>
<td>1.1243</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Year: 2010</td>
<td>2,115</td>
<td>4.9350 ***</td>
<td>13.95</td>
<td>1.1088</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Multivariate Results

A multivariate OLS model was used to see if that bivariate relationship remained after controlling for all other factors included in the model. The dependent variable (clothing expenditures) was estimated using the natural log of clothing expenditures to account for positively skewed (a large right tail in the distribution) expenditure data (9.86). The regression results are summarized in Table 4.3. The overall model was significant $F$-statistic ($F = 22.73; p <0.0001$) with an adjusted $R^2$ of 0.15.

Results of the OLS regression are reported in Table 4.3. The dependent variable for this study was the natural log of total consumer unit clothing expenditures (excluding shoes, costumes, accessories, and age parameters) for residents within the consumer unit. Columns two and three of Table 4.3 consist of the coefficient ($\beta$) and the standard error. Column four shows the significance (p-value). To assess the potential that multicollinearity (two highly correlated variables) exists among the variables in the model, variance inflation factor (VIF) values were checked; no value was greater than 5.3 while the majority of VIF values were less than 2. The higher VIF values were in consumer unit composition which was not unexpected since it is a group of binary variables representing a single overarching concept (consumer unit composition). The other high VIF’s were in the interaction variable (4.05), which was again expected because it is the product of two other variables in the model. In addition, marital status (4.04) is a component of several binary variables so a relatively high VIF value was expected.
Table 4.3
OLS Log Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error (SE)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>4.621</td>
<td>0.1078</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>HouseYearInteraction</td>
<td>0.120</td>
<td>0.0670</td>
<td>0.0741</td>
</tr>
<tr>
<td>Homeowner</td>
<td>0.056</td>
<td>0.0503</td>
<td>0.2670</td>
</tr>
<tr>
<td>Year 2010†</td>
<td>-0.566***</td>
<td>0.0557</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Male</td>
<td>0.007</td>
<td>0.0320</td>
<td>0.8383</td>
</tr>
<tr>
<td>Ageone (18-24)</td>
<td>0.060</td>
<td>0.0742</td>
<td>0.4224</td>
</tr>
<tr>
<td>Agetwo (25-34)</td>
<td>-0.017</td>
<td>0.0483</td>
<td>0.7233</td>
</tr>
<tr>
<td>Agefour (45-54)</td>
<td>-0.074</td>
<td>0.0450</td>
<td>0.1018</td>
</tr>
<tr>
<td>Agefive (55-64)</td>
<td>-0.039</td>
<td>0.0523</td>
<td>0.4607</td>
</tr>
<tr>
<td>Less than high school</td>
<td>-0.279***</td>
<td>0.0672</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>High school</td>
<td>-0.247***</td>
<td>0.0486</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Some college</td>
<td>-0.111**</td>
<td>0.0433</td>
<td>0.0107</td>
</tr>
<tr>
<td>Graduate or higher</td>
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<td>0.0529</td>
<td>0.5739</td>
</tr>
<tr>
<td>Income1 (0-20%)</td>
<td>-0.321***</td>
<td>0.0619</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Income2 (&gt;20-40%)</td>
<td>-0.274***</td>
<td>0.0547</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Income4 (&gt;60-80%)</td>
<td>-0.001</td>
<td>0.0449</td>
<td>0.9917</td>
</tr>
<tr>
<td>Income5 (&gt;80-100%)</td>
<td>0.362***</td>
<td>0.0452</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Husband wife only</td>
<td>0.119*</td>
<td>0.0521</td>
<td>0.0223</td>
</tr>
<tr>
<td>Husband wife adult child</td>
<td>0.273***</td>
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<td>&lt;.0001</td>
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<td>0.8955</td>
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<td>0.7120</td>
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<td>0.0257</td>
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<td>White collarb</td>
<td>0.157***</td>
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<td>&lt;.0001</td>
</tr>
<tr>
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<td></td>
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<td></td>
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<tr>
<td>Military occupation</td>
<td>0.472*</td>
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<td>0.0201</td>
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<tr>
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<td>0.0105</td>
</tr>
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<td>0.0805</td>
</tr>
<tr>
<td>Region NE</td>
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<td>0.0451</td>
<td>0.1851</td>
</tr>
<tr>
<td>Region W</td>
<td>0.039</td>
<td>0.0425</td>
<td>0.3576</td>
</tr>
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</table>

Note. N = 4,737. † “<” only appears when the p-value is less than 0.001.

