

Working Paper 007**Defining and Measuring the Middle Class****Steven Pressman****Visiting Research Fellow, AIER**pressman@monmouth.edu**Abstract**

This paper develops a definition of “the middle class” that, to a large extent, follows the procedure used by Mollie Orshansky when she came up with the official U.S. measure of poverty. A four-member, middle-class household is defined as those having disposable income that falls between 67 percent and 200 percent of median household disposable income. For households of other sizes, median income is adjusted along the lines used by Orshansky when she calculated poverty rates in the U.S., and middle-class households are again defined as those with incomes between 67 percent and 200 percent of the median.

Using the Luxembourg Income Study database and our methodology for defining “the middle class,” we find that the middle class is smallest in Anglo-Saxon countries and largest in Scandinavian countries. Continental European nations fall in between these two extremes. Among all countries, the U.S. has the smallest middle class, which has been declining almost continuously since the early 1980s.

In many countries the middle class has fallen during the past several decades. However, there are exceptions—in some countries (e.g., France) the middle class has grown since the early 1980s, and in other countries (e.g., Italy and Norway), the size of the middle class has remained relatively constant over time.

Since national results differ by so much over a long historical time period, it is hard to maintain that globalization or technical change, the two standard economic explanations for rising inequality (and hence a falling middle class) are responsible. Rather, it would seem that institutional forces, unique to individual countries, play a big role in our results. These forces need to be examined and studied in greater detail to understand the reasons for a falling middle class in the U.S.

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1. Introduction

People either hate numbers or they love numbers.

On the one hand, our ancient ancestors were not required to do a great deal of math. Hunters and gatherers do not need to know much about numbers in order to survive and reproduce. As a result, the human mind today did not evolve to deal well with figures or to make mathematical computations. That is why many people find math hard and tend to dislike it.

On the other hand, there is nothing like numbers to focus our attention and help us understand what is happening in the world around us. Numbers and rankings are especially important for understanding how our economy works and for developing policies to improve economic performance. Simon Kuznets (1941, 1946) in the U.S. and Richard Stone (1947) in the U.K. developed national income accounting and used it to measure GDP. This lets economists track how much an economy grows over time and enables them to study the factors contributing to economic growth.

Mollie Orshansky (1965, 1969) developed the official U.S. poverty rate. After reading John Kenneth Galbraith's (1958) "The Affluent Society" and Michael Harrington's (1962) "The Other America," President Kennedy wanted to track how the U.S. was doing in terms of poverty. He also needed a measure to be able to evaluate the impact of any government policies on poverty in America.

Today, instead of poverty, public and scholarly concern revolves around the middle class. During the past decade many authors (D'Agostino 2012; Faux 2012; Frank 2013; Kiernan 2015; Leicht and Fitzgerald 2013; Pressman 2007, 2011) have worried about the U.S. middle class and its decline. In order to actually see what has happened to the middle class and to analyze these changes, it is crucial to have a good measure of the middle class. Such a measure would show changes in the size of the middle class in one country over time. It would also allow us to compare the size of the middle class across nations. These numbers are also a necessary prelude to the next important step-- developing models that can explain what determines the size of the middle class and to what extent different policies, institutions, and macroeconomic circumstances affect the size of the middle class in one nation over time and across nations. Finally, having a good measure of the middle class will let us formulate policies that have been shown to increase the chances that a household will achieve middle-class status.

2. Some Approaches to Defining the Middle Class

Unfortunately, when it comes to the middle class, there is currently no single definition that social scientists accept and no number that gets calculated and reported regularly, in the U.S. or elsewhere. Part of the reason for this is historical. As Thomas Piketty (2014) argues, until the second half of the 20th century, the middle class was virtually nonexistent in the developed world. Furthermore, only during the past decade has the shrinking middle class become a major concern; this has led to numerous attempts to define and measure the middle class. This section briefly describes these approaches and their shortcomings.

Most attempts to identify the middle class do so in terms of some income range. Often scholars acknowledge that including other factors (such as having health care, having some education beyond high school, or having some assets for retirement) are also important for middle-class status, but even in these cases the focus is almost exclusively on income ranges. This is quite reasonable since we have reasonably good income data and virtually everyone agrees that having a certain income and standard of living is an important component of being middle class. It is also not particularly problematic, since income is likely correlated with most of the other factors deemed to be important. For example, jobs that provide health insurance in the U.S. are typically better paying jobs and so are more likely to provide a middle-class income as well as health insurance, and more educated workers tend to have higher incomes that will put them into the middle class.

If we focus on income, the hard question becomes what income range to use when identifying middle-class households. A first and simple approach is to select figures that accord with one's intuitions about middle-class incomes. Authors taking this approach typically select nice round numbers. For example, Brian D'Agostino (2012) identifies the middle class as those households whose income ranges from around \$20,000 to around \$200,000. The Congressional Research Service (Elwell 2014) sets the range at between \$19,000 and \$91,000. These are strange figures, mainly because the official poverty line for a family of four in 2010 was over \$21,200. (It was even higher in later years.) Consequently, many families falling in the middle-class income range will also be counted as being poor by the U.S. government. As Horrigan and Haugen (1988, p. 5) rightly contend, the lower boundary for the middle class must be "significantly above the poverty level."

Gary Burtless of the Brookings Institution employs a somewhat narrower range, and one whose lower boundary is a little bit above the U.S. poverty thresholds. Relying on early 2000s income levels, Burtless defined "the middle class" as those households whose income ranges from \$24,000 to \$96,000. His numbers come from taking half the national household median income at the time and also twice the national household median income. MIT economist Frank Levy pushed up the lower boundary point even more. He takes the range of middle-class incomes to be from \$30,000 to \$90,000 (Vigeland 2008).

Still, this approach is not satisfactory. One issue is that these income ranges fail to control for household size or recognize that the standard of living one can enjoy with a certain income depends on how many people that income needs to support. But the big problem with all these income ranges is that different people have different intuitions about what it takes to be middle class, and there is no way different intuitions can be debated and no way we can resolve any differences in the ranges selected by different intuitions.

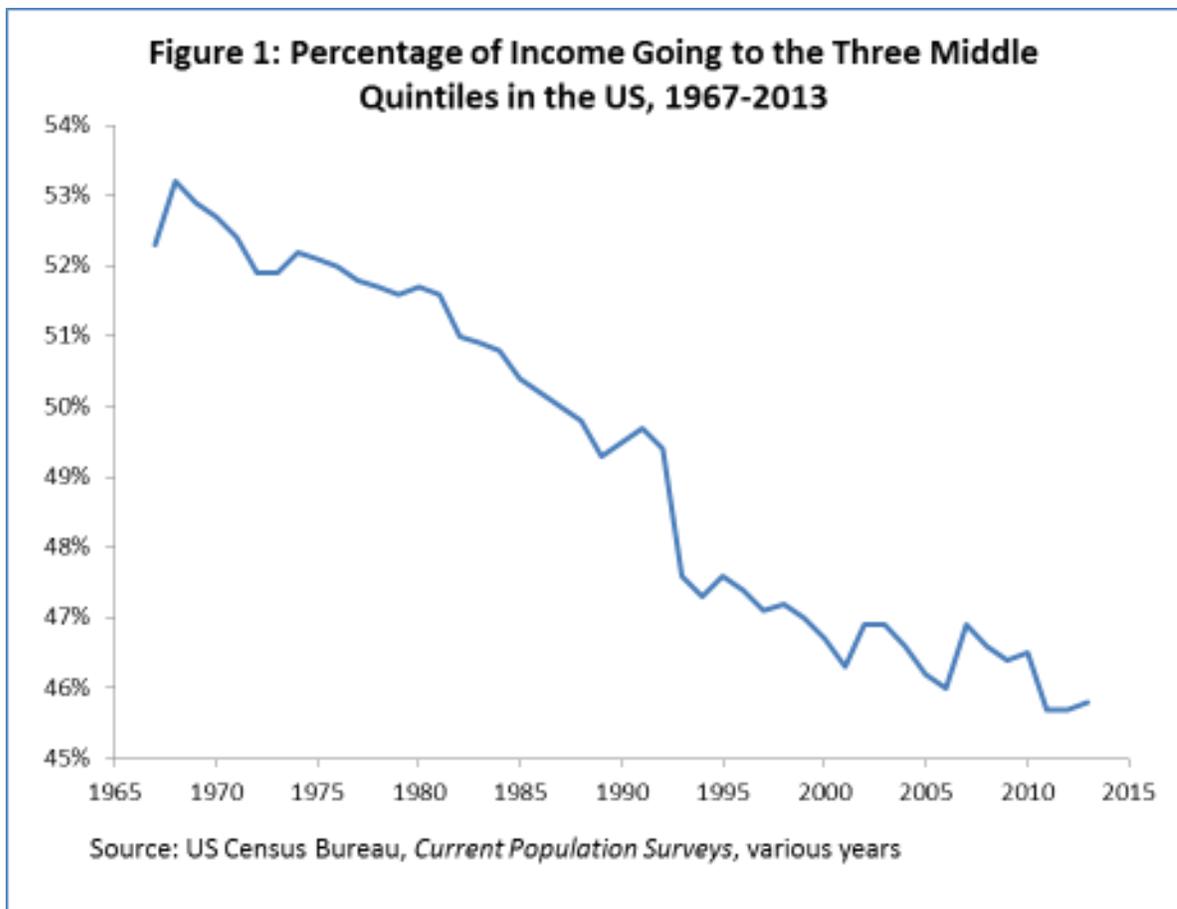
A second approach is to look at the fraction of income received by the middle three income quintiles. The top quintile can be regarded as the upper class and the bottom quintile the poor or the lower class. Everything in between, or the middle 60 percent, is taken to be the middle class. Nobel Laureate economist Robert Solow (on the back cover of Estache and Leipziger 2009) takes this approach and defines "the middle class" as the middle 60 percent of earners (also see Atkinson and Brandolini 2011).

