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## **Maintaining Consumption Levels over Economic Fluctuations and the Impact on Consumption vs. Spending-Based SPM Thresholds**

by

Thesia I. Garner and Marisa Gudrais

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Thesia I. Garner  
Bureau of Labor Statistics  
Division of Price and Index Number Research  
U.S. Department of Labor  
2 Mass. Ave., NE, Suite 3105  
Washington, DC 20212  
U.S.A.  
Email address [garner.thesia@bls.gov](mailto:garner.thesia@bls.gov)

Marisa Gudrais  
Bureau of Labor Statistics  
Division of Price and Index Number Research  
U.S. Department of Labor  
2 Mass. Ave., NE, Suite 3105  
Washington, DC 20212  
U.S.A.  
Email address [gudrais.marisa@bls.gov](mailto:gudrais.marisa@bls.gov)

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The views expressed in this research, including those related to statistical, methodological, technical, or operational issues, are solely those of the authors and do not necessarily reflect the official positions or policies of the Bureau of Labor Statistics, or the views of other staff members within this agency. The authors accept responsibility for all errors.

## Abstract

During times of economic downturn, consumer spending is expected to contract, even for basic necessities; however, basic consumption needs are not expected to change very much, if at all. This would be expected to be the case especially for basic goods and services, for example, food, clothing, shelter and utilities. In times of need, individuals and families can apply for government in-kind benefits; these benefits are designed to cover consumption needs when they cannot be purchased due to a lack of resources. In addition, service flows from currently owned or durable goods also provide a flow of services. In this study only the service flow from owner-occupied housing is considered. Consumption spending and consumption are compared over a five to seven year period to track how these vary over a time period that includes a recession. Three definitions of consumption are considered, each starts with consumption spending and either adds to this spending or substitutes spending for services flows. The first accounts only for the value of in-kind benefits from government programs. The second accounts only for food and rent as pay plus the rental value of owner occupied housing. And the third accounts for both of the first two.

We hypothesize that consumption is fairly stable over time, regardless of fluctuations in the economy. This hypothesis is tested for all consumer units in the U.S. and for the subsample of consumer units, those with exactly two children. This subsample is selected for examination as it is this group whose spending serves as the basis of the Supplemental Poverty Measure (SPM) thresholds. The focus on the SPM thresholds are the basic goods and services earlier noted: food, clothing, shelter, and utilities.

The period under study is 2005 through 2012, a period that covers the most recent recession. Using U.S. Consumer Expenditure Interview Survey data, levels of spending and consumption are examined and well as their distributions. The inequality in expenditures and consumption is examined by year, and is measured using the Gini coefficient. SPM thresholds are produced using spending and consumption measures.

Results reveal that consumption tracked spending over the time period for consumer units in the U.S., with consumers downwardly adjusting their expenditures and consumption. However, the behavior of two child consumer units differs, with consumption smoother than spending.

Spending and consumption became more equal during the recession, especially for two child consumer units as opposed to the U.S. as a whole. Consumption based SPM thresholds are higher than spending based thresholds with renter and owners without mortgage thresholds more alike than those of owners with mortgages. The opposite results when consumption spending is used as the concept underlying the thresholds

## I. Introduction

The economic well-being of individuals is most often been measured in terms of income, spending, and consumption.<sup>1</sup> The focus of this research is spending and consumption as measures of economic well-being, with a particular interest on the behavior of these during the recent recession. Spending and consumption, total as well as those for food, clothing, shelter, and utilities (FCSU), are examined. FCSU is a focus as goods and services represented by this group are the basis of the new Supplemental Poverty Measure (SPM) thresholds as specified in an Interagency Technical Working Group (ITWG) document published in 2010 (ITWG 2010). For SPM thresholds, basic needs are defined as those for FCUS plus “a little bit more,” represented by personal care products, reading materials, and non-work related transportation. Five years of U.S. Consumer Expenditure Survey data are used to produce SPM thresholds for a single year.

To produce poverty statistics using these thresholds, the Census Bureau defines resources to include the value of case income from all sources, plus the value of in-kind benefits available to buy FCSU minus necessary expenses for critical goods and services not included in the thresholds. In-kind benefits include those for nutrition assistance, subsidized housing, and home energy assistance. Necessary expenses subtracted include those for income taxes, Social Security payroll taxes, childcare and other work-related expenses, child support, payments to other households and contributions toward the cost of medical care and health insurance premiums (Short 2012). The SPM can be viewed as an input into our understanding of how well consumers meet their basic needs with current resources.

Expenditures by consumers reflect current fixed and variable spending behaviors. During times of economic uncertainty such as during recessions, consumers are able to adjust their spending for certain goods and services but not for others. On the other hand, consumption reflects their levels of living. It is expected that one’s consumption is smoothed over time and is little affected by fluctuations in the economy. This is expected to be true particularly for the consumption of basic goods and services.

For some commodities, expenditures are a good measure of consumption, such as for food, while for others, like owned housing, they are not. Consumption needs can be met through the purchase of goods and services, the use of previously purchased goods, and in-kind transfers by individuals, organizations, or governments. Consumption for owned shelter is better valued as the rental value of this shelter rather than as spending; the flow value of household appliances is included in rental equivalence. Other consumption, for example, the value of the flow of services from owned vehicles is not considered for now.

The in-kind benefits included in the measures of consumption in this study are limited to those from the federal government. They are the same as those identified by the ITWG for the SPM and are used by the Census Bureau for poverty SPM statistics: Supplemental Nutrition Assistance Program (SNAP) benefits, National School Lunch Program (NSLP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits, and housing subsidies.<sup>2</sup>

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<sup>1</sup> For examples, see, Attanasio et al. (2007, 2012), Blundell and Preston (1998), Fisher et al (2012), Garner et al. (2003), Johnson et al. (2005), Krueger and Perri (2002), Meyer and Sullivan (2003,2012a,b), and OECD (2008).

<sup>2</sup> The Census Bureau also includes in resources<sup>2</sup>s the value of Low-Income Home Energy Assistance Program (LIHEAP); these benefits are not considered in this study.

A requirement under the ITWG guidelines is that SPM thresholds and resources be defined consistently. This means that the thresholds and resource measure are to be defined using similar concepts. For example, if the poverty measure is in-flow and out-flow based, thresholds would be derived from out-flows from the household and resources would be based on in-flows. When in-flows are based on income, consistently defined thresholds would be based on expenditures.<sup>3</sup> Consistency in measurement was also a requirement for the National Academy of Sciences (NAS) poverty measure as proposed in Citro and Michael (1995). The currently published SPM thresholds are expenditure-based, reflecting the FCSU spending needs of reference consumer units.<sup>4</sup> In contrast, the resource measure includes both income and the value of in-kind benefits. Thus the current SPM measure is not consistently defined.<sup>5</sup> For consistently defined thresholds, the values of in-kind benefits added to resources by the Census Bureau need to be included along with FCSU spending to determine the threshold levels. Garner and Hokayem (2012) produced SPM thresholds with these benefits for 2009; these have not been used for poverty measurement as yet.

A topic of debate in ITWG meetings is the treatment of shelter in the SPM; similar discussion arose for the National Academy of Sciences report (Citro and Michael (1995)). The question is whether shelter needs would be better represented in poverty measurement in terms of consumption versus spending needs.<sup>6</sup> As noted, currently the SPM is based on spending for FCSU; however, with the addition of in-kind benefits the measure is not lower limited to spending but accounts for the consumption value of benefits received. Thus, accounting for the consumption value of housing is a logical next step. For consistency in the production of the SPM, a resource measure that accounts for the net rental income from owner occupied housing would need to be developed. An alternative to a SPM resource measure that accounts for this net implicit rental income is a consumption based resource measure.<sup>7</sup>

Four definitions of economic well-being that are examined in this study: (1) consumption expenditures (CS); (2) CS plus in-kind benefits; (3) CS plus the consumption value of owned housing replacing owner shelter expenditures, and (4) CS plus the value of in-kind benefits and the consumption value of owning housing replacing owner shelter expenditures. Two values of in-kind benefits are considered; those based on the Current Population Survey (CPS) Program Participation Method (Garner and Hokayem 2012) and the Consumer Expenditure Survey (CE) Eligibility Method (first developed by Garner 2010 and further developed in this study).