References groups for the omitted categories are: age = Agethree (35-44); education = bachelor’s; income = income3 (>40%-60%); family composition = husband wife minor child;
Primary Variables

Housing Tenure

Despite preliminary evidence from the t-tests of a relationship between clothing expenditures and housing tenure, home ownership was not statistically significant in the multivariate model (see Table 4.3). The 0.056 coefficient indicates that consumer units that owned their residence spent a statistically insignificant 5.8% more (the percent is the geometric average dollar amount in 2010) than renters, a result which is consistent with Sung and Yu’s\(^4\) (as cited in Park & Widdows, 2001) findings. Homeownership rates in 2006 were 67% and dropped to 66% in 2010 (U.S. Bureau of Labor Statistics, n.d.b; U.S. Bureau of Labor Statistics, n.d.c). Home prices fell approximately 30% from their peak in 2006 which reduced household net worth and spending power. This decline, which coincided with the early contraction phase of the business cycle heading into the Great Recession, led to increased defaults, delinquencies, and foreclosures, so it is reasonable that the coefficient for housing tenure is not significant (Amromin & Paulson, 2010; Kiff & Mills, 2007; Krainer & LeRoy, 2010).

This result is consistent with Paulin’s (1995) finding that homeownership was not practically significant when examining clothing expenditures. The current results differ from Paulin’s, however, in that they are not statistically significant. I suspect this is because one quarter versus an entire year was examined which limits the number of cases.

\(^4\) All reasonable attempts were made with the aid of multiple librarians to locate said document.
and observations. However, these findings contradict Park and Widdow’s (2001) findings that housing was positively and significantly relate to clothing expenditures. Because house prices fell reducing net worth, and America as a country was beginning to recover from the recession, which was part of the human built and the human behavioral systems (the economy), it is reasonable that tenure status does not significantly relate to clothing expenditures in this analysis of two spring quarters (March through May); one before and one after the largest recession America has seen in many years making it a unique macro environment.

**Year/Quarter**

Unlike housing tenure, year was negatively related to expenditures and statistically significant, decreasing -0.566 log dollars between 2006 and 2010. The bivariate relationship between year and clothing expenditures identified in the t-test remained when controlling for other variables. This implies that a consumer unit in 2010 spent approximately -43.2% less than consumer units in 2006. This result is logical when considering the 8% increase in overall inflation between 2006 and 2010, which reduced consumer spending power. Likewise spring 2010 was in the expansion phase after the trough of the business cycle whereas spring 2006 was the expansion phase right before the peak of the business cycle. Consumers in 2010 were still recovering from a deep recession the effects of which were felt for several years after the official end of the recession. Between inflation, the effects of the Great Recession, and the loss of wealth,

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5 It can be a challenge to interpret percentage change in a log distribution. Here is an example from one of the primary variables of interest that was significant; the rest of the variables are done in the same way. When I exponentiate the intercept (4.621) I obtain the baseline value for 2006 expenditures of $101.60. I then find the average total expenditures for 2010 by exponentiating the sum of the intercept and the coefficient for year (4.621 -0.566) which is $57.69. To find the difference in expenditures between 2006 and 2010 simply subtract the average total expenditures for 2010 from the baseline expenditures ($101.60 - 57.69) which comes to $43.91. Therefore, households in 2010 spend approximately half as much on clothing as households in 2006, ceteris paribus.
many American consumers were compelled to reduce spending. Although these results contradict previous research, it may be due to the particular combination of years and spring quarters (Amromin & Paulson, 2010; Hager & Bryant, 1977; U.S. Bureau of Labor Statistics, 2007; U.S. Bureau of Labor Statistics, 2010; U.S. Bureau of Labor Statistics, n.d.a.).