There is one big advantage to doing this-- good annual data are available all the way back to 1967, and that data are summarized just the way we want it. The Census Bureau surveys U.S. households every year, asking about their income and various household characteristics. From this it publishes data on the fraction of income going to various income quintiles or fifths-- the top 20 percent of households, the second 20 percent, etc. It is

tempting take the lowest fifth of the population distribution to be poor, the top fifth to be wealthy, and the middle three quintiles comprising the middle class (the upper middle class, middle class and lower middle class, respectively). The percentage of income going to this middle group can tell us how well this group is doing over time and how it is doing in one country compared to another country.

To be in the bottom-income quintile in 2010, households needed an income of \$20,000 or less; to be in the top quintile required an income of more than \$100,065. Using these as dividing lines, middle-class households can be regarded as those with incomes between \$20,001 and \$100,065. To bring these figures up to date (2015) we would need to add around 10 percent.

Figure 1 shows the percentage of total income going to the three middle quintiles in the U.S. With only a few exceptions, we see a steady decline starting in the late 1960s and continuing up to the present. Today, the three middle quintiles receive only 46.5 percent of total national income—a drop from 53 percent in the late 1960s. Most of this drop has been due to the smaller fraction of income going to the middle fifth and the second lowest quintile. Almost all the income gains went to households in the top quintile, which increased its share of total income from 43 percent to 51 percent.



This way of defining “the middle class” does have some drawbacks. First, as noted earlier, many middle-class households will also be poor according to this definition. A second problem is that the size of the middle class always remains the same. While we will know how much money goes to households in the middle of the income distribution (rather than the wealthy or the poor), it does not tell us what is happening to the size of the group in the middle of the distribution. The middle class is always the sum of the three middle income quintiles. It cannot grow; it cannot shrink. It is 60 percent of the population and will always be 60 percent of the population. Only the fraction of national income received by this group can change. If we are interested in the changing fraction of the population that is middle class over time, or if we want to measure the size of the middle class from one country to the next, a different approach is required.

A third approach to defining “the middle class” ignores income levels entirely. Robert Putnam (2015), in his recent book “Our Kids,” focuses on education levels. He defines classes in terms of the highest level of education attained by a household member. Charles Murray (2012) also adopts this method of defining “the middle class,” regarding anyone with a college degree as being in the upper class. Although Putnam’s book focuses on the rich and poor and ignores the middle class and middle-class children, it implicitly contains a definition of “middle class.” For Putnam, upper-class households are those where at least one parent has a college degree and lower-class households are those where neither parent has education beyond high school. The middle class thus becomes those in between these two cases— households that include one adult who has gone beyond high school (maybe they have an associate’s degree) but with no adult possessing a four-year college degree.

A first problem here is that this ignores income entirely when defining the middle class. As a result, Putnam’s definition will categorize many households as middle class (due to their education level) even though they are regarded as poor according to the official U.S. definition of poverty. It will also count some very wealthy individuals as middle class. Bill Gates is one of the richest people in the world. He attended Harvard University but never graduated. Should he divorce his wife Melinda (who has an MBA from Duke University), Bill Gates would count as being middle class according to this definition. A definition of “middle class” that counts Bill Gates and lots of rich people without a college degree as middle class certainly leaves a great deal to be desired.

Another problem with using education as a distinguishing characteristic of the middle class is that in the 1960s and 1970s relatively few household heads had much education beyond a high school degree. None of these would be considered middle class on Putnam’s definition. Because educational attainment has increased over time, more households move from the lower class into the middle class and upper class, so we would see the middle class growing for this reason. But this historical trend is not the result of higher living standards for lots of people and says nothing about changing standards of living. Rather, it is the result of increasing educational attainment and requirements.

A fourth approach looks at wealth rather than income. Thomas Piketty has defined “the middle class” in terms of wealth holdings. As noted earlier, some wealth is important for a middle-class existence. Assets give the middle-class security; they provide a buffer against illness, disability, or unemployment. They also enable middle-class families to help put their children through college. And perhaps most important of all, middle-class individuals want to be able to retire, a subject AIER’s research fellow Luke Delorme explores in “How to Formulate a Retirement Spending Plan” (2015). Since Social Security only replaces around 42 percent of previous earnings, the ability to retire requires that people put aside some money or accumulate some assets that can be spent down in retirement. This means that to be middle class, some wealth is required.

In his book “Capital in the Twenty-First Century,” Piketty (2014) defines “the middle class” exclusively in terms of wealth holdings. In particular, middle-class households have wealth holdings that fall between the top 10 percent of the wealth distribution and median household wealth. He argues that up until the 20th century most households, other than the very wealthy ones, did not have much wealth. The destruction of inherited wealth, due to two world wars and the Great Depression, reduced income and wealth inequality and enabled a middle class to grow in the U.S. and Europe. Their wealth provides both a source of income and security to households.

This definition has problems similar to those we encountered with other definitions, however. As with looking at the middle three income quintiles, looking at the middle of the wealth distribution makes the size of the middle class the same every year, which prevents us from being able to understand what causes the size of the middle class to change. And, like Putnam, Piketty ignores income. Someone who just graduated from college and is beginning a professional career and adult life will likely have no wealth (and maybe even carry considerable debt). But that person may also be making \$55,000 or \$90,000 a year—incomes that should put him or her solidly within the middle class.

A fifth way to define “the middle class” is to just ask people whether they are middle class or ask them to classify themselves as either lower, middle, or upper class. Then we can define “the middle class” in terms of the income level and percentage of respondents who claim to be middle class. For example, if at least half of those with incomes between \$30,000 and \$150,000 say they are middle class, then we can consider this range as encompassing the middle class.

This approach has the advantage of coming up with income ranges for the middle class that most people would recognize as being acceptable and of correctly classifying them. However, it also has a number of limitations. Perhaps the biggest problem with this approach is that most people in the U.S. consider themselves to be in the middle class. According to a 2008 Pew Research Center (2014) survey, only 6 percent of Americans considered themselves lower class and only 2 percent thought they were upper class. This makes the range of income to be in the middle class usually large (\$15,000 to \$250,000); likewise, the percentage of middle-class households is very large (over 90 percent). As with other attempts to define “the middle class,” many poor households consider themselves to be middle class and so get counted as middle class.