There are two goals of this research. The first is to examine how spending and consumption, total and for FCSU, have varied before, during, and after the recent recession with data from 2005 quarter two through 2012 quarter one examined. The National Bureau of Economic Research identifies the recession period beginning in December 2007, with a peak in economic activity, and ending in June 2009, with the expansion.<sup>8</sup> We test the hypothesis that consumers smoothed their consumption over

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<sup>3</sup> See Garner and Short (2010) for a NAS poverty measure that is internally consistent. The published NAS poverty measure is not internally consistently defined.

<sup>4</sup> Reference consumer units are those with two adult and two children although the estimation sample is composed of all consumer units with two children.

<sup>5</sup> See Short (2012) for the latest statistics based on the 2011 SPM.

<sup>6</sup> See Garner (2006) and Garner and Short (2001) for consumption based poverty NAS thresholds that account for the value of the flow of services from owner-occupied housing.

<sup>7</sup> Meyer and Sullivan (2012b) develop a consumption measure for resources but compare these resources to spending based SPM thresholds. Thus, their "consumption poverty" measure, thresholds and resources, is not internally consistently defined.

<sup>8</sup> <http://www.nber.org/cycles/recessions.html>

this time period. The hypothesis is tested for all consumer units in the U.S. and for a subsample of consumer units, those with only two children. It is this subsample whose spending behavior is used to define the SPM thresholds. We examine levels of spending and consumption as well as distributions and inequality.

The second goal is to produce expenditure- and consumption-based SPM thresholds for 2009, 2010, and 2011 that are derived from the distribution of expenditures and consumption over five years of CE data. Each set of five years of data underlying the thresholds include the recession period. We follow the ITWG definition of FCSU needs and do not address whether other goods and services should be included in this basic bundle. There has been much discussion about the inclusion of medical care in the thresholds set; we leave that discussion for others.

Results from this study reveal that consumption expenditures and consumption for the total U.S. population have followed similar paths before, during, and since the last recession, unlike what was hypothesized. Constant dollar spending and consumption fell in the latter part of the recession and remained lower than before the recession. FCSU expenditures and consumption have also contracted but not as much as for the totals. FCSU expenditures and consumption for SPM reference consumer units were the most similar, in levels, beginning with the recession and continuing through the remainder of the time period. The Gini coefficients reveal the greatest inequality in total expenditures for the U.S. and the lowest inequality for FCSU consumption for consumer units with two children. This is not surprising as the basket of goods and services become more homogeneous, and the consumer units become more homogeneous, inequality would be expected to lower. This pattern is the same over the 2005 to 2009 timer period. From 2005 to 2009, expenditures and consumption changed the least for FCSU for the SPM estimation sample compared to all consumer units. Expenditure based SPM thresholds are the lowest of those produced for the three housing tenure types, with the highest thresholds for owners with mortgages and the lowest for owners without mortgages. The spending based thresholds for owners with mortgages and renters are not statistically significantly different. When SPM thresholds are based the consumption measure that accounts for food and rent as pay, the value of the flow of services from owner occupied housing, and in-kind benefits, owners without mortgages and renters thresholds are not statistically significantly different.

The paper is divided into four remaining sections. The next includes the four definitions of economic well-being considered in this study. Section three is a description of the data and methods, section four includes results, and the final section concludes.

## **II. Definitions of Economic Well-Being**

Economic well-being is defined as spending or expenditures and as consumption. One measure of spending, referred to here also as consumption expenditures, and three definitions of consumption are considered.

**Consumption Expenditures.** For this study, consumption expenditures include the value of goods and services purchased in the market by the consumer unit. There is no distinction whether these purchases are for the consumption of this consumer unit or for another consumer unit. Due to the way that the data are collected, the value of Supplemental Nutrition Program benefits (SNAP), earlier known as food stamps, are also included in food expenditures.

This definition is a deviation from the definition of consumption expenditures published by the International Labour Office (ILO 2003) definition.<sup>9</sup> The ILO defines consumption expenditures as the value of consumer goods and services that were acquired (used or paid for) by the consumer unit for the direct satisfaction of the needs and wants of its members. These goods and services could be acquired through direct monetary purchases in the market, through the market-place but without using any money as a means of payment, such as barter and income in-kind, and from production within the households. In this study, we deviate from the ILO definition and consider the value of income in-kind (food and rent as pay) along with the consumption value of owner-occupied housing in one of our consumption definitions.

Note, the consumption expenditures definition used in this study differs from the definition of consumer expenditures used by the BLS for publication.<sup>10</sup> Not include in our definition are cash contributions, as defined by the BLS, or those for personal insurance or retirement or pensions.

**Consumption expenditures plus in-kind benefits (C1).** To consumption expenditure are added the cash value of in-kind federal government benefit. These benefits include those for NSLP, WIC, and subsidized rental housing. Benefits are imputed since the CE Survey is that little or no information is collected on the receipt of in-kind federal government benefits. The only in-kind benefits information is for SNAP, collected as a source of income, and whether someone lives in government subsidized or public rental housing. The values of SNAP benefits are included with reported food expenditures, and thus no additions to food expenditures are added. It is assumed that consumer units with SNAP benefits use these to meet their food spending needs before using other sources of funds. As earlier in Garner (2010, 2011)<sup>11</sup>, rental housing benefits are imputed using the indicator variables for subsidized rents, rents paid, and Fair Market Rents published by the U.S. Department of Housing and Urban Development. For the NSLP and WIC, benefits were imputed using two different methods (see Garner and Hokayem 2012): the Current Population Survey (CPS) Program Participation Methods and the CE Eligibility Method. With these two sets of in-kind benefit estimates, we produce two consumption measures: (1) the C1-CPS, based on the CPS Program Participation Method; and (2) C1-CE, based on the CE Eligibility Method. CPS-based benefits have only been produced for 2005 quarter two through 2010 quarter one. CE Eligibility based benefits are produced for the full period, 2005 through 2012 quarter one.

The CE Eligibility Method assumes all consumer units and their members who qualify for benefits receive those benefits. The CPS Program Participation Method assumes that consumer units are reporting their participation accurately. However, neither method is expected to fully reflect actual participation. First not all consumer units or individuals who qualify for benefits apply for and received the benefits. For an example, Jackowitz and Tiehen (2010) reported that 79.1 percent of eligible household participated in WIC during the postnatal period. On the other hand, Meyer and Sullivan (2012b) and colleagues (e.g., Meyer, Mok, and Sullivan 2009; Meyer and George 2011) have noted that the CPS appears to substantially underreport government transfer. Thus, neither method is fully satisfactory; actual benefits for school lunches and WIC are most likely in between these two sets of estimates.

**Consumption expenditures with shelter expenditures replaced by value of owner-occupied housing for owners (C2).** To consumption expenditures are added the value of food and rent as pay.

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<sup>9</sup> <http://www.ilo.org/public/english/bureau/stat/download/17thicls/r2hies.pdf>

<sup>10</sup> See <http://www.bls.gov/cex/>.

<sup>11</sup> Also see Garner and Hokayem (2012) for a description of the method.