Interestingly the interaction variable between housing tenure and year was of no statistical significance with a p-value of 0.07. This indicates that the combined effect of homeownership and the year 2010 did not increase the total clothing expenditures more than the two variables separately. By these results, homeownership in 2010 did no more to increase total consumer unit clothing expenditures than did homeownership in 2006.

**Control Variables**

**Gender**

Gender was statistically insignificant with no difference between men and women’s coefficients controlling for all else. Male reference person consumer units spent 0.007 log dollars more (0.7%) than female reference person consumer units ($p=0.84$). This finding concurs with Yang’s (1996) finding of no significant relationship between clothing expenditures and gender. Since this research is based on the responses of the reference person I suspect gender in this case has to do with who is answering the question and less to do with who is making the actual purchases.

**Age**

The regression results indicated that there was no statistically significant relationship between age and clothing expenditures. Consumer units where the reference person was older than 24 had negative clothing expenditures compared to reference
persons between 25 and 34 years. The only category to have a positive (although statistically insignificant) result was the category where the reference person was 18 to 24 years. Those consumer units spent 0.060 log dollars more (6.2%) than a consumer unit where the reference person was 35 to 44 years old. Reference persons who were 25 to 34 spent 0.017 log dollars less (-1.7%) than reference persons who were 35 to 44. Reference persons who were 45 to 54 spent 0.074 log dollars less (-7.2%) than reference persons who were 35 to 44. Finally, reference persons who were 55 to 64 years old spent 0.039 log dollars less (-3.8%) than reference persons who were 35 to 44. These non-significant results contrast previous studies which found a relationship between age and clothing expenditures (Dardis et al., 1981; Fan et al., 1996; Hager & Bryant, 1977; Marcus, 2006; Viljoen, 1998).

**Education**

The regression results indicate that levels of education were statistically significant relative to respondents with a bachelor’s degree with the exception of graduate or higher (p=0.57). Similar to Park and Widdows (2001), a consumer unit where the reference person held less than a high school or a high school graduate education levels were negatively related to clothing expenditures compared to a consumer unit where the reference person held a bachelor’s degree. This implies that reference persons with higher levels of education were in consumer units that spent more on clothing than consumer units with less educated reference persons. Consumer units where the reference person held less than a high school education spent 0.279 log dollars less (-24.3%) than a consumer unit where the reference person held a bachelor’s degree. Those with a high school education spent 0.247 log dollars less (-21.9%) than those with a bachelor’s
degree. Those with some college spent 0.110 log dollars less (-15%) than those with a bachelor’s degree. The regression results indicate that there was no statistically significant difference in clothing expenditures between those with bachelor’s degrees and those with graduate degrees.

**Income**

In income quintiles with the exception of the highest quintile (Quintile5) spent less than quintile three (>40-60%). In contrast, all income quintiles were significant at the <0.001 level with the exception of Quintile4 (p=0.99). Income levels in the lowest quintile (Quintile1 (0-20%)) were negatively and significantly correlated with clothing expenditures; those consumer units spent 0.321 log dollars less (-27.5%) than consumer units with incomes in Quintile3 (>40-60%). Likewise, income levels in Quintile2 (>20-40%) were negatively and significantly correlated with clothing expenditures, spending 0.274 log dollars less (-24%) than consumer units with incomes in Quintile3. Only income levels in Quintile5 were positively and significantly correlated with clothing expenditures, spending 0.362 more log dollars (43.6%) than consumer units with income in Quintile3. These results are consistent with previous research in that lower socio-economic status consumer units tend to view clothing expenditures as a luxury versus higher socio-economic groups who viewed it as a necessity. With the changes in the business cycle, the Great Recession, and 8% inflation during a period with stagnant wages (U.S. Bureau of Labor Statistics, n.d.a) it is understandable that only the highest quintile (Quintile5) spent more than the middle income quintile (Quintile3), especially since quintiles three and four are so closely related. Quintile5 may have been the only
group of consumer units with a large enough income that the recession and inflation did not impact their clothing expenditures to the same degree as the other quintiles.

