Where are the Middle Class in OECD Countries?

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The US presidential campaign has highlighted the conditions of the middle class and policies that could improve their well-being. President Obama even introduced middle-class economics – "…the idea that the country does best when everybody has got a fair shot, everybody is doing their fair share, everybody is playing by the same rules." Recent headlines suggest that fewer people in the US are identifying with the middle class (see PEW (2016) and Newport (2015)), and research suggests that, using income as the measure, there has been a decline in the middle class (see Rose (2016) and PEW (2016)). Research in Europe demonstrates a similar phenomenon – a shrinking middle class (see Kharas (2010) and Thewissan et al. (2015)). While there is wide agreement that the middle class has been shrinking in the US, some suggest that it is because of an expanding upper-middle class and not an expanding lower class (or working class). OECD publications also highlight this difference, focusing on the expanding middle class in developing countries (like China) with a shrinking middle class in OECD countries.

US official statistics show that real median household income has remained flat for over a decade. Many recent studies have suggested a recent middle class squeeze – both a shrinking middle class and a decrease in their incomes. Recent studies (Gornick and Jantti (2013)) find that this shrinking of the middle class is occurring in many developed countries. In many countries this fall in the middle class is due to households moving up the income distribution, while in some countries the fall in the middle class is accompanied with an increase in poverty. These changes in the size and composition of the middle class also change over recessionary periods, with the economic well-being of both the bottom and middle falling behind those at the top.

Boushey and Hersh (2014) demonstrate the importance of the middle class for economic growth and overall well-being, stating: “A strong middle class supports inclusive political and economic institutions, which underpin economic growth.” In Europe, OECD reports that “…middle classes are believed to support democracy and progressive but moderate political platforms. Strong middle classes can influence economic development through more active participation in the political process, expressing support for political programs and electoral platforms, in particular those that promote inclusive growth.” Even President Obama stated: “America's middle class is the economic engine of this nation.”

We use the Luxembourg Income Study Database to evaluate some of the OECD member countries (about 28 countries) for the past 3 decades (from late 1980s to 2010). This time period spans the Great Recession, which will allow us to measure the change in the size and composition of the middle class. We use a simple definition of the middle class – between half and twice each country’s median disposable household income. We adjust each country’s income by PPPs and pool all country data for similar years to create a large LIS/OECD database that provides a sample of 19 OECD countries. Most studies of state-level distribution in the US, compare the distribution of the states to the overall distribution for the US (see PEW (2016)). However, most European studies compare the distribution of countries separately. Our paper creates an overall distribution for these 19 countries. Future work includes simulating distributions using the summary statistics in the WIDER database for some OECD countries that are not included in the LIS data.

Using this database, we can determine the OECD-wide income distribution, median and middle class. We evaluate how the OECD middle class has changed over the past three decades and how each country’s middle class (and the identifying parameters) compares to the overall OECD middle class. In particular, we find that changes in the size of the middle class depend on which measure one uses – country-specific or global middle class. We can see which countries are more likely to be in the OECD-wide middle class and which people (from which countries) are more likely to move up or move down the income ladder.

Background

One of the first mentions of the middle class in the US occurs in Walt Whitman's 1858 paper: "The most valuable class in any community is the middle class, the men of moderate means…" (quoted from Blumin (1989)). One of the first mentions of a similar concept is in the late 17th century referring to the "middling sort." The first presidential campaign to mention "Middle class" was in 1908 by nominee, William Howard Taft, in 1908. According the NY Times, the term was not mentioned again until 1984 by Walter Mondale (see Willis (2015)).

The PEW study (2016) distinguishes between the middle income and middle class: "The terms 'middle income' and 'middle class' are often used interchangeably. This is especially true among economists who typically define the middle class in terms of income or consumption. But being middle class can connote more than income, be it a college education, white-collar work, economic security, homeownership, or having certain social and political values. Class could also be a state of mind, that is, it could be a matter of self-identification" (see also Hout (2007)). Today's US presidential campaign continually mentions the middle class.

These quotes suggest that the middle class is defined by income, education, occupation and a sense of social status. However, most recent work examining the middle class focuses on the household income and where the household is located on the overall distribution. Even though some research use the middle three quintiles of the distribution (Piketty (2014) uses the 3rd and 4th quintiles), most use a more absolute measure focusing on a relationship to the median income. We follow Atkinson and Brandolini

(2011) and use a fraction of the median and a multiple of the median to represent the middle class. Following Burtless (2015) We use half the median to twice the median as our definition of the middle class. Others have also used 75% to 150%, or two-thirds to twice (see PEW (2016)) (and future work will examine the sensitivity to these other definitions).

Most recent research shows the middle class falling over time with many of the countries experiencing increases in the upper classes and much as the lower classes. This is not the hollowing out of the middle class, as much as an improvement in living standards. Janet Gornick, in her presentation at the APPAM International Conference (see Gornick (2016)), used the Luxembourg Income Study database to show the range in the size of the middle class (from 42% for South Africa to 89% for Denmark), and that many countries experienced a decrease in their middle class over the past 3 decades. This result uses country specific median income; our goal is to generate an overall median and middle class.

Other research demonstrates that not only is the middle class shrinking, but they are experiencing a fall in income. The NYTimes (Leonhardt and Quealy (2014)) used the LIS to show that median incomes, while rising since 1979, have begun to flatten and decrease. And many countries are improving faster than the US, with Canada actually passing the median income of the US.

Much of the research on inequality and the middle class discusses the importance of measurement. Making international comparisons, comparisons over time, and comparisons across households requires the use of purchasing power adjustments, inflation adjustments and equivalence scale adjustments. All of these have important effects of the resulting comparisons. Deaton (2010) demonstrates the importance of the Purchasing Power Parity (PPP) adjustments when comparing poverty and inequality across countries, and Jantti and Johnson (2014) show the importance of the equivalence scale, while FIxler and Johnson (2014) show the importance of the country's price index in the growth of the median income. For the US, Rose (2016) also demonstrates that there are substantial differences in how many of the middle class are moving up depending on whether one uses the standard Consumer Price Index or the Personal Consumption Expenditure price index that yields less inflation. He states: "…the increase in the upper middle class share is 4.5 percentage points less when using the CPI-U-RS instead of the PCE."