These endeavors all fall prey to something that we might call “the economist’s disease.” The following quip, by Nobel Laureate economist Ronald Coase, makes this problem clear: “If economists wished to study the horse, they wouldn’t go and look at horses. They’d sit in their studies and say to themselves, ‘What would I do if I

were a horse?” The economists’ disease involves reflecting on people and economic relationships while sitting in one’s office. No real-world experience is necessary.

This methodology, employed by most economists, was first set out by John Stuart Mill [1844]. His essay “On the Definition of Political Economy” saddled economists with the procedure for studying horses and humans, the procedure that Coase mocked in the above quotation. Mill noted that the social sciences were not like the natural sciences in one important way—controlled experiments were not possible in the social sciences. We cannot set up two different economies, exactly the same and populated by identical people, in order to study the impact of one factor on one of these two economies while keeping the other economy as a control group. Since economic knowledge cannot come from such experiments, Mill reasoned, it must come from introspection. We know from thinking about ourselves that people seek to maximize their pleasure and that attempts to maximize pleasure are constrained by nature. According to Mill, economic theory or economic science must deduce the consequences of these assumptions, just as geometry proves theorems about triangles and circles after starting with some basic definitions and assumptions about points, lines, and angles.

If we wish to avoid the economist’s disease like the plague, then we must ground our definitions and our theories in the real world and in real-world experiences. Grounded theory (Glaser and Strauss 1967) developed as a method for constructing theory and gathering data based on the real world rather than on musings about what sounds good or what I think. It is a pragmatic approach (on pragmatism, see Dewey 1938; Putnam 1995; Rorty 1979)—defining and measuring concepts in accord with what we observe in the world so that they can be used for some end. Data are collected by interview and observation and then examined and analyzed. This new understanding leads to changes in both definition and collection methods.

In brief, we need something more objective than what people think makes someone middle class. Intuitions do count, but we need to make sure that these intuitions represent what is necessary to obtain a certain (i.e., middle-class) standard of living. Fortunately, there is a good case study for how to go about doing this.

3. Mollie Orshansky and the Measurement of Poverty

The U.S. is one of the few countries in the world with an official national poverty rate. It was developed in the early 1960s by Mollie Orshansky. Orshansky grew up in New York and attended Hunter College from 1931 to 1935, receiving a BA degree in mathematics and statistics. She then went on to do graduate work at American University in statistics and economics.

Orshansky’s first job was with the U.S. Children’s Bureau in the late 1930s; in 1942 she returned to New York to work as a statistician for the New York City Department of Health. Three years later she took a job working on family consumption and living standards at the U.S. Department of Agriculture in Washington, D.C. Soon Orshansky became its senior food economist, collecting and analyzing data on food consumption. In 1958, she went to work for the Social Security Administration, becoming its expert on income adequacy.

Orshansky’s rise to fame began in December 1962. Concerned about poverty, President Kennedy asked Walter Heller, his chairman of the President’s Council of Economic Advisers, to get him some statistics on poverty. Heller asked the Social Security Administration to come up with a measure of poverty, and it turned to

Orshansky to perform this task. As noted earlier, she was a specialist in family living standards and income adequacy, and she had been studying household budgets for a number of years. She was the perfect person to choose for devising U.S. poverty measures.

Prior to Orshansky's work there was no official U.S. poverty measure and no agreed-upon method for defining poverty and measuring poverty. Scholars writing about poverty used thresholds with fixed-dollar cutoff points that came from subjective musings about adequate income levels. During the 1940s and 1950s, single individuals making less than \$1,000 a year (a little more than \$8,500 in today's dollars) and families with an income under \$2,000 were usually considered to be poor. By the early 1960s, when Orshansky began her work, most scholars took \$3,000 to be the poverty line for the U.S. This number applied to families of all sizes, and it was not increased each year to deal with rising prices reducing the purchasing power of that income level (Orshansky 1965).

Orshansky's main task was to find the minimal income that would enable a household to survive for one year. Her approach to this problem has a rather long history. According to Gordon Fisher (1997a, p. 13), a distinguished historian of measuring poverty in the United States, W.E. B. DuBois was the first American to select a dollar figure for the poverty line after carefully studying the actual needs of black families in Philadelphia from 1896 to 1897. He called those families "poor" whose weekly income was \$5 or less per week. This works out to an annual poverty line of \$260 per year. In 1963 dollars, this was less than half the official Orshansky poverty threshold for a family of four. In 2014 dollars, it would be \$7,283, or less than half the poverty rate for a family of two and less than one-third of the current poverty threshold for a family of four in the U.S.

Following the lead of DuBois and a few others, Orshansky went at her job pragmatically and empirically. She began with U.S. Department of Agriculture data on the minimum food requirements for families of different sizes¹; these data were compiled in 1955 by the agriculture department. Orshansky then obtained data on the cost of purchasing all this food in the early 1960s.

Next, she examined extensive government surveys of household expenditures undertaken during the 1940s and the 1950s. From these data, Orshansky found that families, on average, spent around one-third of their income on food. She multiplied the cost of a minimum food budget for each family type by three to arrive at its poverty threshold. These thresholds represent the minimum income needed by families to survive during the year.

Each year poverty thresholds are increased by the annual rate of inflation. Poverty thresholds in the U.S. thus represent a fixed and constant real living standard. Orshansky called her thresholds "relatively absolute" measures of poverty (Fisher 1997b, p. 9); they provided an absolute standard that was relative to household spending habits and the minimum income needed by each family type at the time. The poverty rate measures the fraction of all U.S. households that fail to rise above its poverty threshold.

¹ Orshansky (1965, p. 28, Table E) proposed a lower poverty threshold for single women because women needed less food than men. This was quickly quashed.

After some debate (see Section 4 and footnote 1) the Office of Economic Opportunity adopted Orshansky's definition in 1965 and made it the official U.S. measure of poverty. In 1969, the director of the Bureau of the Budget directed all federal agencies to use this measure to determine eligibility for federal programs. As a result, eligibility for federal programs such as housing vouchers, Medicaid, school lunches and SNAP (formerly Food Stamps) all depend on household income levels that are some percentage of the Orshansky poverty thresholds.

4. Some Critiques of the Orshansky Methodology

The Orshansky poverty measure has been criticized on a regular basis since it was first proposed in the 1960s.

First, there is a problem with the Orshansky poverty thresholds. Harrell Rodgers (2000) has argued the food requirements used in the official poverty thresholds were designed for short-term, emergency situations only; they could not meet a family's nutritional needs for an entire year. The story of how this came about has been told in great detail by Gordon Fisher (1997a, 1997b). Orshansky originally developed two sets of poverty lines. One was based on a food budget that was intended for short-term, emergency use only; the other was a food budget that would provide adequate nutrition to the family for a longer time period, such as a year. Since the poverty lines and poverty measures are all annual measures, it would seem as though the more generous food budget should have been used. Orshansky has even indicated that this was her preferred set of poverty thresholds (Fisher 1997b, p. 17). But her work compiling a poverty measure took place during the height of the Cold War. If the U.S. government used Orshansky's annual food budget rather than the emergency food budget, the higher poverty thresholds would have resulted in a very high poverty rate. The U.S. government would then proclaim to the entire world that its economy and capitalism in general had a big problem with poverty.

Harold Watts (1986) noted that in the early 1960s the poor paid no income taxes and virtually no Social Security taxes. However, by the 1970s and 1980s, low-income households faced a considerable tax burden. Calculating poverty based on pre-tax income, as in the Orshansky methodology, ignores the fact that by the 1970s and 1980s, poor households were paying a greater share of their income in taxes. More important, the Earned Income Tax Credit, or EITC (Hoffman and Seidman 1990), which results in negative taxes for a substantial number of low-income households, does not get counted as income when calculating poverty status and poverty rates. The EITC has substantially increased the money income available to low-income families with children and working parent, and has given them a substantially higher standard of living. U.S. poverty computations ignore this.