**Composition of the Consumer Unit**

Composition of the consumer unit was constructed by examining consumer unit composition, marital status, and number of earners. The only statistically significant types among consumer unit composition were a married couple with an adult child (p=<0.001) and husband and wife only couples (p=0.022) as compared to married couples with a minor child. Married couples with an adult child spent 0.273 more log dollars (31.4%) than the traditional husband and wife with a minor child composition. All consumer unit composition types spent more than the husband and wife with a minor child composition with the exception of single consumer units, but that category was statistically insignificant. Husband and wife only couples spent 0.119 more log dollars (12.6%), husband and wife with an adult child spent 0.273 more log dollars, single parents spent 0.013 more log dollars (1.3%), singles spent 0.103 less log dollars (-9.8%), and other types spent 0.061 more log dollars (6.3%) than the husband and wife with a minor child composition. This likely represents a budget constraint for families with children since there is typically a nonlinear relationship between age and clothing (Erickson, 1968; Fan et al., 1996; Hager & Bryant, 1977). It is not surprising that married couples with an adult child spent the largest amount, even more than married only couples. If an adult child is employed and living with parents it may explain the large increase over the other categories because there are a minimum of three adults purchasing clothing. This result contrasts with Erickson’s (1968) and Park and Widdows’ (2001) findings regarding female headed consumer units.
Relative to the reference category of a married reference person, all other marital status categories were statistically insignificant. Consumer units with divorced, widowed, separated reference person spent 0.068 log dollars more (7%), and never married reference persons spent 0.070 log dollars more (7.3%) than married reference person consumer units.

Consumer units with one earner spent and insignificant 0.058 log dollars more (6%) on clothing than consumer units with two earners. Consumer units with zero earners spent 0.030 log dollars less (-3%) than two earner consumer units which is consistent with Paulin’s (1995) findings. In contrast, consumer units with three or more earners spent 0.129 more log dollars (13.8%); this was the only statistically significant difference in this series.

**Occupation**

Occupation was positively and significantly related to clothing expenditures. White collar workers spent 0.157 more log (17%) dollars than blue collar workers at the <0.0001 significance level. This is consistent with Dardis et al. (1981) and Nielsen’s (1978) findings that people employed in white collar occupations spent more than people employed in blue collar occupations. Reference persons in military occupations spent 0.472 more log dollars (60.3%) on clothing than blue collar workers at the 0.05 significance level. However, military personal may be a mix of white and blue collar workers and comprise such a small portion of the surveyed consumer units (mean = 0.01) that this may be a statistically but not practically significant result. A possible explanation for this increase in clothing expenditures is that many military consumer units have
access to a commissary on base where prices may differ from the off-base market, and they receive a uniform clothing allowance.

Race and Hispanic Origin

The regression results indicated that race and Hispanic origin had no statistically significant relationship with clothing expenditures. Clothing expenditures in consumer units in which the reference person was of Hispanic origin were positive but insignificant at the <0.05 level with 0.097 more log dollars expended (10.2%) than in consumer units where the reference person was of non-Hispanic origin.

Urban/Rural and Region

No region of the country exhibited clothing expenditures that were any different from clothing expenditures in the South. Urban location was statistically significant ($p=0.01$) with 0.191 more log dollars (21%) spent than non-urban consumer units. This finding was consistent with previous research (Hawk, 2013; Nelson, 1989; Park & Widdows, 2001; Paulin, 1995).