Our paper contributes to the literature by creating a panel dataset for all countries in the LIS database with adjusted incomes using the PPP and calculates an overall LIS/OECD median income and middle class. Unlike Thewissin et al. (2015) and others, we go beyond the country specific parameters. We show that the median of the pooled sample is different than the average median. Unlike OECD (2010), we do not fix the boundaries of the middle class, but allow them to be determined by the data and the overall OECD median. As such, we can determine how much each country contributes to the middle class and the changes in the composition over the past three decades.

The Data

We use data from the Luxembourg Income Study (LIS) database (Luxembourg Income Study, 2014) to examine empirically the robustness of country rankings by inequality and poverty. While we examine the results for 30 countries distributed across many datasets (for multiple waves of data representing multiple years), we mainly focus on those 19 countries available for most of the 9 waves of LIS data. We measure median and the middle class using disposable household income (dhi), which includes all cash income, plus government transfers less government taxes. Data are adjusted for inflation using country-specific price indexes from OECD Main Economic Indicators Headline CPI, and all data are converted to US dollars using PPP adjustments from Penn World Tables.[1] Median income is estimated from individual-level data with equivalent household income combined with the individual records, inflated to

[1] PPP comes from Penn World Tables (constructed from gdpe * market exchange rate, as per documentation), LCU/Euro comes from Euro Fixed Exchange rate numbers:
http://ec.europa.eu/economy_finance/euro/adoption/conversion/index_en.htm
LCU/Euro are multiplied by the PPPs for years corresponding to the Dataset information (prior to 2004 for most countries): http://www.lisdatacenter.org/our-data/lis-database/datasets-information/. The conversion is given by (in LCU) * (1/PPP) * (1/CPI), and PPP = (LCU/EURO) * (EURO/DOLLAR).

the population level using the appropriate weights. Each wave requires estimating the medians using about 800,000 observations across the countries in the LIS database (the balanced set of 19 countries over the 4 waves includes over a million and a half observations). Appendix Table shows the countries, waves and years of data collection and which countries are included in OECD.

The Results

Using the country-specific inflation factors and PPP adjustments to obtain values in 2010 US dollars, Figure 1 shows the changes in the median incomes for all countries for all waves in the LIS data. Similar to the NY Times (Leonhardt and Quealy (2014)), most countries experienced an increase in median income, and Canada's median now similar to the US median. While all countries experienced increases in the median income between the mid-1990s to the mid-2000s, the Great Recession was experienced by most countries with falls in median income between 2007 and 2010. Since many of these countries do not have data for all years, Figure 2 shows the results for the balanced panel of 19 countries for waves 2, 5, and 8, which covers the period from the late 1980s to 2010. This figure also includes the global median income pooling all countries, which increases 35% over the period, while the weighted average of the country medians increases only 24%.

Figure 3A shows that, similar to Thewissen et al. (2015), there is a wide disparity in income growth over this period. The median income increased over 100% for Ireland, yet fell 6% for Hungary. The US experienced the lowest increase in median income of only 12% over this period. Figure 3B shows the changes in median income over the Great Recession (between 2007 and 2010). About half the countries experienced a decrease in median income (with the global median falling by 1%), and two of the largest decreases occurred for the countries with the largest increase in income over the entire period.

As shown in Kharas (2010) and Thewissen et al. (2015), inequality has increased during the past 20-30 years for almost all of these countries, with the top percentiles experiencing larger increases in income than the increases in the median income. These changes in inequality and the size of the middle class are related in that there has been an increase in polarization in many countries (see Thewissen et al. (2015)).

Using the balanced set of 19 countries, Figure 4 shows the percent of the total population living in each country, with the US comprising slightly over a third of the total population, with Mexico being the second largest country, at 14% and Germany at 10%. Using this balanced group of countries, we can determine the global median for wave 8 (as in Figure 2) and calculate the middle class – those between half and twice the global median. Figure 4 compares the composition of the overall (global) population and the global middle class. For most countries, their share of the middle class is similar to their share of the total population, with the exception of Mexico that makes up only 4% of the middle class (and 14% of the population). Germany and the US make up the largest share of the middle class, 47% total compared to 45% of the population. The Netherlands and Finland have the highest middle class/population share, while Mexico, US, Luxembourg and Israel have a smaller middle class share than their respective population share.

We can compare this global middle class to the county specific middle class. Figure 6 (bottom panel) shows the middle class share using the global median for three waves of data and the top panel shows the country-specific middle class (Figure 5 shows the composition of the middle class in 2010 for all available countries in the LIS database). The global middle class shares are more disperse ranging from 17% to 87% in 2010, compared to the range of the country-specific middle class of 60% to 90%. In addition, the global middle class for each country is uniformly smaller than the respective country-specific middle class. Some countries have very similar shares, such as UK and France. While Hungary and Mexico have much lower shares due to their lower income, and Luxembourg has a larger global middle class than the country-specific middle class. In 2010, The Netherlands and Finland have the largest global middle class, while Denmark has the largest country-specific middle class.

Using the global middle class also changes the trends in the size of each country's middle class. The percent in the global middle class remains similar over all periods, with a slight increase in 2000 (from 64% to 65%). However, the weighted average of the 19 countries' middle classes falls over the period (from 76% to 74%). Figure 7 compares the percentage point changes in the middle class between the late 1980s and 2010 using both methods. For most countries the middle class continues to grow or shrink, but for seven countries the global middle class increases while the country-specific middle class shrinks. For all of these countries, the increase in the median income is larger than the average increase. As a result, the shrinking middle class depends on whether the country's middle class is placed in a larger context. This is similar to the metro-level (or state-level) analysis in the US (see PEW (2016)). For example, there are some metro areas such as New York City that have experienced a larger increase in median income (than the increase in the US median) which could imply that their city-specific middle class shrank even though their overall middle class increased.

The right panel in Figure 4 shows the change in the composition of the global middle class. The large middle classes in the US and Germany become a larger share of the global middle class between the late 1980s and 2010, while UK's and Italy's middle class shares decrease.

Figure 8A shows the percentage of those in the lower (less than half the median), middle (between half and twice median) and upper (more than twice median) classes using the country-specific medians (forthcoming Figure 8B shows the same for the global middle class). Turning to Figure 9A, we can see whether the middle class moves up to the higher income or down to lower income group. Similar to Gornick (2016), we find that many countries experience an increase in the upper class. Comparing Figure 7 to Figure 9A, we can see that all but three countries experience a decrease in their middle class and all of these except Italy experience an increase in their upper class. However, many also experience a larger increase in the lower class than in the upper class. Figure 9B examines the changes over the Great Recession. The left panel shows that slightly more than half of the countries experience a fall in their middle class. And comparing Figure 9A to Figure 3B shows there is no clear relationship between the change in the median and the size of the middle class. Figure 9B also shows the increased inequality and polarization for many of these countries who experienced a fall in their middle class coupled with an increase in their lower class population. Comparing the left panel to the right panel shows the impact of using the global middle class definition to examine the shrinking middle class. Many of the countries still experience a decrease in the middle class, with the exception of the Czech and Slovak Republics.