Expenditures for owner-occupied shelter are replaced by the value of the flow of services from owner-occupied housing. Owner shelter expenditures include those for mortgage interest and principal repayments, property taxes, homeowners' insurance premiums, and maintenance and repairs. If the housing unit were a rental unit, these expenditures would be subsumed by the landlord and passed on to the renters/owner as rent. This is the approach followed by the BLS in its production of the CPI for owned housing,<sup>12</sup> but differs from that of Meyer and Sullivan in their study of consumption poverty,<sup>13</sup> and from Fisher et al. (2012) in their study of income and consumption inequality.<sup>14</sup>

**Consumption expenditures with flows and in-kind benefits (C3).** For this measure, the value of in-kind benefits, consumption flows from owner occupied housing, and food and rent as pay are added to rental and other consumption expenditures. In other words, C3 is the result of adding the value of in-kind benefits to C2. Again, there are two measure of C2, one with CPS Program Participation Method benefits, C3-CPS, and one based on the CE Eligibility Method, C3-CE. The C3 definition of consumption is the closest to that of the ILO's definition of actual final consumption.

### III. Data and Methods

Expenditures and consumption are examined over the period 2005 calendar quarter two through 2012 calendar quarter one. This time period was chosen as it includes the recession period identified by the NBER as beginning in December 2007 (peak) and ending June 2009 (expansion). With these data, three sets of SPM thresholds can be produced; those for 2009, 2010, and 2011.

**Data.** Data from U.S. Consumer Expenditure Survey (CE) are analyzed. The analysis is restricted to the Quarterly Interview data and therefore is not representation of all expenditures made by consumers. The BLS has estimated that about 60 to 70 percent of total household expenditures are collected in detail in the Interview with an additional 20 to 25 percent collected with global questions. Consumer units are interviewed once for five consecutive quarters with data from the last four interviews usable for data analysis. For this study, the data are analyzed as they are collected by the BLS, quarterly. The one exception is when the quarterly data are analyzed for the production of the SPM thresholds. Data from 2005 quarter two through 2012 quarter one are examined in this study.

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<sup>12</sup> The subtraction of expenditures for owner shelter maintenance and repairs reflects the BLS approach to make owners as much as possible like renters. It is assumed that renters pay for maintenance and repairs to reduce their out-of-pocket rent payments (Cage 2012). Also see Garner and Verbrugge (2009) and Verbrugge and Garner (2009) for comparisons and treatment of owner-occupied housing in the CPI-U and Garner and Short (2009) for households and National Account measures of the flow of services from owner-occupied housing.

<sup>13</sup> Meyer and Sullivan (2012b), in constructing their measure of consumption, excluded human capital investments such as educational and medical expenditures and they made adjustments for vehicles and owner-occupied housing. Vehicle purchase expenditures were replaced by imputed values of the flow of services from currently owned vehicles. The consumption measure for owner-occupied housing only replaced expenditures for mortgage and property tax payments.

<sup>14</sup> Fisher et al. (2012) define expenditures as spending on all goods and services for current consumption, but excluding life insurance, pensions, and cash contributions. Consumption is total expenditures minus the purchase price of vehicles minus the expenditures for home-ownership plus the service flow from vehicles plus the reported rental equivalence of homeownership plus the value of federal government rental assistance. The Fisher et al. measure of consumption includes expenditures for education, health care, and other durable goods.

**Methods.** Expenditures and consumption are examined both in current and constant dollars. The first set of analyses is based on constant dollars. All quarterly CE expenditures and consumption are converted to 2005 year dollars using the All Items Consumer Price Index for All Urban Consumers (CPI-U)<sup>15</sup>. The second focus is the inequality in current expenditures and consumption; inequality is measured using the Gini coefficient. Consumer unit expenditures and consumption are adjusted by an equivalence scale in order to hold the effect of consumer unit size constant over the time period. The square root of family size is the equivalence scale applied for these analyses. Adult equivalent total consumption spending and the consumption measure are analyzed as well as the subset that we refer to as FCSU, for food, clothing, shelter and utilities.<sup>16</sup> To compare levels over time, expenditures and consumption are presented in constant 2005 dollars per equivalent adult, with expenditures and consumption weighted by family size and the consumer unit population weight.

The SPM thresholds are produced using the methods outlined in the ITWG guidelines and as specified on the BLS website (<http://www.bls.gov/pir/spmhome.htm>) and earlier documents also cited therein. In order to produce the thresholds, an estimation sample of consumer units with only two children is selected. The data for these consumer units is pooled over a five year period. The ITWG (2010) noted that by basing the thresholds on the most recent five years of data, a larger (compared to the NAS measure) sample would result and the thresholds would be more stable, ensuring that they would move more slowly from year-to-year than thresholds based on fewer years of data.

All data are in threshold year dollars, for example, 2005 quarter two through 2010 quarter data are pooled to produce the 2009 thresholds. Since these consumer units can vary in the number of adults, all expenditures are converted to adult equivalent values using the three-parameter scale; this scale is described in the ITWG guidelines.<sup>17</sup> These are then transformed to represent consumer units that include exactly two adults and two children. The ITWG proposed that SPM threshold should be produced that account for housing tenure, thus allowing for the differing contractual agreements of owners with mortgages, owners without mortgages, and renters. The thresholds are based on FCSU expenditures, and consumption for this study, within the 30<sup>th</sup> to 36<sup>th</sup> percentile range. Housing tenure thresholds are derived by subtracting the amount for shelter and utilities and then adding back in the amount for this for each of the household tenure groups. This same method is used for this study.<sup>18</sup> The equation to produce the housing tenure thresholds is presented below.

The SPM housing tenure thresholds are produced using the equation below.

$$SPM_i = 1.2 * FCSU_A - (S + U)_A + (S + U)_i$$

*i* refers to one of three housing tenure groups:

- Owners with mortgages
- Owners without mortgages
- Renters

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<sup>15</sup> The All Items CPI can be found at: <http://www.bls.gov/cpi/#data>

<sup>16</sup> The square root of family size is the most often applied equivalence used in studies of income and consumption inequality. See Fisher et al. 2012 as an example.

<sup>17</sup> See Betson (1996) for the development and discussion of this scale.

<sup>18</sup> Meyer and Sullivan (2012b) produced and tested SPM thresholds that do not account for housing tenure status, as well as those that do.



*A* refers to the entire estimation sample, within the 30<sup>th</sup> to 36<sup>th</sup> percentile range of FCSU expenditures or consumption, with these converted to those for consumer units with two adults and two children without distinction by housing tenure

*FCSU*, *S*, and *U* refer to the means of these expenditures or consumption among estimation sample CUs within the 30<sup>th</sup> to 36<sup>th</sup> percentile range of FCSU.

Standard errors for the thresholds are produced and are based on replicate weights (see Garner and Gudrais (2012, forthcoming 2013).