There is an obverse side to this critique. According to the Orshansky methodology, only money income gets counted in determining whether or not a household is poor. This made a good deal of sense when Orshansky developed the official U.S. poverty thresholds, since there were few government programs (such as Food Stamps, housing vouchers, free school lunches, and Medicaid) providing in-kind benefits to assist households with low incomes; as a result, not including such government benefits when defining poverty was not really important. Not only have these programs increased substantially since the early 1960s, but the extra income from these programs makes the difference between being poor and not being poor for many families. And

because this income is not counted when measuring poverty, we cannot observe the role that these programs play in reducing poverty in the U.S. (Weinberg 2005).

Finally, many people have argued that people are social beings and that what is minimally necessary must vary from time to time and from place. For example, private baths, telephones, and television sets were not regarded as necessities during the 1920s or the 1930s, but they are necessities today. Likewise, child care was not as essential in the 1950s or 1960s. But, as more and more families have two earners, or just one adult heading the household, childcare has become an important family expenditure. For this reason, a relative definition of poverty is preferable to the absolute definition used by Orshansky. One way to incorporate this insight into the Orshansky definition is to change the food multiplier as times change and as household spending changes. Alternatively, a relative definition of poverty can be used, one which takes poverty thresholds to be some fraction of the average or median income at a particular time and in a particular place.

Over the years, these debates have generated many suggestions for improving how we calculate poverty (Citro and Michael 1995; Ruggles 1990; Weinberg 2005), as well as many alternative poverty measures. Based on several suggestions, the Census Bureau began publishing a set of alternative poverty measures alongside the official Orshansky measures. Some of these alternatives take taxes and in-kind government benefits into account when estimating household income for the purpose of measuring poverty. Others employ a more relative definition of "poverty."

5. A Defense of Orshansky

Despite its many flaws, it is important to note a number of things that Orshansky got right and that provide important lessons for those wanting to define "the middle class." First, she sought a measure of poverty that was grounded empirically rather than just selecting numbers based on musings from an ivy tower. In specific, she looked at what was needed to maintain a certain lifestyle by trying to ascertain what was necessary to survive for a year. She also realized that poverty lines had to be increased every year with inflation to provide income levels that represented a constant standard of living. Two additional lessons contained in the Orshansky methodology concern household size and regional variations in the cost of living.

(i) Household Size

Tolstoy famously noted at the beginning of "Anna Karenina" that all happy families were essentially the same. While this might be true in psychological terms, it is not true in economic terms. Family needs -- what is necessary to make a family happily middle class -- depend to a large extent on the size of the family.

Two people can live more cheaply together than separately, and they will have a higher standard of living than two single individuals with the same combined income. Only one place has to be rented and heated. There is only one cable TV bill, and just one set of pots and pans will be needed for cooking. In addition, groceries are cheaper to buy in bulk. What we need is some middle ground between focusing on per capita income, ignoring economies of scale in living arrangements, and assuming that household size does not matter at all for household living standards.

The income necessary to make a single individual middle class is not the same as the income required for a family of four to be middle class. One income range does not fit all family sizes. For example, \$24,000 would support a single individual in the U.S. reasonably well. In 2010, it would have provided more than twice the poverty-level income for a single person, and it would have put that person into the three middle income quintiles. But, for a family of five, an annual income of \$24,000 provides each person with just \$4,800, on average. This cannot support the same lifestyle as \$24,000 for a single individual; in fact, according to the U.S. Census Bureau, a family of five would have been considered poor with this income in 2010. Surely, they cannot also be considered middle class. This little example shows that we must deal with household size, and we must adjust household income for household size before determining if a household is middle class.

A simple way to deal with differences in household size is to treat the income needs of all household members the same and look at per capita household income. We made this adjustment in the paragraph above when we divided income by household size, and compared the income of a single individual making \$24,000 with the average income of \$4,800 for a family of five. This solution, though, has one important drawback—it ignores the economies of scale in living arrangements that we noted earlier.

The academic literature refers to this as the problem of equivalence scales, so-called because we must figure out how to adjust income by household size to give us equivalent living standards for households of different sizes. A few reasonable solutions have been proposed to deal with this problem.

One popular set of equivalence scales was developed by the Organisation for Economic Cooperation and Development (OECD 1982). Recognizing different needs for children and adults, the OECD recommended that the income needs of additional adults in a household be counted as .7 of the first adult and the income needs of all children be counted as .5 of the first adult. This means a household with two adults must have 1.7 times the income of a single individual to have the same living standard and a family comprising of two adults and two children must have income 2.7 times that of a single adult. In concrete terms, a single individual making \$24,000 has the same standard of living as a married couple making \$40,800 and the same standard of living as a family of four whose income is \$64,800.

The most empirically grounded equivalence scales, or the only attempt to measure equivalence scales, appear in the Orshansky (1965, 1969) poverty thresholds for households of different sizes, since they are based on actual household food needs for households of different sizes. Orshansky took a leap of faith with her multiplier, which assumed that there were similar economies of scale for other items. Housing costs, for example, may increase more with a first child than with a second child (who can share a bedroom with a sibling). However, lacking any better data on household equivalent incomes, Orshansky did the best that she could and the best that was possible at the time. Each additional household member increased household needs, according to Orshansky, by around 30 percent of what is necessary for a single individual.

The good news is that the choice of equivalence scales does not seem to matter a great deal, as long as they are reasonable. Considerable research with the Luxembourg Income Study has shown that different equivalence scales yield very similar results (Buhmann et al. 1988), although actual results (or numbers) will vary.

(ii) Regional Cost Differences

A second measurement issue concerns geographic differences in the cost of living. As everyone knows, the cost of living varies a great deal from one region to another in every country. To carry forward our earlier example, a single individual making only \$24,000 will have a middle-class life in most rural areas of the U.S. But in major metropolitan areas, especially on the two coasts, this is not likely. Rent and utilities will absorb more than half this income. At the other side of our income range, \$250,000 goes much further in rural Nebraska than in New York City. It will likely provide for a wealthy lifestyle in Nebraska, but not so in a big city. The average rental price for a Manhattan apartment is \$4,000 a month, more than triple the national average of \$1,200. The average price of a home in Manhattan is approaching \$1.5 million compared with the national average of \$230,000 (O'Leary 2013). So being middle class or around the median is much different in New York than elsewhere.

Regional cost differences stem from a number of things, but the largest and most important difference comes from housing. Housing is the largest expenditure item in most family budgets, and housing costs vary considerably from one geographic region to the next due to differences in land prices. While it is possible to have a nice, large house in many rural areas for \$250,000 (a little above the national average for home prices), in large cities like New York and San Francisco, it is hard to find decent housing for purchase at anything close to this price.

Orshansky actually developed a second set of poverty thresholds for rural families on the assumption that people living in rural areas tend to grow their own food, which costs less than purchasing food at the grocery store. The problem Orshansky addressed directly was the lower cost of food. Given her food multiplier, she was also addressing, in part, the lower cost of housing and the overall lower cost of living in rural areas. With time, as fewer American families live in rural areas, this adjustment has become less important, and it has been dropped as part of the methodology for calculating poverty in the U.S. What has changed, however, is the need to address the higher cost of living in urban areas, especially those located on the West Coast and in the northeastern part of the U.S.

The National Research Council (Citro and Michael 1995) found that area population matters most when it comes to housing costs. In general, the larger the region where one lives, the higher the cost of living. Unfortunately, at present, there are no good methodologies for measuring the cost of living in different regions.

6. The Luxembourg Income Study

Once we settle on a good definition, probably the most important requirement for a good measure of the middle class is that we have good data.

The Luxembourg Income Study is an excellent data source for measuring the size of the middle class and examining changes in the middle class over time.² Before the LIS was developed, studies of poverty and income

² Those interested in more information about the LIS can consult the LIS homepage at www.lisdatacenter.org.

inequality usually focused on just one country. Attempts to actually compare nations and draw lessons from these cross-national comparisons faced numerous obstacles. There were national differences in how much income was unreported and in how this problem was corrected in national statistics; countries dealt with sampling errors in different ways, and there were differences in how raw data got manipulated to reflect the demographic composition of the entire nation.