Forthcoming Table uses the global middle class to show the differences in the shares in the top and bottom income groups and the changes over time. The key question is how many of these former middle class move up and how many move down, and who are they in terms of demographics. Atkinson and Brandolini (2011) attempt to create a middle class using other socio-economic characteristics such as occupation. Forthcoming Table shows the demographic composition of the middle class by age, family type, education and occupation. And the change in the composition over time, and who moves up and down.

Adding more Countries and Years

Following Datt (1998) and Lubrano (2015), we can construct the distribution of income for the missing countries using the aggregate distributions given by UN world income database, WIDER. The procedure in Datt (1998) basically regresses the cumulative shares of the income distribution (points along the Lorenz curve) with transformations of the Lorenz curve.[2] Using the estimated parameters we simulate a complete Lorenz curve and following Lubrano (2015) we simulate a cumulative density function (CDF).

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[2] Regress $L(1 - L)$ on $(p2 - L)$, $L(p - 1)$, and $(p - L)$ (where p is the percent of the population and L is the cumulative income share) to estimate the general quadratic Lorenz curve parameters a, b, and c.

For example, using the WIDER data for the US in 2004, Figure 10 demonstrates that the imputed CDF is similar to the CDF obtained directly from the LIS survey data. Using this method, we can impute the CDFs (and respective PDFs) for the countries that are not included in the LIS database. With these CDFs for all countries, we can add them together to determine the more comprehensive global median and the respective middle classes in each country. We plan to start with The Netherlands and Luxembourg in order to benchmark the method to the actual LIS data, and then move to Belgium to include it in the balanced set of countries.

Conclusion (forthcoming)

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Figure 1: Real Median Income (PPP adjusted) for all countries and waves

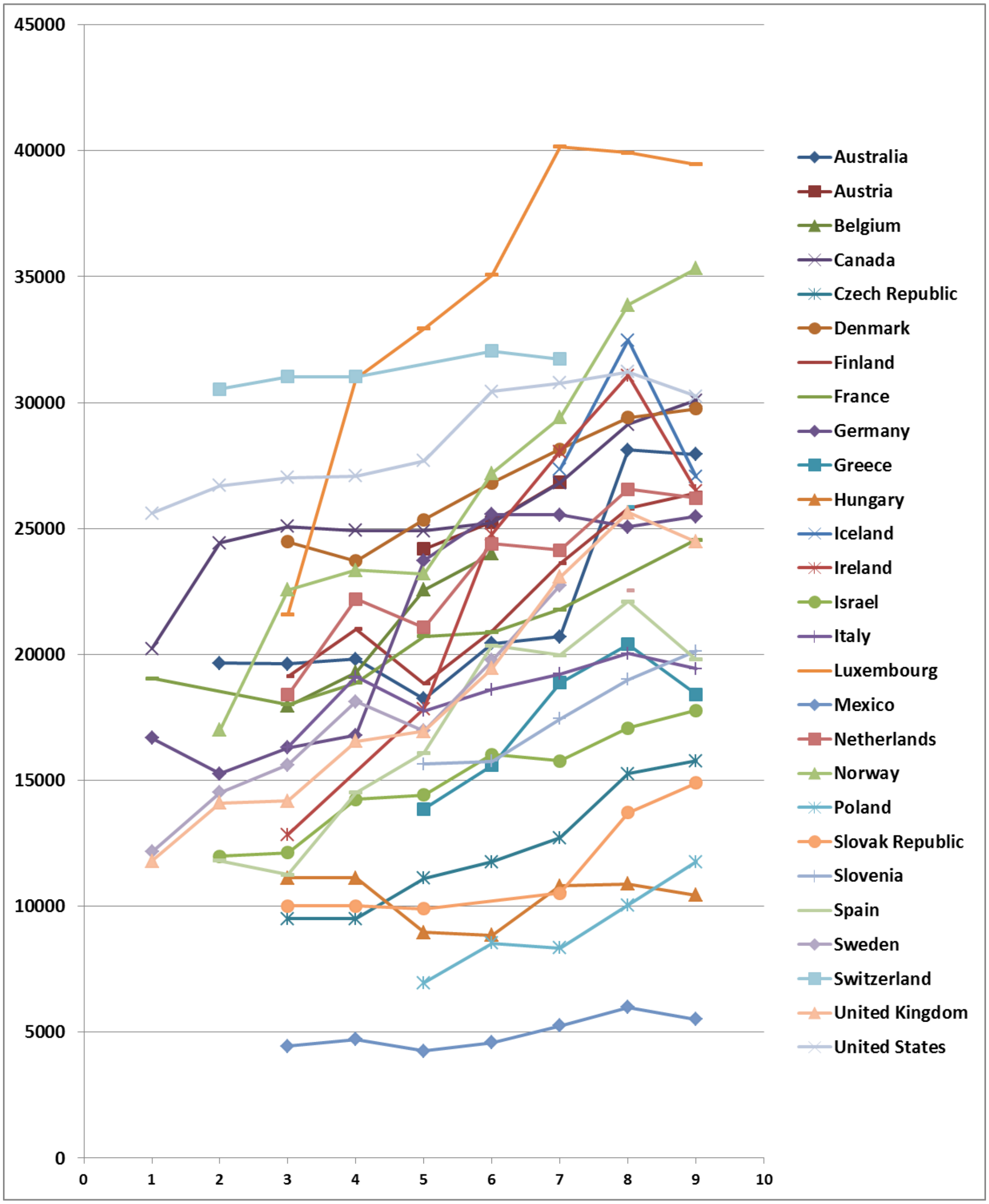


Figure 2: Median Income and Global Income for balanced set of countries, late 1980s to 2010