#### **IV. Results**

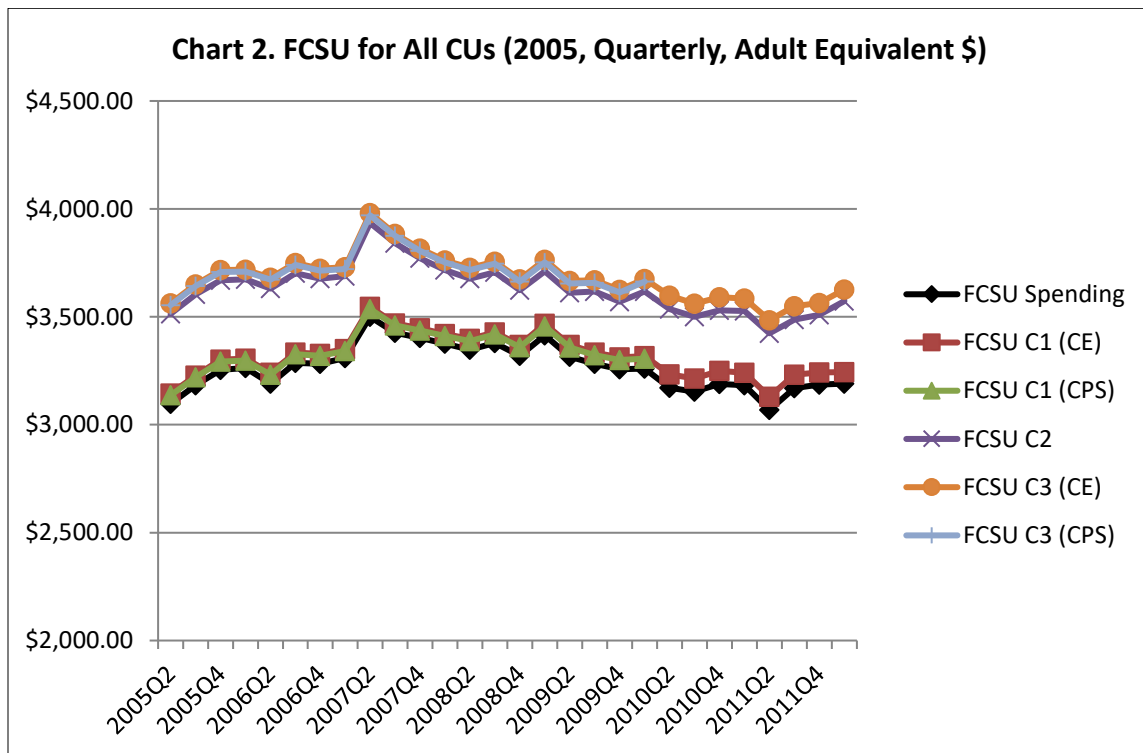
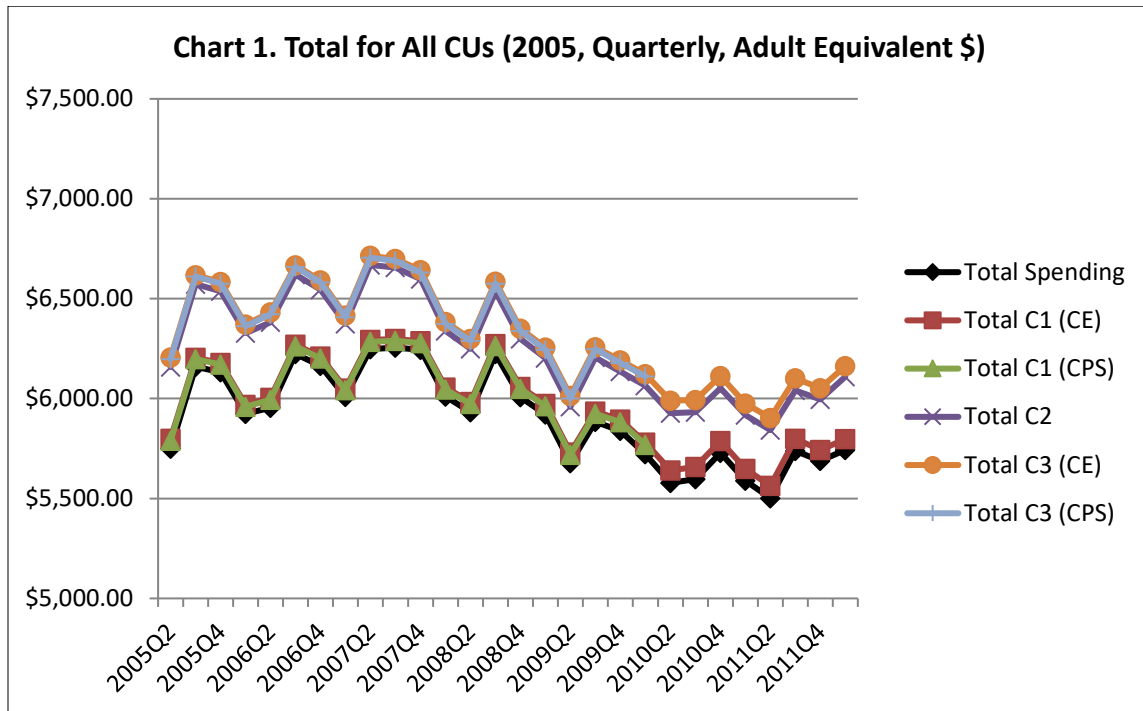
Two types of analysis are presented in this section. The first focuses on levels and trends in consumption expenditures and consumption. The second includes a presentation of SPM-derived thresholds; expenditure and consumption based thresholds are included.

**Levels and Trends in Consumption Expenditures and Consumption.** Average quarterly consumption expenditures and consumption per equivalent adult are plotted in Charts 1 through 4. Charts 1 and 2 include quarterly means for all consumer units with Charts 3 and 4 included expenditures for consumer units with only two children. We focus on two child consumer units as this is the subsample upon which the SPM thresholds are based. As noted in the Method section, the SPM thresholds are specifically based on the 30<sup>th</sup> to 35<sup>th</sup> range of FCSU expenditures. Thus, in addition, we plot mean adult equivalent consumption expenditures and consumption within the 30<sup>th</sup> to 36<sup>th</sup> percentile ranges. We restrict this part of the analysis to the years that underlie the SPM thresholds for 2009; the results for the other year thresholds are similar. Means based on consumption expenditures are based on a ranking of consumer units by consumption expenditures. Means based on each consumption measure are based on rankings of consumer units by each consumption measure.