Discussion

In this section I present the results of the analysis in light of the hypotheses derived from systems theory. Total clothing expenditures were examined by year and housing tenure. In accordance with the foundation of systems theory which describes systems as interdependent and having various degrees of permeability to information outside of the family system, or the linkage between the family system and environments (Whitchurch & Constantine, 1993; Nickols, 2003), this research found a range of results regarding clothing expenditures.
Results of Hypotheses

After controlling for all other variables, there was no difference in the inflation-adjusted clothing expenditures of renters and homeowners. Therefore, I failed to reject the null hypothesis that there is no difference in the inflation adjusted consumer unit clothing expenditures of renter consumer units and homeowner consumer units. If we examine the point of interaction between and within environments, these results suggest that there is a limited degree of permeability between human built (housing tenure) and human behavioral (clothing expenditures) systems.

The year 2010 had a negative and statistically significant 0.566 drop in log clothing expenditures. Therefore, I reject the null hypothesis that there is no difference in real dollar (inflation adjusted) clothing expenditures in the spring quarters of 2006 and 2010. The year 2010 coefficient (-0.56580) suggests that compared to 2006, consumer units in 2010 spent nearly half as much (-43.2%) on clothing in 2006. This is consistent with what was happening in the human built environment (business cycle) at the time. As previously mentioned, in spring 2010 the Great Recession had just ended and the U.S. economy was beginning the recovery process in the expansion phase whereas spring 2006 was near the peak of the expansion phase. On the macro level, Americans had less disposable income in 2010 because of the influence of the recession coupled with inflation. In this study, year is more than the passing of time and part of the natural system. It is an indicator of influences in the human built system, namely the business cycle and impact of the Great Recession on these discrete spring quarters. Also, unlike housing tenure, these findings suggest that there is a degree of permeability or influence between the natural (year/quarter) and human behavioral (clothing expenditure) systems.
Influence from the human behavioral system may influence these results, such as cultural and sartorial norms and purchasing habits in the United States.

The results and discussion of the analysis have been presented. Chapter 5 presents the conclusions, limitations, and recommendation for future research.
CHAPTER 5
CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

Conclusions

I explored if consumer units’ clothing expenditures differed across spring quarters in 2006 and 2010 for American home renters and homeowners, controlling for additional contributing factors. The major findings were presented in Chapter 4. This study helps fill a gap in the research by utilizing nationally representative data to analyze clothing expenditures by housing tenure and across two different spring quarters (March through May) in the later part of the last decade. Limited research exists on clothing expenditures since the late 1980’s (Courtless, 1988), and little is known about clothing expenditures during the Great Recession, especially in light of the business cycle, and even less is known about the correlation between housing type and clothing expenditures (Kamakura & Du, 2012; Paulin, 1995; Petev, Pistaferri, & Eksten, 2011). While a small segment of total consumer unit expenditures, clothing expenditures still give insights into consumer decision making and behavior within the different system theory constructs.

In this study the total inflation-adjusted dollar amount spent on clothing items for men and women served as the dependent variable. The analysis consisted of t-tests and OLS regression to investigate if there was a difference in total real dollars spent by consumers by either year or housing tenure. Multivariate OLS regression analysis revealed no evidence of a relationship between homeownership and total clothing expenditure, ceteris paribus. Thus, the null hypothesis was not rejected. As mentioned
earlier, I supposed that renters would spend more on clothing than owners because of the costs incurred by homeowners associated with owning property (e.g., property tax, home maintenance, mortgages, and homeowners insurance). However, in accordance with the life cycle hypothesis homeowners spent slightly, but insignificantly, more than renters. This finding adds support to the existing research that housing tenure has little to no relationship with clothing expenditures.

In contrast, there was strong evidence of a difference in clothing expenditures in the spring quarters of 2006 and 2010 where consumer units in 2010 spent less than consumer units in 2006. Therefore I reject the null hypothesis that there is no difference in the clothing expenditures between 2006 and 2010. This high degree of significance may be because America was not in the Great Recession in 2006; indeed it was in the expansion phase of the business cycle before the peak in December of 2007. Conversely America was beginning to recover from the Great Recession in the spring of 2010 as the economy was in the expansion phase after the trough in June of 2009 (NBER, 2012). Therefore, it is understandable that consumers in 2006 would have spent more than consumers in 2010 as was indicated in earlier results (U.S. Bureau of Labor Statistics, 2012d; NBER, 2012).