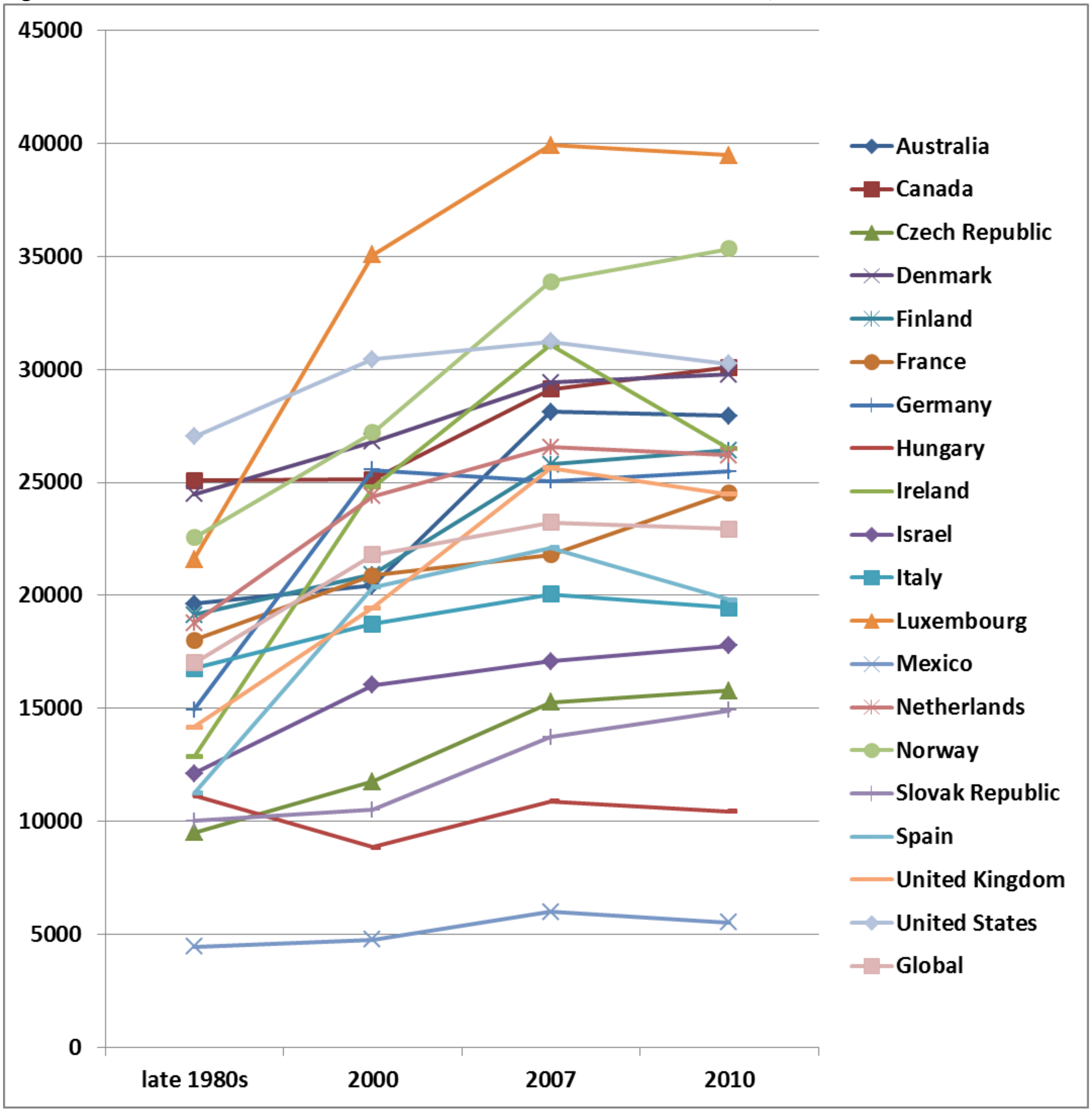


Figure 3: Percentage change in Median Income

A. Late 1980s to 2010

B. 2007 to 2010

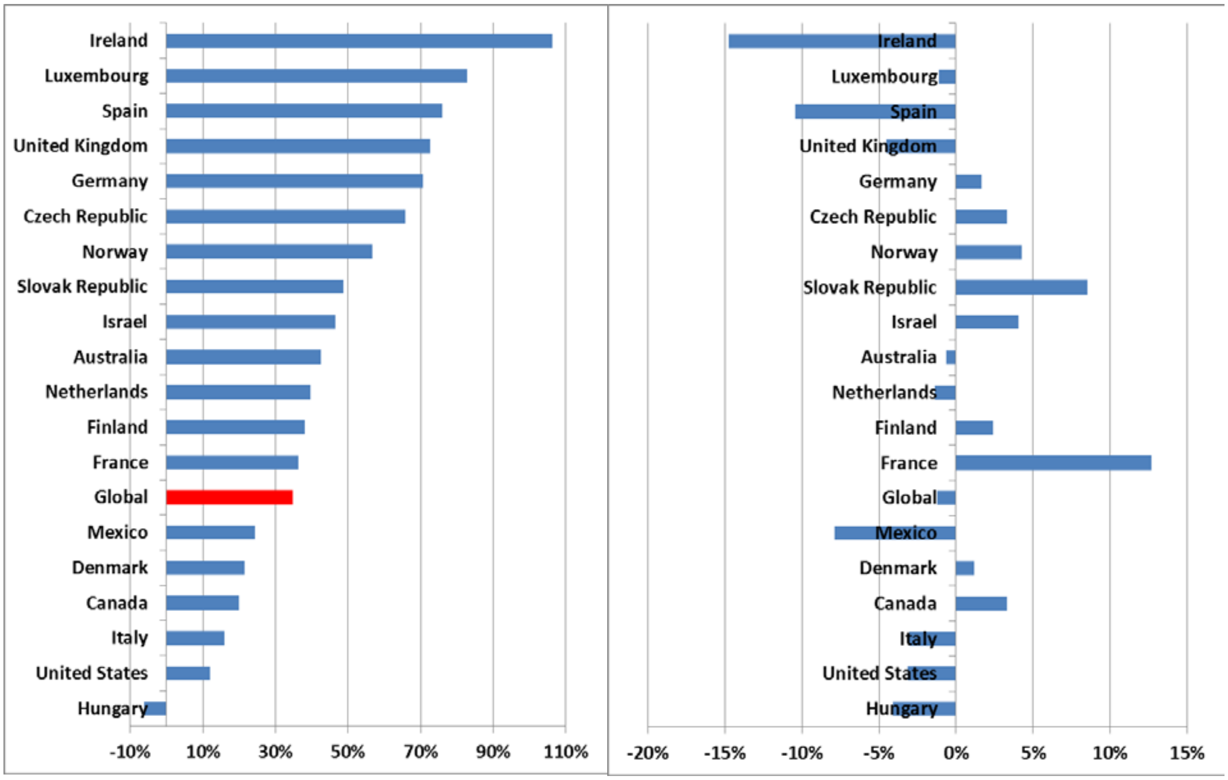