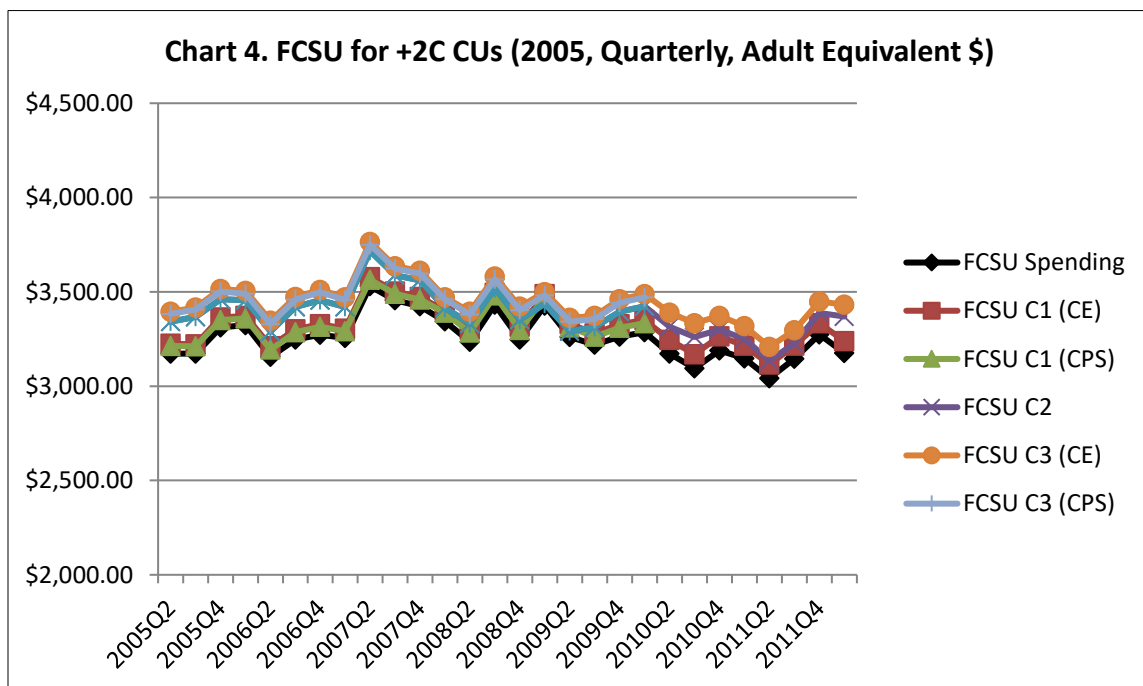
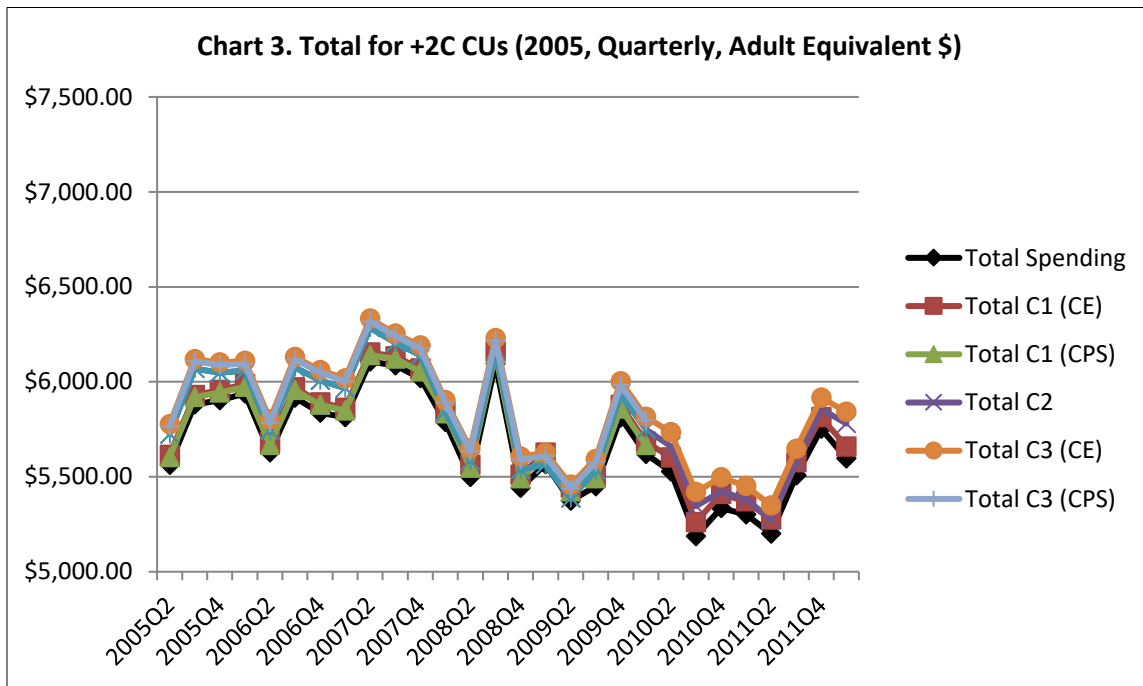
Consumption expenditures are denoted as “spending” in the charts. Total C1 (CE) is consumption spending with benefits based on the CE Eligibility Method and C2 (CPS) benefits based on the CPS Program Participation Method. Total C3 (CE) and C3 (CPS) both include rent and food as pay and the value of owner-occupied shelter substituting owner shelter expenditures. The range for the charts is set to be equal to \$2500 in order to show the volatility in expenditures and consumption.

The results in Charts 1 and 2 reflect the adjustment in expenditures and consumption made by consumer units over the 2005 to 2011 time period. As expected is a clear drop in constant dollar total expenditures over the period. However, unlike what was hypothesized, consumption was not more level than expenditures during the time of the recession. Expenditures and all of the consumption measures tracked in the same way, with consumption consistently higher. The lowering of real living levels, however, came sooner for FCSU than for total spending and consumption. The drop in real FCSU expenditures occurred in 2007 quarter two with the adjustment for total expenditures and consumption in 2008 quarter three. Also,

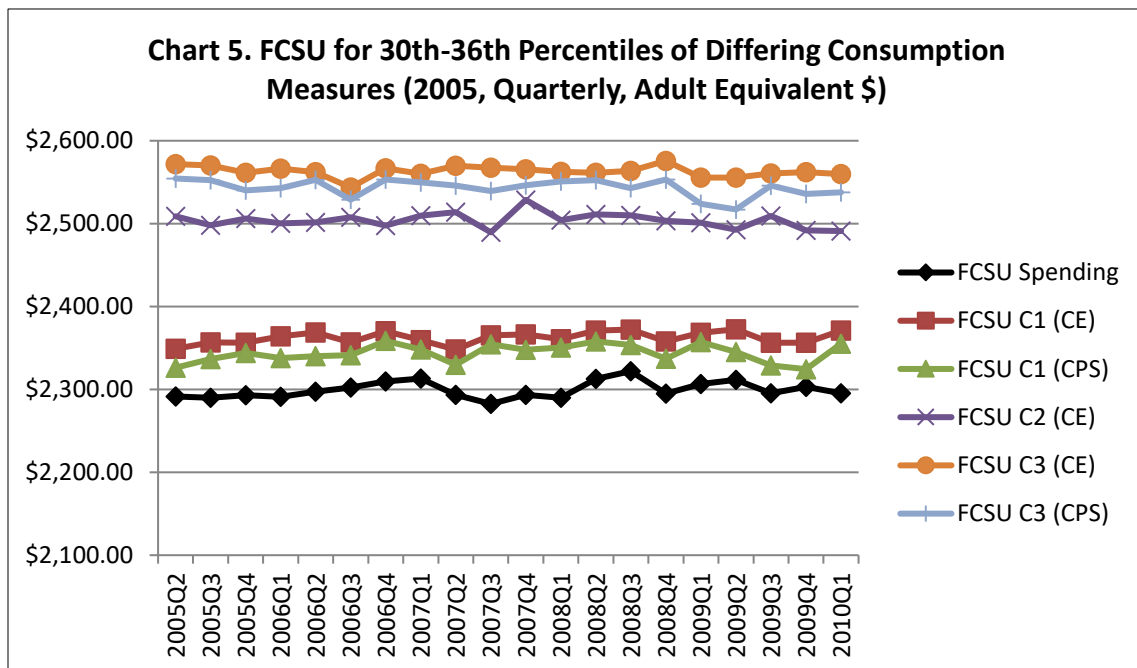
FCSU expenditures and consumption are less volatile over the time period when compared to total spending and consumption. This is important for the production of the SPM thresholds.



Adult equivalent expenditures and consumption for consumer units with only two children, presented in Charts 3 and 4 show similar trends to those of the total population with some notable exceptions. During the recession period, these consumer units, too, cut back on spending and consumption; however, for two-child consumer units, there was not as much difference in spending and consumption as there was for the total population. In addition, over the 2005 to 2011 time period, FCSU spending and consumption were fairly smooth compared to that of total expenditures and consumption.



In order to understand the impact of changes in expenditures and consumption that underlie the SPM thresholds produced in this study, we next restrict our analysis to spending and consumption within the 30<sup>th</sup> to 36<sup>th</sup> percentile ranges of each measure. Charts 5 and 6 should show the results for the years underlying the 2009 thresholds only; adding the additional two years of data needed for the 2010 and 2011 thresholds does not change our result and thus the last two years are not shown. Chart 5 includes plots of the means of quarterly adult equivalent consumption expenditures and consumption within the corresponding 30<sup>th</sup> to 36<sup>th</sup> percentile ranges. Means are presented for year that contributes to the SPM 2009 thresholds, 2005Q2-2010Q1. As for the earlier analyses, consumption spending is lower than consumption, although the trends are similar. The highest levels result for the most complete measure of consumption, FCSU C3. The smoothest trends are for FCSU C3 and for FCSU C1 (CE). Consumption spending is the more volatile of the measures examined. Thus, it appears that, over the 2005 quarter two through 2010 quarter one time period, SPM reference consumer units are able to smooth their consumption, relative to spending, during recession.