There was also a comparability problem. Income data come from national surveys conducted by different countries or tax returns filed in different countries. One big problem is that different countries may ask different questions or have different definitions of key terms. Or different countries can count different sorts of items as income for the purposes of taxation. As a result, measures of household income might differ from country to country. U.S. surveys count money income, ignoring in-kind benefits such as Food Stamps and housing vouchers. Other nations might include the monetary value of these benefits as part of family income. Likewise, the definition of a family could differ from nation to nation. As a result of all these differences, before LIS cross-national comparisons of poverty and income inequality could seem more like comparing apples and oranges than looking at similar notions of poverty or income inequality.

The idea for the LIS arose at a fall 1982 conference in Luxembourg, where problems concerning the comparability of cross-national data became obvious. The LIS was created in April 1983 to circumvent these problems as much as possible. Its goal is to employ common definitions of key income variables and household concepts, ensuring that all variables are measured according to uniform standards across countries. It has made data from different countries as comparable as possible, so that researchers are not comparing apples and oranges when they are talking about poverty or income equality in different nations. The LIS also makes similar decisions about various statistical issues when taking raw national data and extrapolating it to the entire population. As a result, researchers can be confident that the data they are analyzing has been harmonized as much as possible, and their cross-national analyses are as truly comparable as possible.

The two driving forces behind this substantial undertaking were Timothy Smeeding and Lee Rainwater. Smeeding was an economics professor at the University of Utah in the early 1980s (he now teaches at the University of Wisconsin). Rainwater was a professor of sociology at Harvard University. They obtained a grant from the Ford Foundation and the government of Luxembourg to support this project of data harmonization across the world. The government of Luxembourg agreed to house the LIS-- originally in Walferdange, just outside Luxembourg City. The LIS headquarters is now in Luxembourg City. Smeeding served as executive director of the LIS until 2006, when Janet Gornick, a professor of sociology at the City University of New York assumed this responsibility.

By the middle of 2015, 48 countries were part of the LIS. Most industrial nations are part of the LIS database, as are a number of lesser developed countries. In most cases LIS data come from national surveys of households undertaken in most countries on a regular basis. In a few cases national data come from annual tax returns because there are no regular national surveys. Since the two methods are different and may lead to results that are not strictly comparable, we confine ourselves to developed countries where data comes from national surveys.

After a great deal of work, the LIS now has extensive data stretching over a long period of time for most industrial countries. Data are also available for a large number of lesser-developed nations. Country data are organized around particular years, and are called “waves.” Each wave is now around years apart, with Wave #1 beginning in the early 1980s. The most recent wave with a large set of available country data, Wave #8, covers 2010 (plus or minus one year). Historical data going back to the 1970s exists for a few countries. The first Wave #9 datasets (centered around 2013) were just beginning to come online during the summer of 2015.

LIS data for each country at each point in time contains extensive detail regarding income sources as well as a wealth of socio-demographic information. Income data includes information on wages, property income, lottery winnings, in-kind benefits, alimony and child support, and numerous government cash transfers. There is also information on several different tax payments made by households. Household income can therefore be measured by including in-kind benefits and subtracting taxes. Demographic information is available on the education level of the household head and spouse, the industries in which they are employed and their occupations, the age of all household members, where in the country they live, their immigration status, and their ethnicity. This will enable us to examine things like how the probability of being middle class varies with age and how various government benefits impact middle class status.

As intended when this database was established, the LIS has been used extensively to measure poverty and income inequality across nations. In what follows we use the LIS to measure the size of the middle class in the United States and to compare the U.S. middle class to the middle class in other developed nations.

7. The Size of the Middle Class in the U.S.

For the U.S., LIS data originally came from annual Census Bureau household surveys. These surveys are used to estimate median household income, poverty rates and distributional measures (such as the Gini coefficient) for the U.S. The data was then “lissified” to make it as comparable as possible to data from other countries.

Data, of course, are never perfect. One problem with income data collected through a survey is that people can lie, can misunderstand a question, or they can misremember their income from the previous year. Another problem is that the data exclude people not living in households—e.g., students away at college, military personnel and those in hospitals and shelters. Yet another problem is that Census Bureau survey data (and most all survey data) exclude certain types of income—lottery winnings, capital gains from investments and home sales, non-cash government transfers (such as housing vouchers), as well as employer provided non-cash income (such as health insurance). It also excludes items (such as the imputed rent from owner-occupied housing) that most economists believe should be included as part of income, and would be counted if the Census Bureau data followed the Haig-Simons definition of income (Haig 1921; Simons 1938, p. 49).

These problems are serious, but they are only practical problems to the extent that things get much worse or much better over time. If the errors are virtually the same all the time (say, they are always off 10 percent) the figures that the government reports will not be precise measures of income, but they will be good index numbers and will show how things are changing in one nation over time and how things differ from one country to the next. Unfortunately, it is not clear how great this problem is, how it has changed over time, and

how it differs from nation to nation. Still it is the best dataset we have, especially for doing cross-national comparisons. We do need data, for reasons identified at the very beginning of this paper. As Harvard economist Zvi Griliches (1986, p. 1509) notes, “Available economic statistics are our main window on economic behavior. In spite of the scratches and persistent fogging, we cannot stop peering through it and trying to understand what is happening.”

Our measure of the middle class starts with median household income. In 2010, the Pew Research Center (2012) asked people not whether they are middle class, but how much income was necessary for a typical four-person family to be middle class in your neighborhood. While the numbers varied by individual, by location, and by individual characteristics (e.g., those in the Northeast and those making more money tended to give higher responses), the median response of \$70,000 seemed to be a focal point, with most responses clustering around this figure. Wider Opportunities for Women (2010) estimated the budget needs of households with two working parents and two children (plus a few other household types). For 2010, it estimated that their four-person family required \$68,136 to have some degree of economic security. This figure includes some savings for retirement and for emergencies. I take this to represent what is needed to have a middle-class income in the United States in 2010. Further support for using this figure comes from U.S. Census Bureau figures, which found that the median income for a family of four in the U.S. in 2010 (the year of the Pew and WOW surveys) was \$68,274.

From these surveys Pew also found that a large percentage of responses fell between two-thirds and twice the median income. Some of these differences were due to differences in perception of what was necessary to be middle class in one area and some of these differences were due to differences in the cost of living across various different locations. For this reason, Pew takes the middle-class income range for 2010 to be between 67 percent and 200 percent of the \$70,000 household income for a family of four, or between \$46,900 and \$140,000. This seems to be a reasonable income range. It is substantially (more than twice) above the Orshansky poverty thresholds and the top figure does not seem to be so high that we would consider this four-person family to be wealthy.

In what follows we focus on disposable household income (i.e., after-tax household income) rather than household income because people care about what they can spend, and it is disposable income that is used to purchase the necessities and luxuries that make up a middle-class standard of living. Also, as noted above, the failure to account for taxes has been a major criticism of the Orshansky poverty definition and is a legitimate concern among most scholars who study poverty.

The percentage of middle-class households in the population will be the percentage of all households whose disposable income falls within the income range deemed to be middle class. A three-step process gets us this range.

Following the WOW and Pew survey results we start with the median income for a family of four, and the income range for such a family to be considered middle class as falling between 67 percent and 200 percent of median income. We assume that \$70,000 comes from rounding up the median household income for a family of four (either by Pew or by the people surveyed), and so we use the actual median household income as our starting point. This has the additional advantage of letting us use the median household income for a family of

four as our starting point each year for each country when measuring the size of the middle class. Pew, unfortunately, does not undertake this survey every year and did not undertake such a survey until recently. As a result, there is no historical data on this going back to the 1980s or earlier and no time-series data that is available to use. Nor is there cross-sectional data that we can rely on. Likewise, WOW data is limited for the United States and does not exist for other developed countries.