Figure 4: Composition of the population and middle class

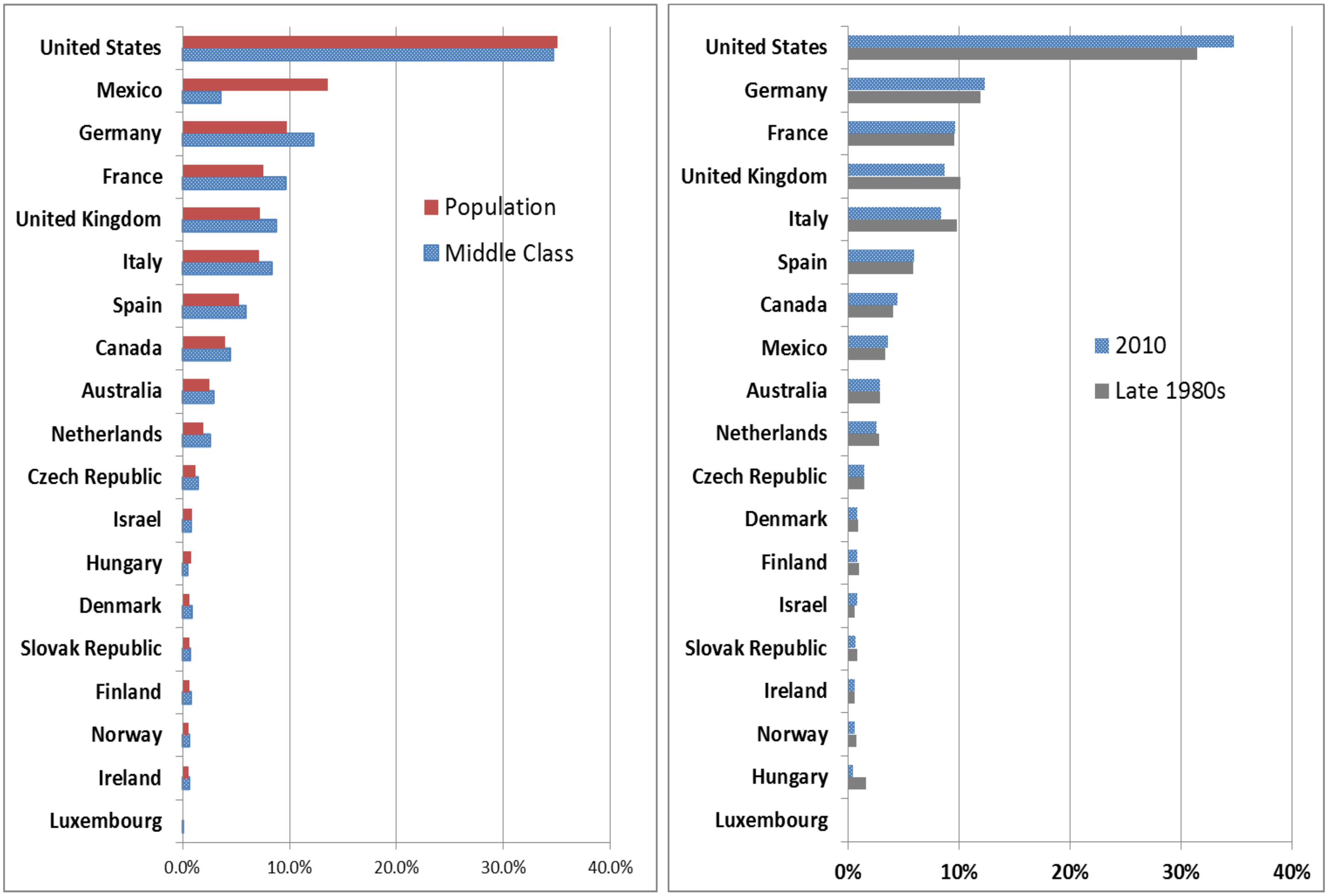


Figure 5: Size of Middle Class using country-specific medians (all countries), 2010