Differences in expenditures and consumption can result from differences in the characteristics of the two-child consumer units. Bar charts of the consumer units by family size, housing tenure, and region are presented in Charts 6, 7, and 8. For these charts, the five years (2005 quarter two through 2010 quarter one) of consumer units are pooled; remember these quarters of data are used to produce the SPM thresholds. The spending and consumption ranges of 30 to 36<sup>th</sup> are for FCSU only. Two-child consumer units are most often represented by four-person consumer units, accounting for about 60 percent of all two-child consumer units (Chart 6). This type of consumer unit represents only about 10 percent of total U.S. consumer unit population. Note that three-person consumer units account for larger shares of the 30<sup>th</sup> to

36<sup>th</sup> percentile distributions when the consumption measures with in-kind benefits are included (C1 and C3).

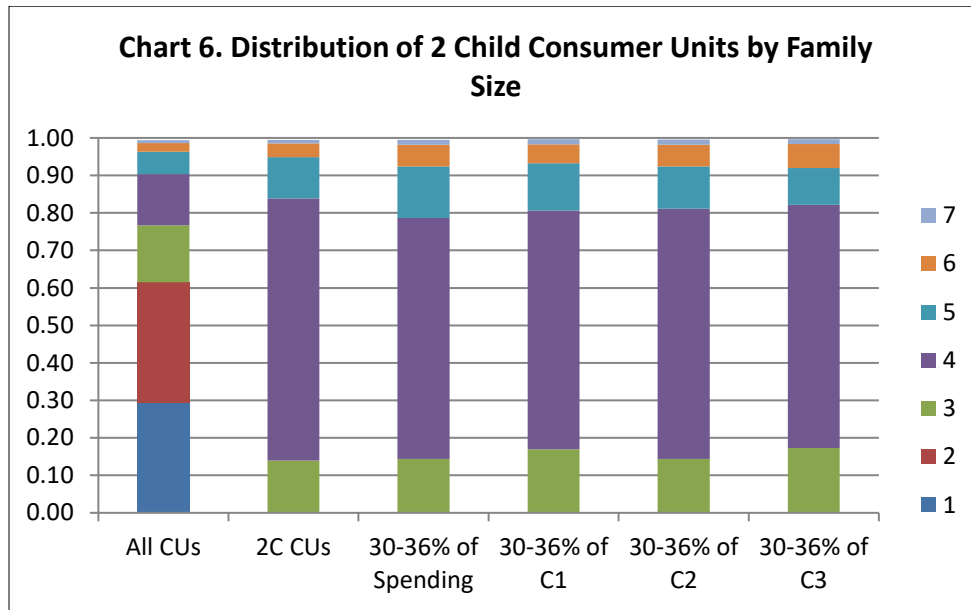


Chart 7 includes the distribution of consumer units by housing tenure. Owners with mortgages present the largest share in each case, for all consumer units, two-child consumer units, and two child consumer units within the percentile ranges. Owners with mortgages account for about 60 percent of all two-child consumer units compared to all consumer units with just over 40 percent. The second largest group is renters. Owners without mortgages are more often represented with the 30<sup>th</sup> to 36 percentile range for the consumption measures, particularly C2, compared to the spending measure.

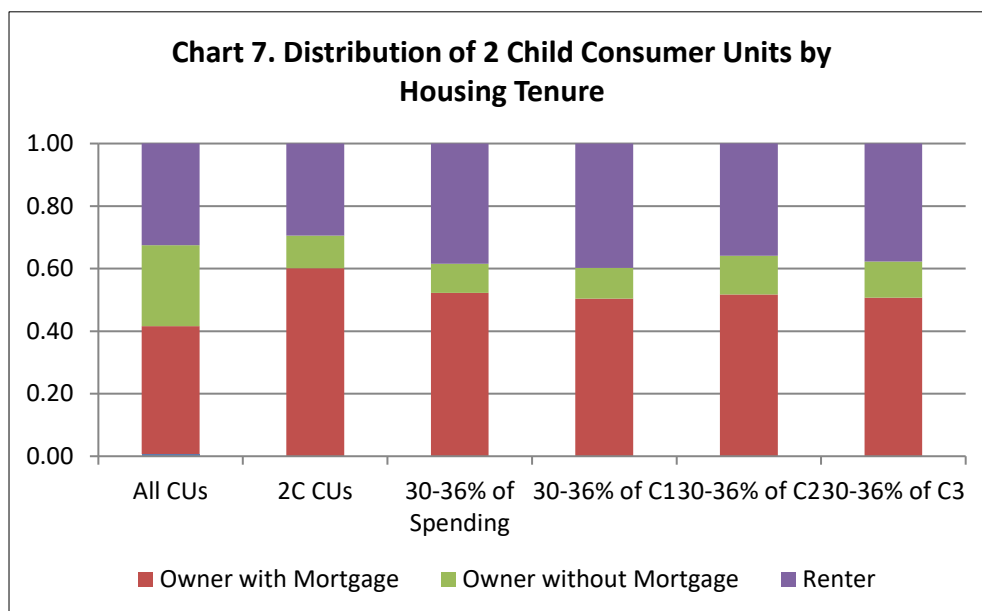
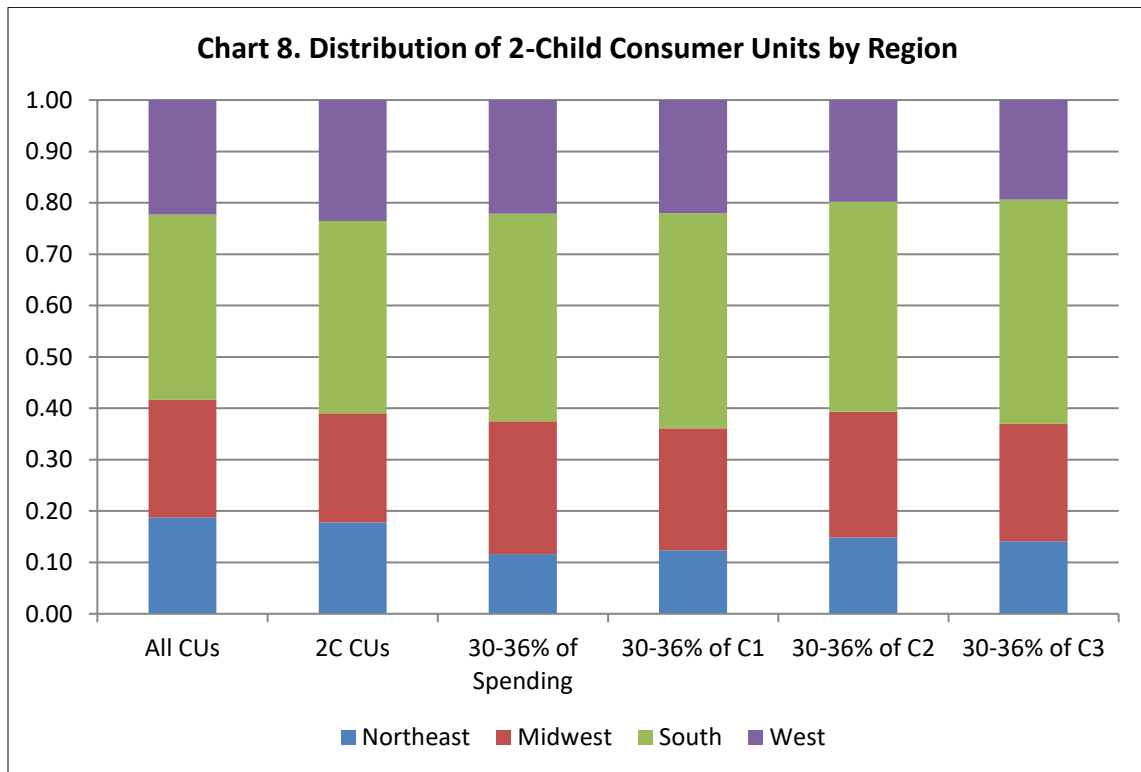


Chart 8 includes distributions of consumer units by region. As for the total population of consumer units, the majority live in the South. The West is the least represented, particularly in the FCSU spending range. The Northeast and Midwest are similarly represented for all groups.