One finding of interest, although not completely unexpected given the results found that housing was insignificant, was that the interaction variable between housing tenure and year was not statistically significant. This indicated that interaction between homeownership and year was not related to clothing expenditures. By these results, homeownership in the spring of 2010 did no more to increase total consumer unit clothing expenditures than homeownership in the spring of 2006.
These results may provide some insight into factors that influence apparel expenditures by year, and may aid consumer researchers in understanding the clothing retail environment since real pre Great Recession clothing expenditures were significantly higher than post Great Recession spring 2010 clothing expenditures (Pentacost & Andrews, 2009; Viljoen, 1998). Future researchers may wish to examine the interaction effects of these variables, particularly income, education, and consumer unit composition, as well as the interaction effects of these systems on housing tenure.

**Limitations**

The Consumer Expenditure Survey (CE) is the only survey that collects detailed information about clothing expenditures (Paulin, 1995). The CE is a hybrid between a cross-sectional, panel, and longitudinal survey. It gives researchers the ability to look at one month of data at a time which is similar to cross-sectional, but it also has data from a consumer unit over a five quarter period of time which is similar to a longitudinal survey. Therefore, I am able to make cross-sectional estimates from the five quarters of data. The CE samples housing units (addresses), not consumer units. Therefore, if one consumer unit moves from that housing unit and another consumer unit moves into that same housing unit, data specific to a particular consumer unit may differ across the survey. A better indicator of household consumer unit\(^6\) spending would be a panel that follows the same consumer unit members for several years to capture the effects of changes in the housing life cycle and economic circumstances of the consumer. Moreover, data are only as accurate as what the participant provides and respondents tend

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to underreport total earnings. Therefore CE survey results may not be completely accurate regarding income and its relation to expenditures (Paulin, 1995).

As with any longitudinal survey, there is an issue with attrition, especially with younger participants. There are a variety of reasons for attrition; some do not like the intrusion, some do not want to complete all five quarters, some move, and therefore, that consumer unit is lost. However, weighting adjusts for this attrition.

I excluded retirement age consumer units from examination because they typically have different spending patterns from the traditional working age population. I selected the cut off year of 64 because the eligible retirement age has typically been between 62 and 67 (Pernot, 2006; U.S. Social Security Administration, n.d.). I relied on previous research findings in my decision making, many of which found clothing expenditures to decline after age 55 (Marcus, 2006; Wagner and Hannah, 1983; Viljoen, 1998). With this in mind, I decided to err on the side of caution and use the middle number, 65, as the first retirement year. This way I would lose fewer consumer units who could still be employed. Likewise, since my interest was in adult expenditures anyone under the age of 18 years was excluded. This range from 18 to 64 focused primarily on the earning years of adults, although college years were also included in this range.

Finally, the remaining categories I excluded from this examination were expenditures on children and infants clothing, accessories, costumes, and shoes. My interest in this study was adult clothing expenditures. Also, there is a plethora of literature regarding expenditures on children and infant clothing, and with different consumption needs, a dedicated study on this age range is a possibility. Likewise, I excluded accessories, costumes, and shoes from examination because of the uniqueness of the
categories, the abundance of literature, and unique purchasing patterns making a study on each topic possible.

This research is grounded in systems theory, which implies that the macro variables influence the micro system variables in my analysis. Including more macro variables besides year would have added to the depth of the analysis. Likewise, I used the same quarters for consistency in both seasonal and business cycles. These mirroring spring quarters, both of which are in the expansion phase of the business cycle, may contribute to why the region variable results were not statistically significant.