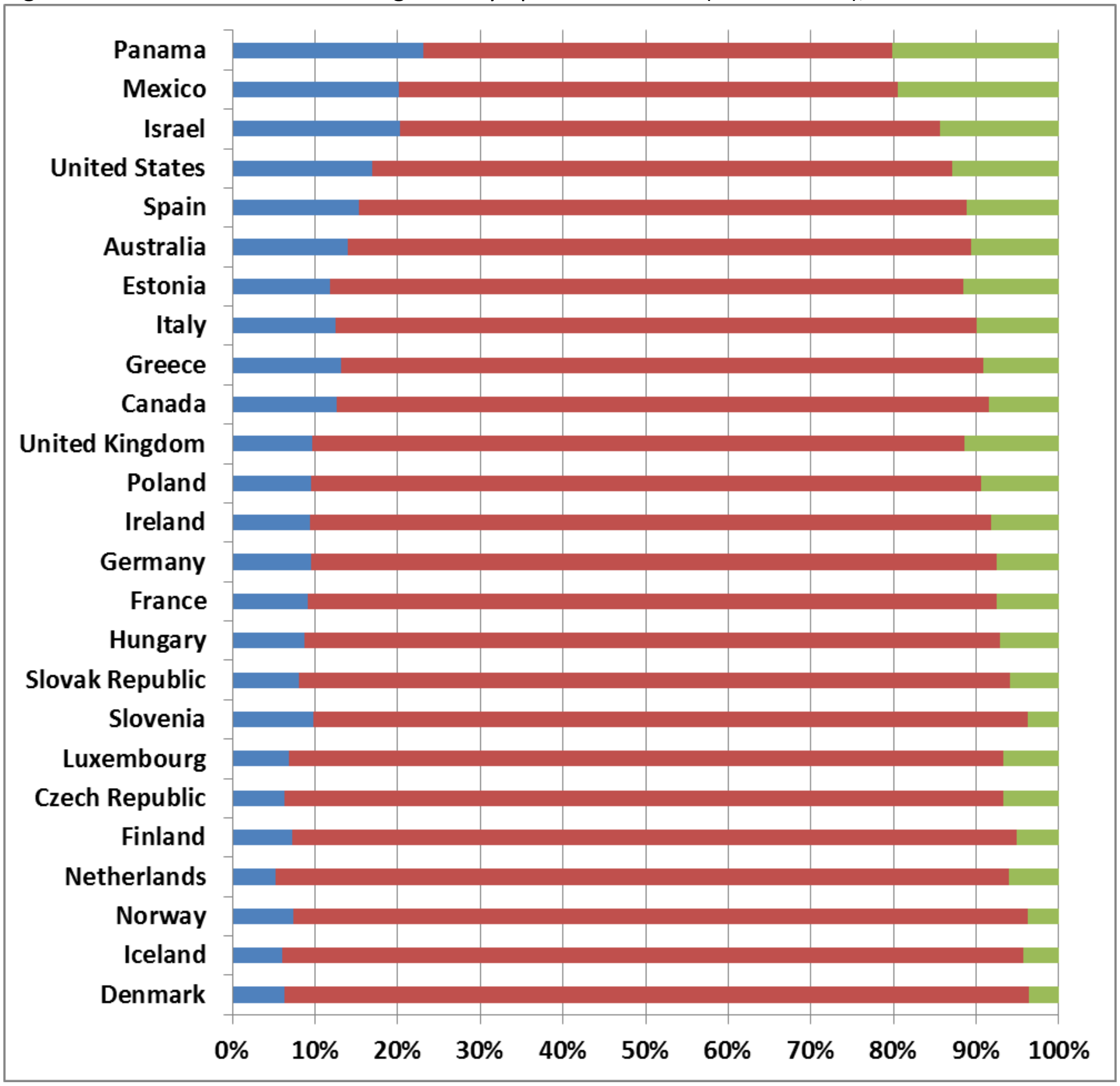


Figure 6: Change in Middle Class using global median and country-specific median

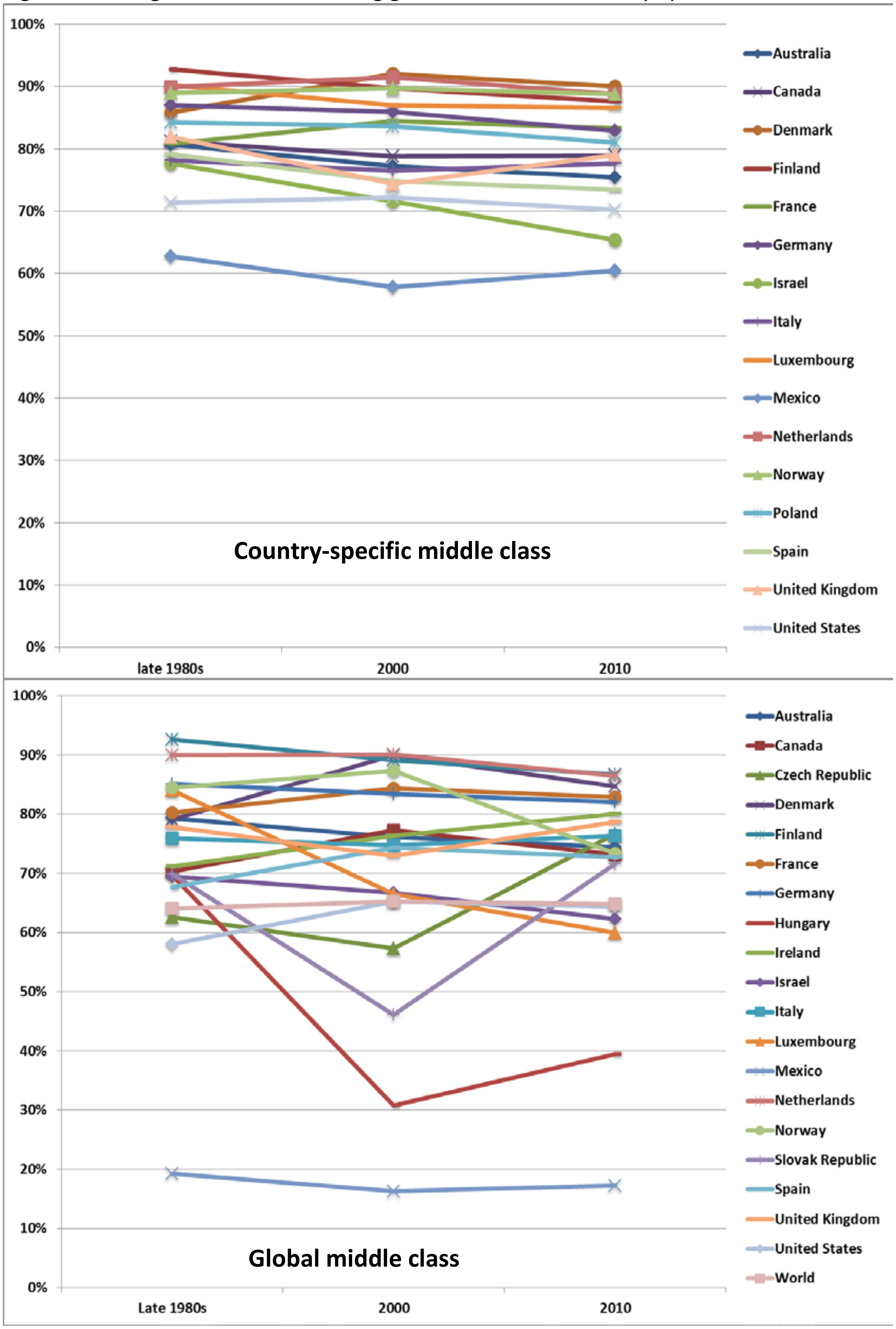


Figure 7: Percentage point change in middle class from 1980s to 2010, country-specific and global