For households of other sizes, we adjust median income for a family of four by the Orshansky thresholds to get equivalent household income for families of different sizes. This also follows the Pew methodology for obtaining middle-class income ranges for households of other sizes, since they did not survey households about middle-class income needs for households of other sizes. Again, we take middle-class households as those (of a given size) whose incomes fall between 67 percent and 200 percent of the median income for (a household of that size).

Table 1 sets out middle-class income ranges for 2013 based on median household income for a family of four, the Orshansky adjustments for households of different sizes, and the Pew ranges for middle-class incomes. These all lie substantially above (more than twice) the poverty line for these households—an important criterion for a good measure of the middle class (Horrigan and Haugen, 1988).

Table 1: Middle-Class Income Range for 2013

HOUSEHOLD SIZE	INCOME RANGE (Household Income)
1	\$28,569-\$85,281
2	\$37,140-\$110,865
3	\$45,710-\$136,449
4	\$54,281-\$162,033
5	\$62,852-\$187,617
6	\$71,422-\$213,201
7	\$79,993-\$238,786
8	\$88,564-\$264,370
9+	\$97,135-\$289,954

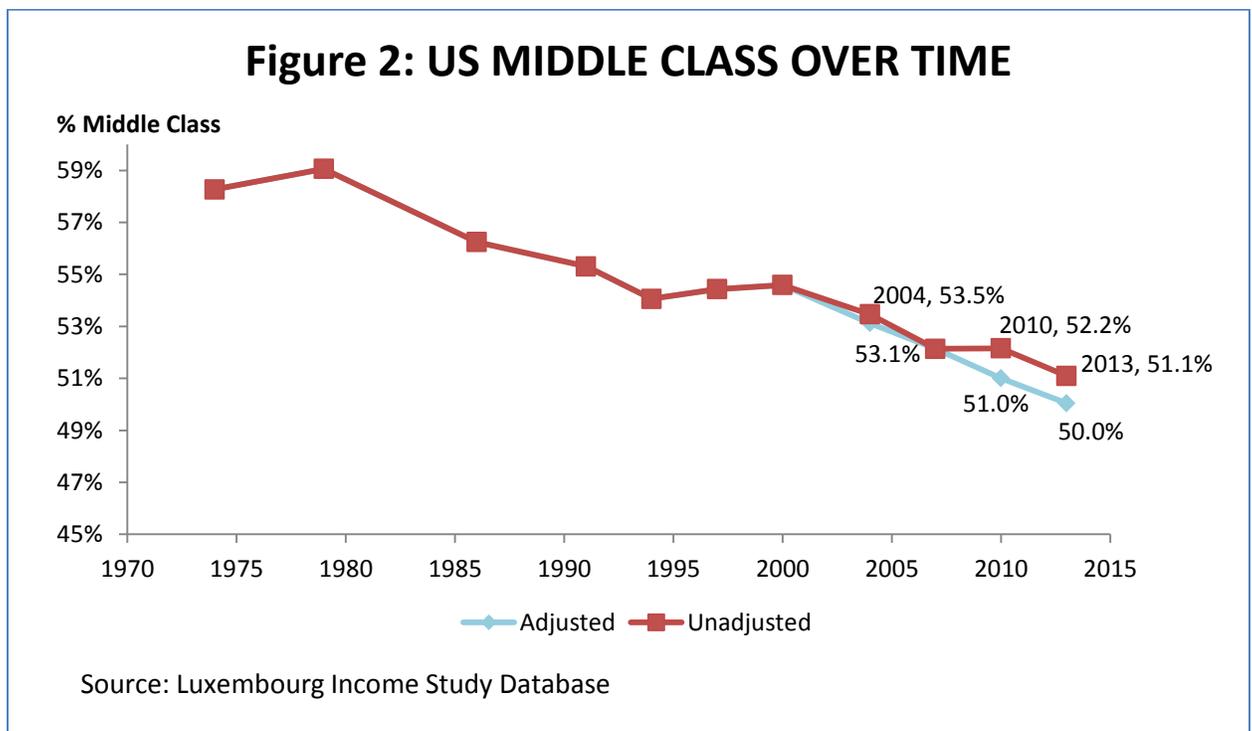
Source: See Paper

As noted above, the important issue is not household income but disposable income. While people care about what they make, what households get to keep determines their standard of living. The main difference between these two measures of income is taxes, and taxes can change from year to year and are different from one country to the next. So we convert household income to disposable income and then compute the percentage of households whose disposable income falls within two-thirds and twice median disposable income.

One objection that could be raised about this approach is that we are defining middle class in terms of relative income for a particular year; to be middle class means having an income that is somewhere near median household income (adjusted by household size). Our methodology does not account for what happens when median household income declines—as occurred during the Great Recession. In such situations, it is likely that people will feel they have fallen out of the middle class because their income fell from their higher levels that obtained only recently; the fact that average incomes also declined will provide little comfort or compensation.

To deal with this we make one minor adjustment to our numbers. When real median income falls, we use the highest real median income before that, and recalculate the size of the middle class using that higher median income and then following our other steps. We continue in this vein until real median income recovers to its previous level.

Figure 2 plots the percentage of middle-class households in the U.S. for the years between 1974 and 2013, using all available LIS data. It is fairly consistent with the numbers in Figure 1 and shows that the middle class in the U.S. has declined fairly continuously since the early 1980s. The size of the middle class held relatively stable during the economic boom of the late 1990s but has dropped substantially since then, from around 55 percent of all households to around 51 percent of all households in 2013.



Finally, Figure 2 adjusts household income upward after it falls during times of recession to account for the income drop of all households. The main adjustment takes place in 2010—after the Great Recession. We see that for 2004, there was a slightly smaller middle class due to the recession of the early 2000s (March–November 2001). Things got much worse during the Great Recession, which officially began in December 2007 and officially ended in June 2009. Even as late as 2013, jobs and income levels had not recovered to pre-

recession levels. In 2010, median household income for a family of four was \$4,800 below the inflation-adjusted figure for 2007. Taking this into account reduces the size of the middle class by 1.2 percentage points. In 2013, median household income for a family of four was more than \$5,100 below the inflation-adjusted figure for 2007. Using the higher real income figure from 2007 would have reduced the size of the U.S. middle class to just 50 percent in 2013.

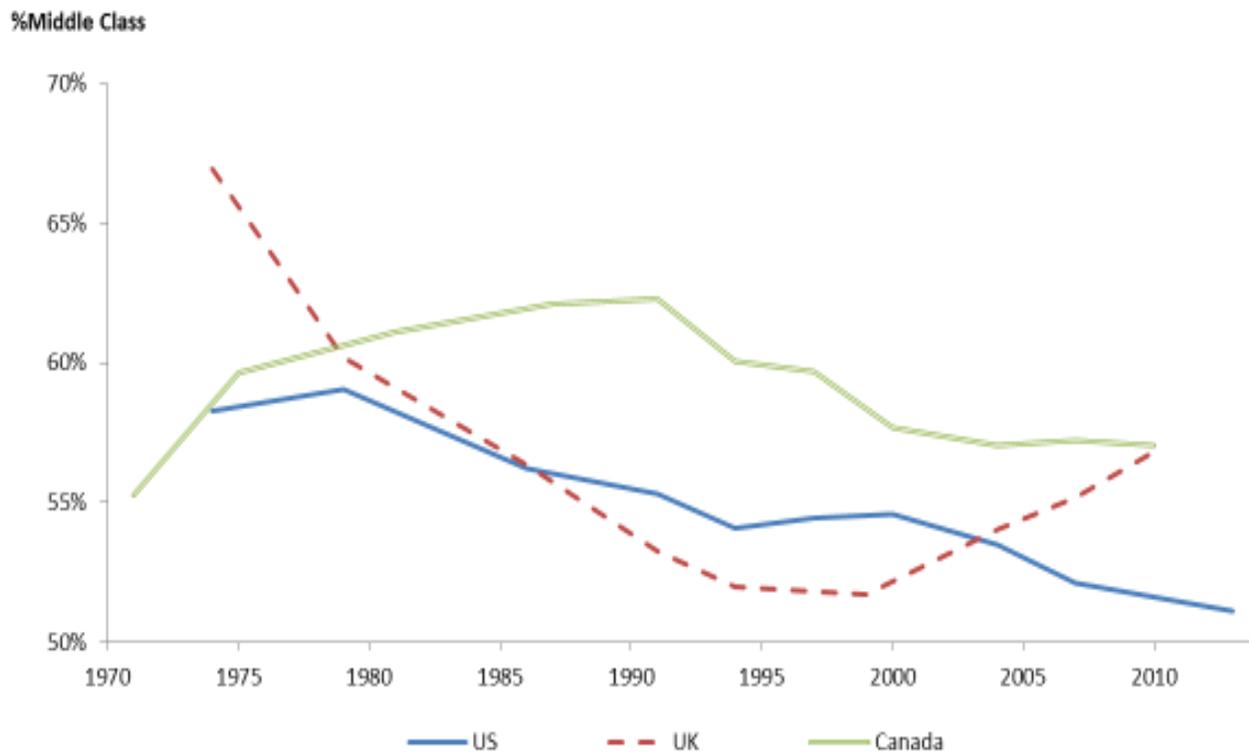
8. The Middle Class in Other Developed Countries