Some additional limitations of this approach are that if children’s clothing had been included the total clothing expenditures for consumer units with children most likely would have been larger. Including expenditures on children’s clothing in a future study may show more significant variables within the composition of the consumer unit than were significant in this study. Likewise, including shoes and accessories would increase the total expenditure amount, especially since clothing and shoes are considered a nondurable good. It is unclear, however, whether the inclusion of these additional expenditures would exhibit differential consumption levels between years and homeowners and renters. Additionally, including whether or not the consumer unit was a vehicle owner would have been beneficial in the overall context of total expenditures and budget shares as indicated in Marcus’ (2006) study.

This analysis examined total adult clothing expenditures minus exclusions ceteris paribus. While this is an appropriate preliminary step to take when examining the role clothing plays in a household’s expenditures, a superior approach would be to examine clothing expenditures by percent of budget/total expenditure or percent of total income.
Either of these approaches would account for expenditure shares besides clothing, such as transportation, educational expenses, child care, and work related expenditures, and may give a clearer picture as to variation in expenditures before and after the Great Recession. An example of this type of analysis is Kamakura & Du’s (2012) paper.

**Recommendations**

When examining consumer unit expenditures over time, panel data are preferable. Longitudinal data more accurately illustrate the fluctuations in consumer unit spending over time and help identify contributing factors. If a future panel survey collects clothing expenditure data for longer than the CE’s five quarters, it may be a superior resource to the CE. Likewise, I used total or overall inflation in this study which equaled 8% between 2006 and 2010. An alternate, and perhaps more precise, method to measure inflation between these two periods would be to use expenditure category (apparel) inflation to see if and how clothing inflation changed between 2006 and 2010.

Further research is needed to examine the interaction effects of the variables utilized in this research, particularly income, age, education, and composition of the consumer unit as well as the interactions among these systems and housing tenure or year. This would clarify which factors are primary indicators of clothing expenditure changes in regards to tenure and or year. There may be some hidden correlation not currently seen with this OLS regression which, by design, included just one interaction possibility (year by tenure). For example, had I included shoes, accessories, and children’s clothing expenditures these additional categories could have increased the total of clothing expenditures, and may have altered the significance of some of the components within the composition of the consumer unit. Shoes especially are often
purchased more frequently than some apparel items and might therefore be a good indicator of consumer spending on apparel. Although itself a unique occupation, combining the military occupation with a larger occupational category may yield more reliable results given the small sample size, the clothing allowance military personnel receive, and the price differences between the commissary and the off base markets. Furthermore, I recommend including more macro variables to enhance the analysis and the depth and clarity of the picture the numbers paint of clothing expenditures during this time frame.

Another recommendation for future research examining this topic is to add the 45 CE replicate weights into the analysis. The CE is a complex data set with oversampling of certain populations, and estimation of standard errors should reflect this complexity. In addition, adding into the analysis whether or not the consumer unit owned a vehicle would help clarify the budget shares allocated to clothing, since there are competing budget shares, and shed some light on the occupation and income control variables. Since the biggest expenditures over the life course are typically housing and transportation including vehicle ownership would likely strengthen future analysis. Likewise, Marcus (2006) illustrated that transportation was a large portion of the household budget.

Future researchers may wish to re-examine year but operationalize it differently. For example, researchers may wish to examine the budget share claimed by clothing expenditures or the percent of total income to see if results are substantively and statistically significant. They may also wish to examine the budget share claimed and whether it changes based on occupational changes. In addition, a larger sample of years, or selecting a quarter other than spring, may reveal different results regarding the
significance of clothing expenditures and time. Examining the same or adjoining year’s clothing expenditures, or investigating quarters in opposite stages of the business cycle (peak and trough, or expansion and contraction) may yield different results. An example would be the winter quarter of 2007 and the summer quarter of 2009 (see Table 2.1). Much like the business cycle, examining different stages of the seasonal cycle may alter results. Fall quarter expenditures may produce vastly different results as consumer units must prepare for winter and comparing fall to spring or another seasonal cycle may reveal more differences. Finally, these findings may be of interest to housing policy analysts by adding to the current body of knowledge about expenditures by housing type.
References