**Distributions of Expenditures and Consumption.** Another way to study the impact of the recession on consumer units is to examine not just levels, as above, but the distribution or inequality of expenditures and consumption. As a first step, we computed Gini coefficients for each of the spending and consumption measures. The Gini indexes provide us with information regarding how spending and consumption changed with regard to dispersions in the distributions before, during, and after the recession. Gini coefficients are presented in Table 1. Results are presented for all consumer units, total and FCSU expenditures and consumption, and for consumer units with two children. To compute the Gini coefficients, expenditures and consumption remained in current dollars (unlike the levels analysis where they were converted to constant or real dollars). These results are for 2005 through 2009 only, again using the data that underlay the 2009 SPM thresholds. We have not yet examined whether the impact on the Gini coefficients are due to changes in the upper or lower tails of the distribution. Our plan is to expand the analysis to 2010 and 2011 and also to produce additional measure of inequality to better identify where in the distribution changes occurred.

Total and FCSU consumption are more equal than expenditures. The greatest equality is exhibited by the consumption measure that accounts for both the flow of services from owner occupied housing, food and rent as pay, and in-kind benefits (C3). The pattern results for all consumer units and for two-child consumer units. FCSU expenditures and consumption are more equal than are total expenditures and consumption. Inequality in total expenditures and consumption begins to fall around the time of the recession and picks up in 2009 for two-child consumer units; for the total population, inequality remains steady for 2008 and 2009. For FCSU, again inequality drops in 2008 and remains at about the same level in 2009 for all consumer units. For the SPM estimation sample (consumer units with two children), FCSU expenditures and consumption are the most equal, compare to the total population and to all two-child consumer units. Spending shows little change in equality over the time period. The Gini coefficients for spending and consumption are the lowest for the SPM estimation sample; this is an indication that FCSU expenditures and consumption are relatively equally distributed compared to the distribution of total consumption expenditures and consumption.

**Table 1. Gini Coefficients for 2005 to 2009 Adult Equivalent Consumption Expenditures and Consumption Using Quarterly CE Interview Data**

All Consumer Units					Consumer Units with Two Children			
Spending	Consumption (C1)	Consumption (C2)	Consumption (C3)		Spending	Consumption (C1)	Consumption (C2)	Consumption C3)
<b>Total</b>								
2005	0.374	0.368	0.360	0.354	0.356	0.349	0.342	0.335
2006	0.372	0.365	0.358	0.352	0.347	0.339	0.338	0.331
2007	0.360	0.354	0.352	0.346	0.330	0.323	0.323	0.316
2008	0.347	0.340	0.338	0.331	0.327	0.318	0.317	0.308
2009	0.349	0.342	0.339	0.331	0.346	0.337	0.338	0.329
<b>FCSU</b>								
2005	0.319	0.308	0.291	0.281	0.300	0.289	0.269	0.258
2006	0.323	0.312	0.292	0.282	0.296	0.283	0.270	0.258
2007	0.319	0.309	0.292	0.282	0.291	0.280	0.266	0.255
2008	0.313	0.301	0.276	0.265	0.295	0.280	0.258	0.244
2009	0.310	0.298	0.275	0.264	0.291	0.277	0.263	0.250



**SPM Thresholds.** The threshold guidelines provided by the ITWG are followed with the exception that different measures of economic well-being are used in the estimation of the thresholds. For in-kind benefits, the imputations are those based on the CE Eligibility Method as the CPS imputes are not available for 2010 and 2011. As previously, consumption expenditures and consumption are restricted to those for food, clothing, shelter, and utilities (FCSU). Adult equivalent values have been converted such that thresholds for two adults with two children are produced. As noted earlier, five years of CE data are used to produce thresholds for each year, 2009, 2010, and 2011. The earlier part of the Results section focused on the underlying yearly data that contribute to thresholds. This section focuses on the result of pooling the five years of data and the resulting thresholds.

Housing tenure thresholds are produced, ignoring the fact that consumption measures C2 and C3 should not necessitate such a distinction. Consumer units living in renter and owner-occupied housing are likely to consume similar amounts of housing in terms of the value of the flow of services from their respective housing. We produced housing tenure specific thresholds with the consumption measures to determine whether the consumption needs of owners and renters vary, as do their spending needs. The results presented in Table 2 support this idea. Thresholds based on consumption spending alone result in the lowest of the thresholds. As might be expected, with additions of in-kind benefits and other consumption, thresholds are higher for each of the housing tenure groups.

Statistical tests were conducted to compare differences in the thresholds by housing tenure; these were for within years. No comparisons across years have been produced for this study. Z-test statistics reveal that there is no statistically significant difference in SPM thresholds for owners with mortgages and renters when FCSU is defined in terms of spending. This result holds when in-kind benefits alone are added to spending (C1). The pattern changes, however, when shelter needs are represented by consumption rather than spending. In this case, the SPM thresholds are not statistically different for owners without mortgages and renters. This suggests that perhaps that the shelter in which renters and owners without mortgages live it is more similar in terms of the value of service flows.

**Table 2. SPM Thresholds for Two Adult Two Child Consumer Units using Different Economic Well-being Concepts for Food, Clothing, Shelter, and Utilities (FCSU)**

	2009		2010		2011	
	MEAN	SE	MEAN	SE	MEAN	SE
<b>Spending (Consumption Expenditures)</b>						
<b>Owners with Mortgages</b>	\$24,450	\$242	\$25,018	\$323	\$25,703	\$347
<b>Owners without Mortgages</b>	\$20,298	\$335	\$20,590	\$341	\$21,175	\$298
<b>Renters</b>	\$23,874	\$345	\$24,391	\$379	\$25,222	\$378
<b>Consumption (C1)</b>						
<b>Owners with Mortgages</b>	\$25,489	\$278	\$26,072	\$296	\$26,827	\$285
<b>Owners without Mortgages</b>	\$20,911	\$353	\$21,367	\$531	\$22,182	\$514
<b>Renters</b>	\$24,886	\$213	\$25,437	\$276	\$26,288	\$302
<b>Consumption (C2)</b>						
<b>Owners with Mortgages</b>	\$26,571	\$303	\$27,109	\$379	\$27,728	\$371
<b>Owners without Mortgages</b>	\$25,298	\$371	\$25,824	\$444	\$26,477	\$459
<b>Renters</b>	\$25,361	\$401	\$25,898	\$428	\$26,720	\$395
<b>Consumption (C3)</b>						
<b>Owners with Mortgages</b>	\$27,543	\$253	\$28,106	\$367	\$28,765	\$348
<b>Owners without Mortgages</b>	\$26,086	\$420	\$26,544	\$459	\$27,481	\$446
<b>Renters</b>	\$26,271	\$362	\$26,903	\$351	\$27,776	\$340

## V. Summary and Conclusions

During the recession, consumer units in the United States reduced their levels of spending and consumption, with greater reductions in totals as compared to spending and consumption for food, clothing, shelter and utilities. Unlike what was hypothesized, levels of consumption did not remain steady over the recession period. Instead, consumption fell along with expenditures. The Gini coefficients exhibit this contraction as well with consumption more equal than expenditures before, during and after the recession. Consumer units with two children, the sample whose FCSU spending and consumption patterns underlie the Supplemental Poverty Measure thresholds produced for this study, appear to have made fewer adjustments in spending and consumption. The distributions of their FCSU expenditures and consumption are relatively more equal than those of the total population.