What we did for the U.S. we can do for other countries in the LIS database. This section looks at just a few developed nations but makes no adjustments for falling median incomes as a result of recession. These countries can be divided into three groups, based on the framework laid out by Gøsta Esping-Andersen (1990)—Anglo-Saxon nations, Nordic countries, and Continental Europe. Figures 3, 4 and 5 show the size of the middle class over time for several developed countries that fit into each of these three classifications.

We provide just a little bit of commentary on these results here.

First, the middle class is smallest in the three Anglo-Saxon countries, around 55 percent to 60 percent of all households in the 2000s. The major exception here is the U.S., where the middle class has shrunk to nearly 50 percent in the early part of the 21st century. In addition, as Figure 3 shows, the pattern of change varies over time from one country to the next. In the U.S. there has been a nearly continuous decline in the size of the middle class (with a short breather in the 1990s). In the U.K. the middle class fell sharply during the 1970s and 1980s as social security and other government benefits were cut substantially (Atkinson 2015, p. 205). In the 2000s, during the Tony Blair-Gordon Brown era when Labour held power, some of these benefit cuts were reversed and the British middle class regenerated. In contradistinction to the U.K., the Canadian middle class grew in the 1970s and 1980s before declining in the 1990s and 2000s, which includes times when the Conservative Party ruled Canada and times when the Liberal Party ruled Canada.

Figure 3: MIDDLE CLASS, ANGLO-SAXON COUNTRIES



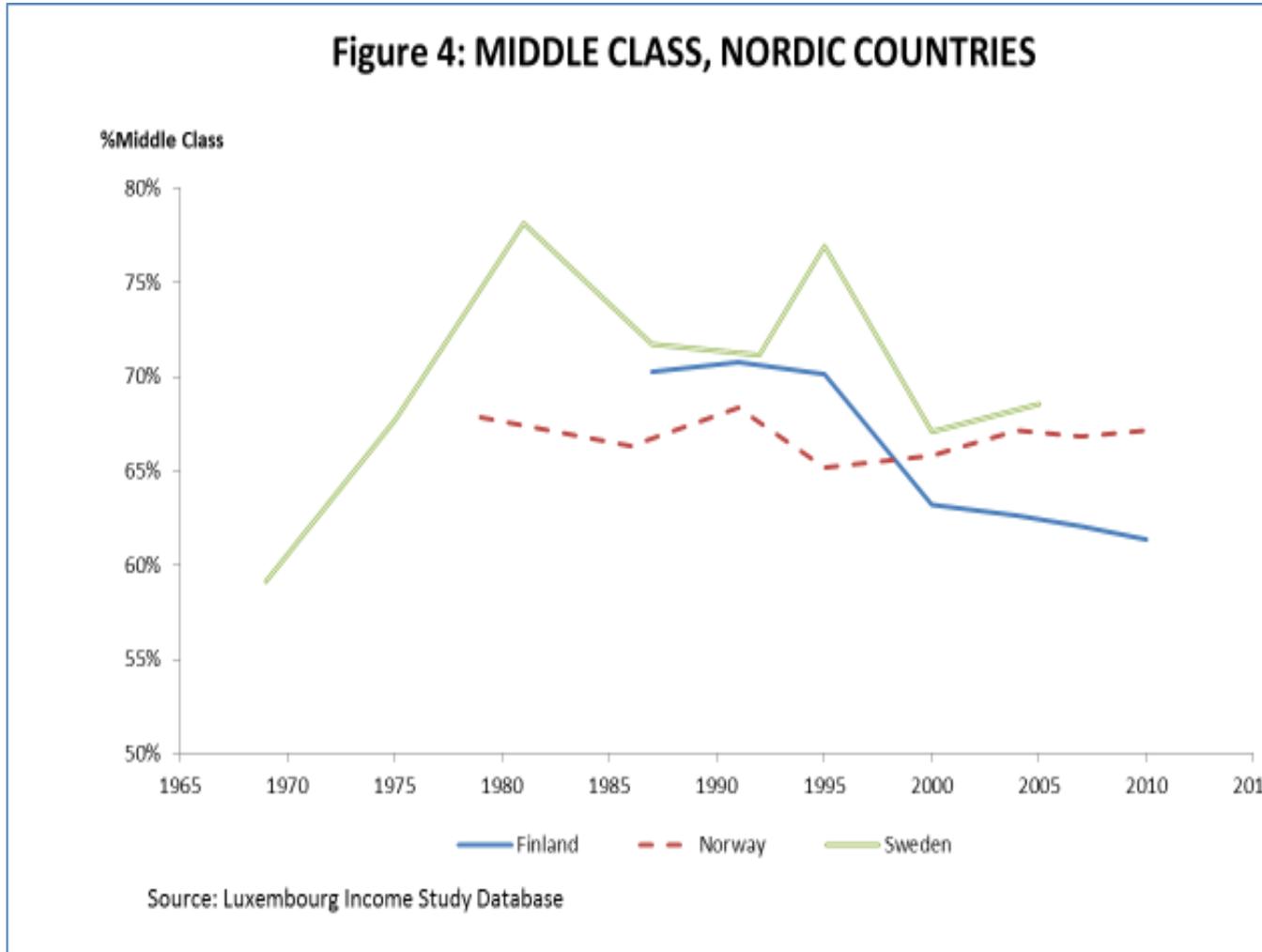
Source: Luxembourg Income Study Database

The Canadian figures for the 2000s correspond fairly well with survey data that ask people to define their social class. According to Frank Graves (2013), in 2004, a bit more than 60 percent of Canadians described themselves as middle class. And in 2010 a bit less than 60 percent did so; this is roughly equal to our estimate that 57 percent of Canadian households were middle-class households in both years.

At the other end of the continuum, the Nordic countries tend to have the largest middle class, with around 65 percent to 70 percent of households falling into this category.