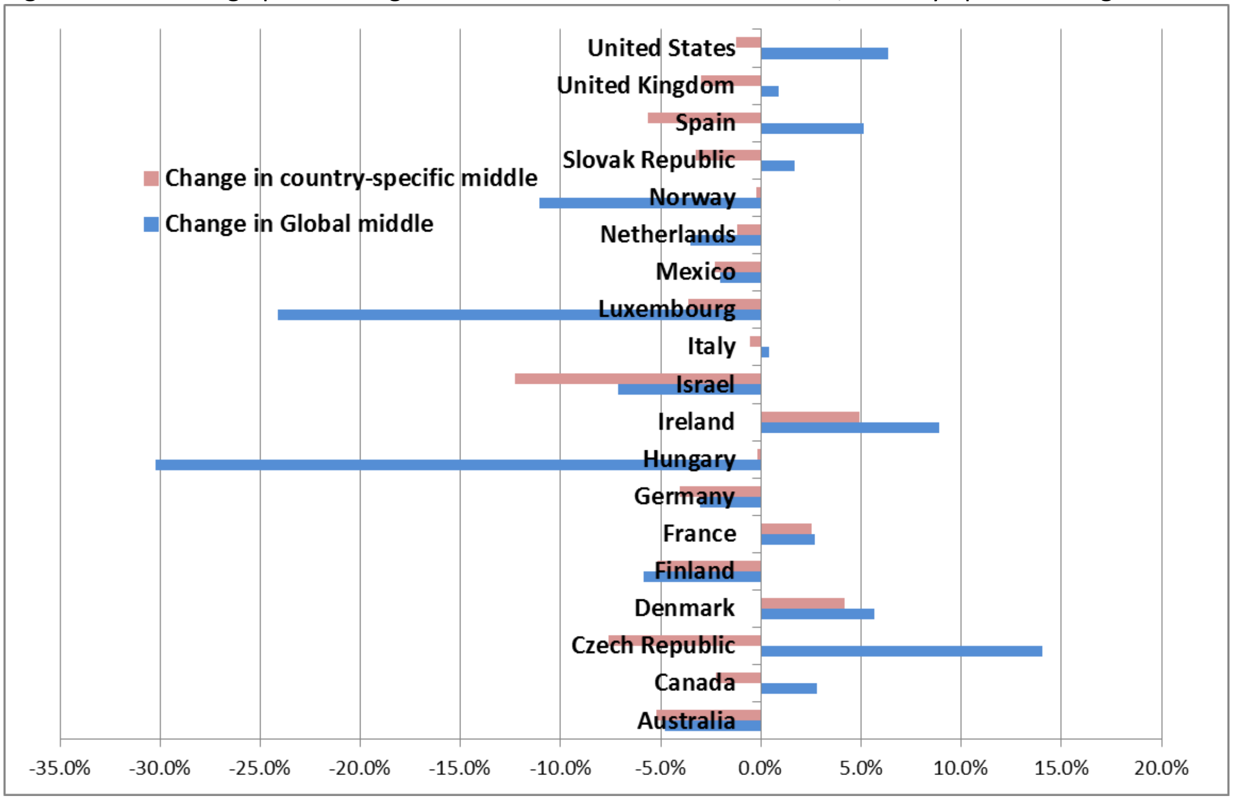


Figure 8a: Size of lower, middle and upper classes using country-specific median, 2010

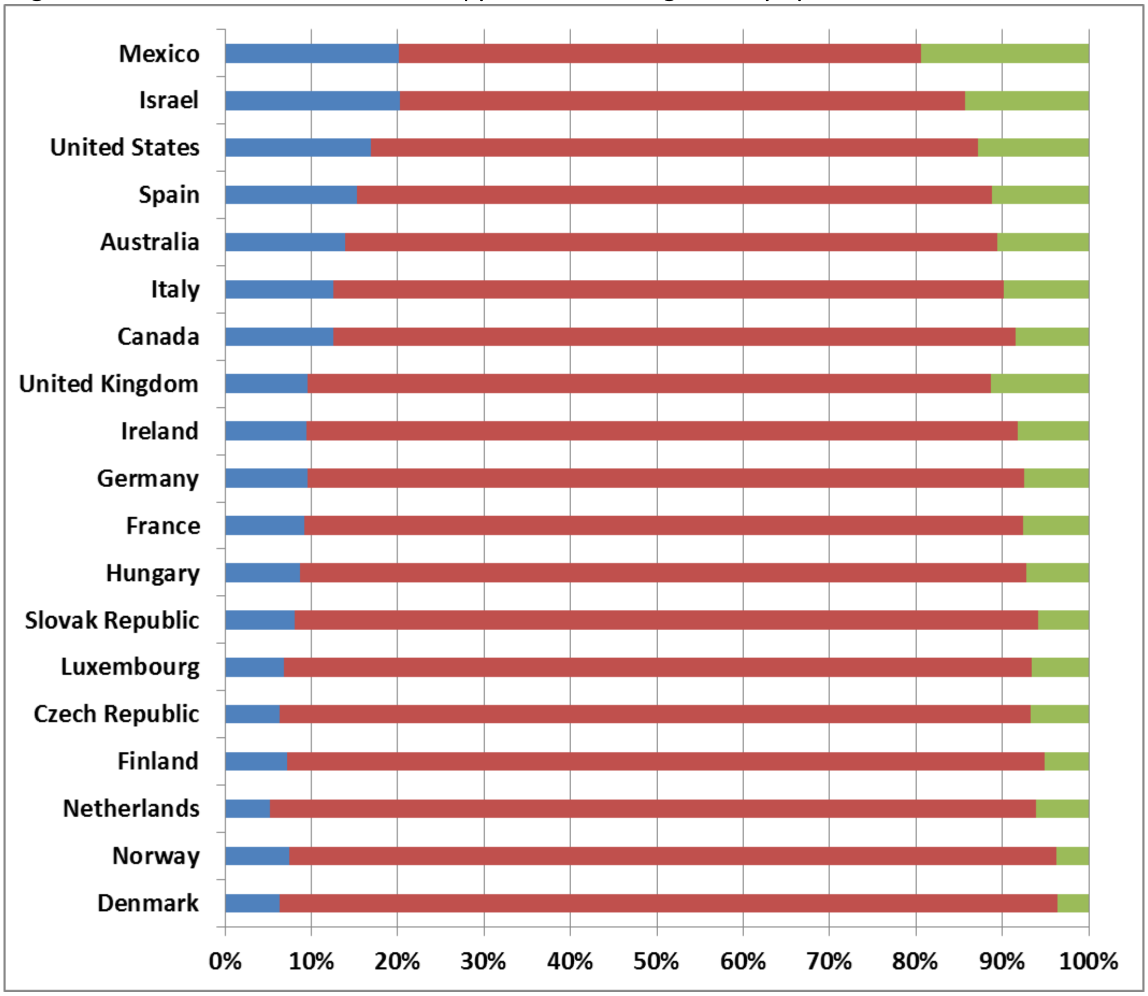


Figure 8b: Size of lower, middle and upper classes using global median (forthcoming)

Figure 9A: Change in size of lower and upper classes (using country medians), late 1980s to 2010