Housing tenure specific SPM thresholds based on consumption reveal a different pattern than do spending based thresholds. Owners without mortgages now appear more like renters in terms of their FCSU needs. With a spending based measure, renter and owners with mortgages appear to have more similar needs. A criticism of the SPM spending based thresholds is that owners with newer mortgages and those with older mortgages are pooled together for the production of the owner with mortgage SPM thresholds; thus, there is no distinction for the contractual needs of the two groups (Meyer and Sullivan 2012b). One solution is to drop the distinction by housing tenure in the production of the SPM thresholds. However, before doing this, a study of the housing needs and obligations of consumer units with two children could prove useful in better understanding the needs of those in the lower end of the economic well-being distribution.

## References

- Attanasio, Orazio. P., Erich Battistin and Hidehiko Ichimura, "What Really Happened to Consumption Inequality in the U.S.?" in E. Berndt and C.Hulten, (Eds.) *Measurement Issues in Economics – Paths Ahead: Essays in Honour of Zvi Griliches* (Chicago: University of Chicago Press), 2007.
- Attanasio, Orazio. P., E. Hurst, and L. Pistaferri, "The Evolution of Income, Consumption, and Leisure inequality in the US, 1980-2010," NBER Working Paper #17982, 2012.
- Betson, David, "Is Everything Relative? The Role of Equivalence Scales in Poverty Measurement," University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, 1996.
- Blundell, Richard and Ian Preston, "Consumption Inequality and Income Uncertainty," *The Quarterly Journal of Economics*, 113(2), May 1998, pp. 603-540.
- Citro, Constance F., and Robert T. Michael (eds.), *Measuring Poverty: A New Approach*, Washington, D.C.: National Academy Press, 1995.
- Fisher, Jonathan, David S. Johnson, and Timothy Smeeding, "Inequality of Income and Consumption: Measuring the Trends in Inequality from 1984-2010 for the Same Individuals," Russell Sage Foundation Working paper, 2012.
- Garner, Thesia I., "Developing Poverty Thresholds 1993–2003," in: 2005 Proceedings of the American Statistical Association, Social Statistics Section 2006 (CD-ROM). American Statistical Association, Alexandria, VA, revised September 18, 2006.
- Garner, Thesia I. and Marisa Gudrais, "Supplemental Poverty Measure (SPM): Thresholds Issues," Bureau of Labor Statistics, Washington, D.C. Forthcoming 2013.
- Garner, Thesia and Marissa Gudrais, "Two-adult-two-child Poverty Thresholds," Bureau of Labor Statistics, Experimental poverty measure, < [www.bls.gov/pir/spmhome.htm](http://www.bls.gov/pir/spmhome.htm) >, October, 2012.
- Garner, Thesia I. and Charles Hokayem, "Supplemental Poverty Measure Thresholds: Imputing School Lunch and WIC Benefits to the Consumer Expenditure Survey Using Current Population Survey," July 2012, BLS Working Paper # 457, available at: <http://www.bls.gov/osmr/abstract/ec/ec120060.htm>
- Garner, Thesia I., Javier Ruiz-Castillo, and Mercedes Sastre. "The Influence of Demographic and Household Specific Price Indices on Consumption-Based Inequality and Welfare: A Comparison of Spain and the United States," *Southern Economic Journal*, 70(1), July 2003, pp. 22-48.

Garner, Thesia I. and Kathleen S. Short. "Accounting for Owner-occupied Dwelling Services: Aggregates and Distributions," *Journal of Housing Economics*, Volume 18, Issue 3, September 2009, pp. 233-248,

Garner, Thesia I. and Kathleen S. Short, "Creating a Consistent Poverty Measure Over Time Using NAS Procedures: 1996-2005," *Review of Income and Wealth*, Series 56, Number 2, June 2010.

Garner, Thesia I., Short, Kathleen S., "Owner-Occupied Shelter in Experimental Poverty Measures," Poverty Measurement Working Paper, 2001, available at: <http://www.census.gov/hhes/www/povmeas/topicpg5.html>.

Garner, Thesia I. and Randal Verbrugge, "The Puzzling Divergence of Rents and User Costs, 1980-2004: Summary and Extensions," chapter 8, in *Price and Productivity Measurement: Volume 1 – Housing* (W.E., Diewert, B.M. Balk, D. Fixler, K.J. Fox and A.O. Nakamura, eds.), Trafford Press, 2009, pp. 125-146.

ITWG, Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure (Interagency), March 2010, available at [http://www.bls.gov/pir/spm/spm\\_twg\\_observations.pdf](http://www.bls.gov/pir/spm/spm_twg_observations.pdf).

Jackowitz, Alison, and Laura Tiehen. *WIC Participation Patterns: An Investigation of Delayed Entry and Early Exit*, Economic Research Report 109, U.S. Department of Agriculture, Economic Research Service, December 2010.

Johnson, David S., Timothy Smeeding, and Barbara B. Torrey, "Economic inequality through the prisms of income and consumption," *Monthly Labor Review*, April 2005.

Krueger, Dirk and Fabrizio Perri, "Does Income Inequality Lead to Consumption Inequality? Evidence and Theory," NBER Working Paper 9202, <http://www.nber.org/papers/w9202>, September 2002.

Meyer, Bruce D., and Robert George, "Errors in Survey Reporting and Imputation and Their Effects on Estimates of Food Stamp Program Participation," October 5, 2011, <http://harrisschool.uchicago.edu/faculty/web-pages/10-2011%20-%20Food%20Stamp%20Survey%20Error.pdf>.

Meyer, Bruce D., Wallace K. C. Mok, and James X. Sullivan, "Under-Reporting of Transfers in Household Surveys: Its Nature and Consequences," NBER Working Paper 15181, 2009.

Meyer, Bruce D., and James X. Sullivan, "Five Decades of Consumption and Income Poverty," NBER Working Paper 14827, Revised February 2012a.

Meyer, Bruce D., and James X. Sullivan, "Identifying the Disadvantaged: Official Poverty, Consumption Poverty, and the New Supplemental Poverty Measure," *Journal of Economic Perspectives*, 26(3), Summer 2012b, pp. 11-136.

Meyer, Bruce D., and James X. Sullivan, "Measuring the Well-Being of the Poor Using Income and Consumption." *Journal of Human Resources* 38(S), 2003, pp. 1180–1220.

OECD, *Growing Unequal? Income Distribution and Poverty in OECD Countries*, Paris, 2008, Available from:

<http://www.oecd.org/els/socialpoliciesanddata/growingunequalincomedistributionandpovertyinoecdcountries.htm>

Short, Kathleen, "The Research Supplemental Poverty Measure: 2011," Current Population Report P60-244, U.S. Census Bureau. November 2012, available at:

[http://www.census.gov/hhes/povmeas/methodology/supplemental/research/Short\\_ResearchS PM2011.pdf](http://www.census.gov/hhes/povmeas/methodology/supplemental/research/Short_ResearchS PM2011.pdf) .

Verbrugge, Randal and Thesia I. Garner, "Reconciling User Costs and Rental Equivalence: Evidence from the US Consumer Expenditure Survey," *Journal of Housing Economics*, Volume 18, Issue 3, September 2009, pp. 172-192.