The case of Finland is rather interesting and unique. In Finland there is a large drop in the size of the middle class starting in 1995. At this time over 70 percent of households were middle class and Finland had one of the largest middle classes in the world. Since the 1990s the Finnish middle class dropped to 62 percent by 2010. This decline stems from several factors. First, there was the bursting of a housing bubble in the early 1990s followed by the economic collapse of its neighbor and key trading partner, the Soviet Union. Today Finland faces many of the same economic challenges that Greece is experiencing. It is running a trade deficit with Europe but cannot devalue its currency because it adopted the Euro in 1999. As a result, it cannot sell enough goods to other Euro nations, and thereby create adequate jobs and incomes for its workers. Taken together,

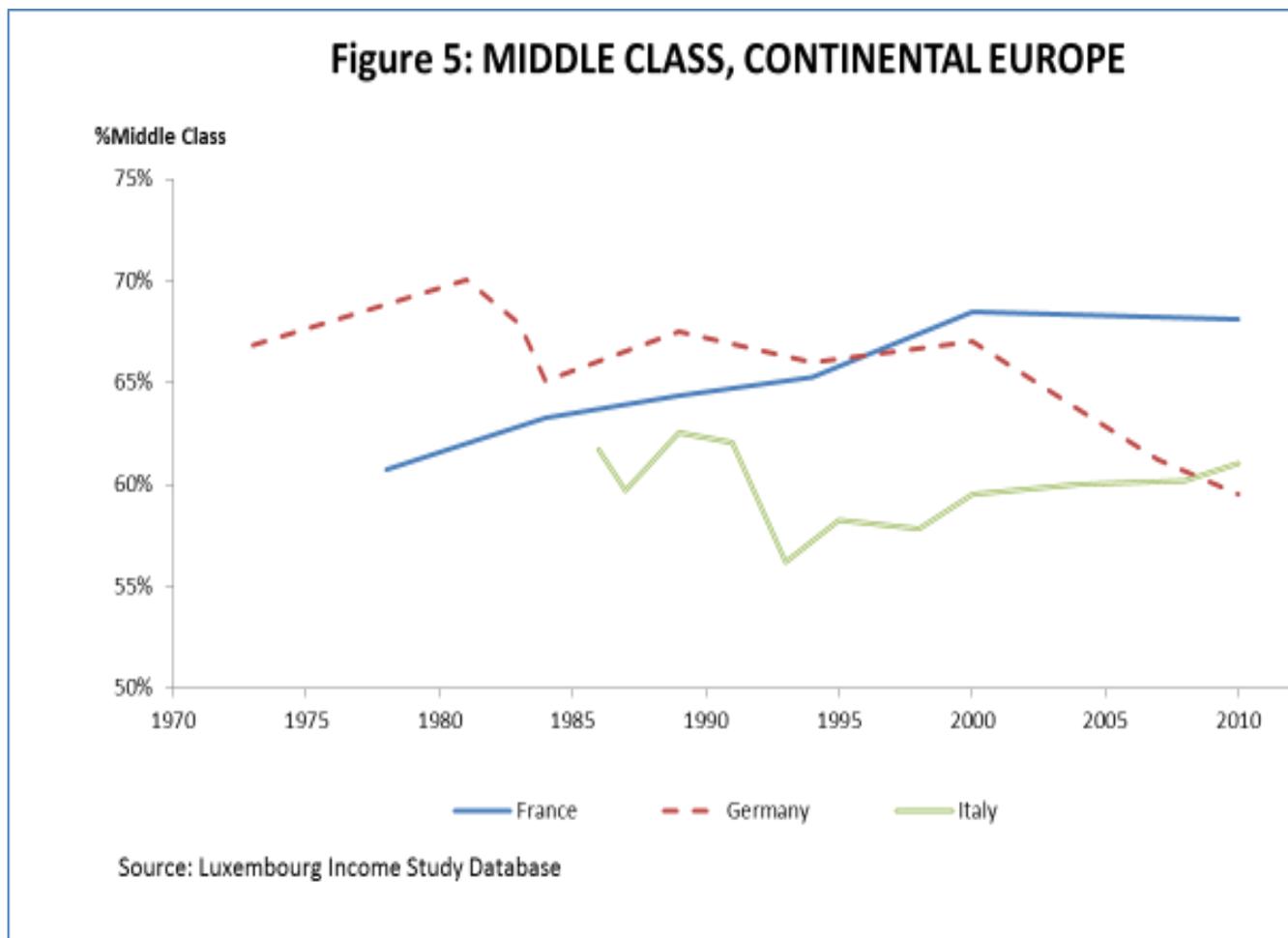
these two factors can help explain why Finland has been looking more and more like Continental Europe rather than like Norway or Sweden.



Norway and Sweden continue to do better than the other developed European nations, and they continue to have a large middle class. In the case of Norway, the size of the middle class has fluctuated a little, but over a period of three decades has remained relatively stable at somewhere between 65 percent and 70 percent. Sweden has seen somewhat large fluctuations in the size of its middle class over time. Exceeding 70 percent in the 1980s and 1990s, the Swedish middle class fell to a bit under 70 percent in the early 2000s. Unfortunately, at present, there are no data available for Sweden in the late 2000s, so for now we don't know the impact of the Great Recession on Sweden's middle class.

The nations of Continental Europe lie between the Anglo-Saxon and the Nordic countries. The middle class in France, Germany and Italy (the three largest continental economies) averages around 60 percent to 65 percent of all households.

One needs to be somewhat cautious when examining the data for Germany and drawing any conclusions, since prior to reunification in 1990 the data included only what was then West Germany. Afterwards, the German data incorporated the former East Germany. Still, one can discern some trends or changes here. The German middle class was approximately 65 percent of all households in the 1980s. Since then it has slowly fallen to around 60 percent of all households. In Germany we see a clear decline in the size of the middle class during the 2000s.



France runs contrary to the German trend and the trend in a majority of our nine countries. In France, the size of the middle class seems to grow continuously. It increased from around 60 percent in the late 1970s and early 1980s to 65 percent in the 1990s, and then began to approach 70 percent in the 2000s. There is no sign

of any middle-class squeeze or any decline in the French middle class over several decades of data or during bad economic times.

Italy, too, seems to run counter to most other countries. In Italy, the middle class has remained relatively constant, at around 60 percent of all households from the 1980s to the 2000s. There is some fluctuation in the 1980s and 1990s but great stability in the 2000s—even after the start of the Great Recession.

9. Summary and Conclusion

This paper has surveyed some past attempts at defining “the middle class.” It then set forth a pragmatic approach to measuring the middle class, using the LIS to measure the size of the middle class in the U.S. and other developed nations.

Our empirical work contains several key findings. First, since the 1980s the U.S. middle class has been slowly shrinking. From nearly 60 percent of households in the late 1970s, the U.S. middle class declined to a bit more than 51 percent of all households by 2013. Things are even worse for the U.S. if we control for lower median incomes by not lowering the income standards for being middle class as a result of economic recessions and large income drops.

Second, the fate of the middle class over the past several decades has been very different in many of the developed nations we examined. This casts doubt on the two major economic explanations for rising inequality in the world economy starting in the late 20th century. If the phenomenon of rising inequality, and by implication a declining middle class, was due to globalization (Friedman 2005, Wood 1994) or technical change (Bound and Johnson 1992, Tinbergen 1975) we should see similar patterns in all developed nations, since these are all economies that have substantial economic relationships with each other. All nine nations trade with each other, and they are part of a world economy in which technology gets transferred around the globe rapidly. If these are the main reasons for changes in the size of the middle class, we should see similar results for all the nations in our study. But we have seen that this is not the case. Hence, we need to look more at what is going on in different nations and less at global forces.

From our cross-national results it appears that institutional factors matter. Some countries do better than other countries in both good times and in bad times. These differences may be the result of demographic factors such as the age distribution of the population, the tendency to marry, stay married, and have children, as well as life expectancy and immigration policy. Finally, they are also likely the result of different types of economic and social policies employed in different countries.

Third, the middle class does particularly poorly during recessions. We can see this in the decline of the middle class throughout the developed world in the late 2000s. The data presented in Figures 3 through 5, and the discussion in Section 8, indicate that macroeconomic conditions seem to impact the size of the middle class. Most, although not all, nations experienced a drop in the size of their middle class as a result of the Great Recession. Furthermore, as Figure 2 shows, if we control for falling median household incomes during national recession when defining and measuring the middle class, the result is even starker. Given the actual

experiences of several countries, it seems that national policies can make a difference when it comes to the impact of economic recession and high unemployment on the size of the middle class.

There is still a great deal of work that needs to be done. A National Academy of Sciences report (Citro and Michael 1995) contained two main recommendations concerning the official U.S. measure of poverty. It suggested varying poverty thresholds by geographic area to take account of different costs of living in different parts of the country. This is one important next step forward in measuring the middle class. The other important next step is to expand the middle class dataset presented here so that it includes more countries (and with time more years for existing countries). Last, but not least, we need to begin studying what factors impact the size of the middle class within nations from one time to the next.³

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