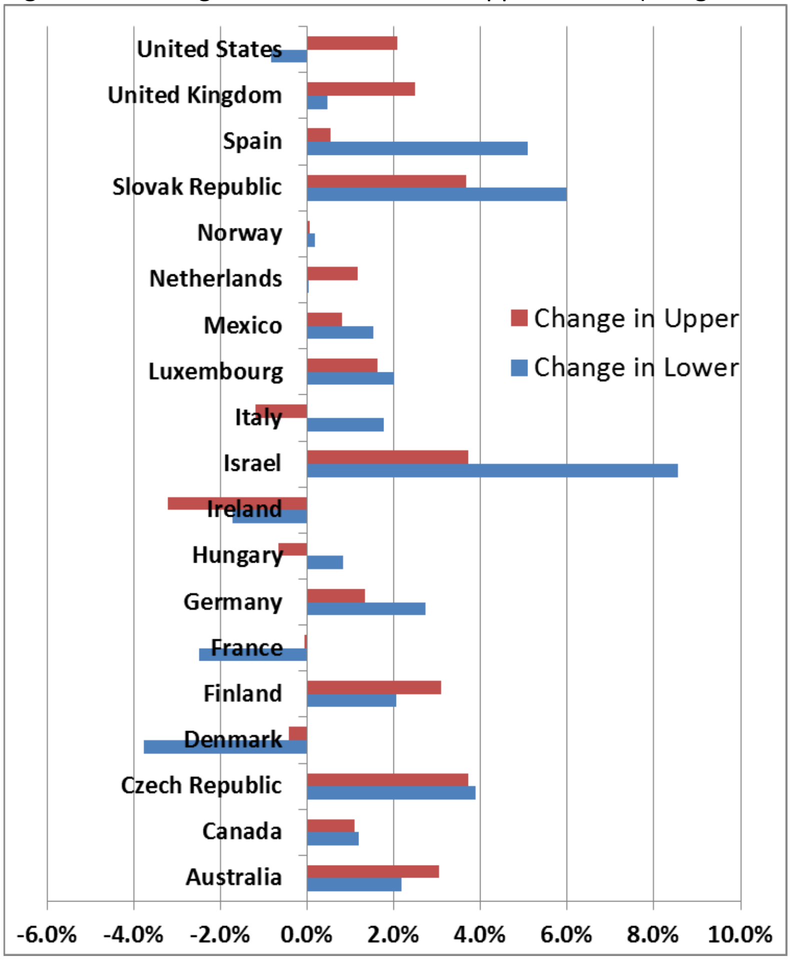
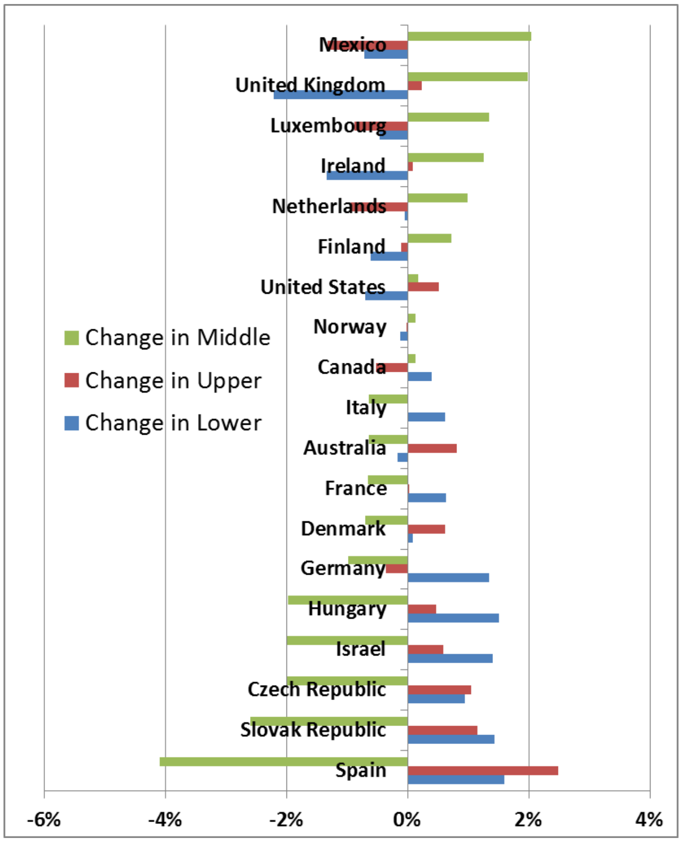


Figure 9B: Change in size of middle, lower and upper classes (using country medians) and change in middle class (using global median), 2007 to 2010



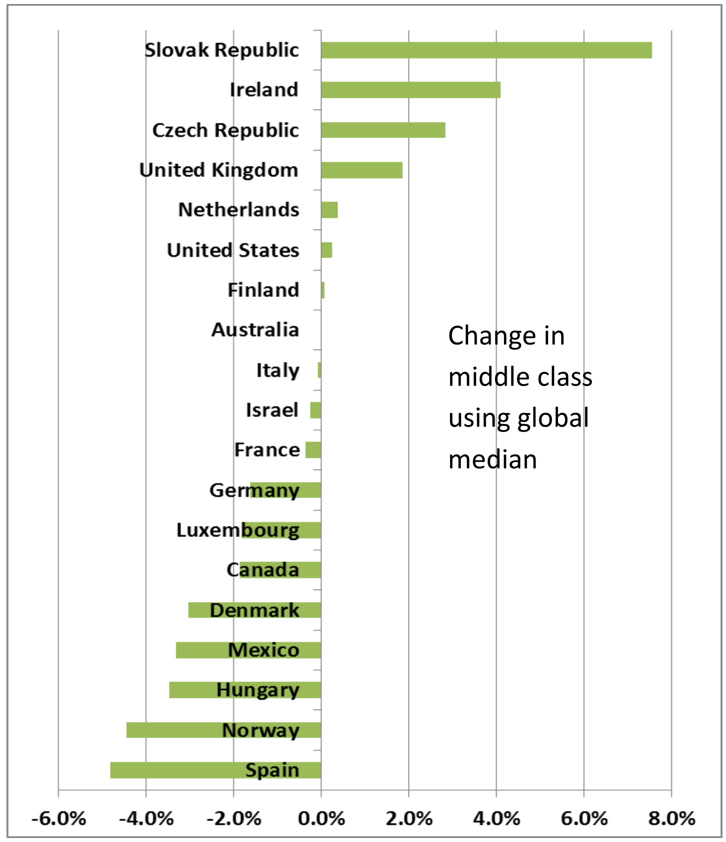


Figure 10: Simulated and Actual CDF for the US, 2004