Preliminary

ON THE IDENTIFICATION OF THE "MIDDLE CLASS"[1]

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Abstract

The paper examines three issues in the identification of a possible "middle class" using data from LIS. It considers first definitions based purely on income, examining the rationale for different approaches and illustrating the implications for changes over time. It argues that any interpretation in terms of "class" requires the examination of dimensions other than income. The second part of the paper considers the composition of income and the role of property. Drawing on the sociological literature, the third part investigates what can be said about the role of occupations.
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Contents

[1] Paper prepared for the conference "Inequality and the Status of the Middle Class: Lessons from the Luxembourg Income Study", University of Luxembourg Campus, 28-30 June 2010. This paper reports preliminary results of a joint project with Tony Atkinson. The views expressed here are solely mine; in particular, they do not necessarily reflect those of the Bank of Italy.

"There is no shortage of talk about the middle class (say, the middle 60 percent of income recipients)." (Robert Solow on cover of Estache and Leipziger, 2009).

1. Introduction

There is considerable interest, as Robert Solow notes, in the "middle class", both within countries – our focus here – and world-wide. There is however a certain penumbra surrounding the definition. "Middle class" has many different meanings. In this paper, we consider three of the many possible ways in which it may be identified, and explore how far they can be implemented using data from the Luxembourg Income Study (LIS) and its twin Luxembourg Wealth Study (LWS).[2] First, in sections 2 to 4, we examine definitions based purely on the dimension of personal income, on which there has been a large economics literature. In seeking to ground the concept more firmly in social relations, we are going back in time; in section 5, we go further back to the classical economists, who saw class as rooted in the sources of income, and the role of property and wealth. Economists have however been criticised (recently by Goldthorpe, 2009) for over-emphasis on income, and for neglecting the more fundamental differentiation implied by the use of the word "class". Sociologists have emphasised the social stratification embodied in labour market relations. In section 6, we investigate the occupational structure, as far as it can be studied using LIS data. The main conclusions are summarised in section 7.

2. The income dimension: A fixed-size middle class

Interest in the middle class appears to stem in part from the perception that distributional studies have focused on the poor, at one end, and on the rich, at the other end, leaving out the middle.[3] Solow's reference to the "middle 60 per cent" could be interpreted in this sense, being bracketed between the bottom 20 per cent (at-risk-of-poverty) and the top 20 per cent (the well-off). The European Union (EU) uses as its main income inequality measure the ratio of the income share of the top 20 per cent to that of the bottom 20 per cent. Transfers away from the middle 60 per cent could, if made proportionately, leave the measured income inequality unchanged. They are the "forgotten" middle.

The analysis of the entire income distribution, and not only of changes at either the bottom or the top, is indeed revealing. Figure 1 reports the income shares of the middle 60 per cent of the population, ranked by increasing income, together with the shares of the bottom and top 20 per cent, in 14 countries around 1985 (left panel) and 2004 (right panel).[4] These

[2] Data and measurement hypotheses are described in the Appendix.

[3] The recent resurgence of interest for top incomes, associated with the use of tax data for the long-run analysis of income distribution (e.g., Atkinson and Piketty, eds., 2007, 2010), may have reinforced this perception.

[4] The LIS procedures are such to maximise cross-country comparability for the same wave of data (e.g., wave VI for data around 2004). This implies that the evidence tends to be less reliable for changes over time than for comparison across nations, as data cannot be treated as continuous time series (Atkinson, 2004). This is especially true for such a long period of time, during which the LIS procedures have been refined but have not always been brought backwards, most surveys have undergone revisions in methods and definitions, and the original surveys included in the database may have changed (which is the case in Austria, Canada and the United Kingdom). An instructive example of the importance of revisions in survey methods is provided by the sharp rise

two years are chosen as they span a period of almost two decades, characterised by radical economic and political changes, from the globalisation to the ICT revolution, from the end of the experiment of the planned economy to the retrenchment of welfare states. On the other hand, we should be cautious to infer long-run trends from the comparison of two years: first, results are sensitive to the pair of years chosen, which may reflect different business cycle conditions; second, these years do not necessarily coincide with the critical junctures that identify the relevant episodes in the long-run changes in the distribution of income (Atkinson, 1997). Indeed, the debate on the disappearance of the middle class in the United States was spurred by the evolution until the mid-1980s: the analyses of household incomes by Bradbury (1986) and Horrigan and Haugen (1988), for instance, considered the periods 1973-1984 and 1969-1986, respectively, while the studies of labour earnings by Lawrence (1984), Bluestone and Harrison (1988) or Beach, Chaykowski and Slotsve (1997) focused on the periods 1969-1983, 1963-1986 and 1968-1990.

The 14 countries in Figure 1, selected among those for which suitable data are available in the LIS database, cover a wide spectrum of political, institutional and economic arrangements: Austria, Canada, Denmark, Finland, the Federal Republic of Germany (including eastern Länder in 2004 but not in 1984), Italy, Luxembourg, Mexico, Norway, Poland, Sweden, Taiwan, the United Kingdom, and the United States. They are ordered, from top to bottom, by increasing size of the income share accruing to the middle class. The ranking has a familiar pattern: in 2004 the Nordic nations are at the bottom, preceding the corporatist European countries; Canada, Taiwan, Poland and Italy come next, followed by the United States and the United Kingdom; Mexico is the country with the smallest middle (and bottom) income share. The difference is sizeable: the UK and US middle class seize a share of total income which is about a tenth less than that of their Nordic counterparts.

The ranking of Figure 1 closely resembles the one found using summary inequality measures like the Gini coefficient (e.g., Brandolini and Smeeding, 2009). There is an interesting switch of positions between the two Anglo-Saxon countries, as the income share of the middle 60 per cent is slightly lower in the United Kingdom, whereas inequality is higher in the United States because of the wider gap between the bottom and the top. The pattern is similar but far from coincident for the distribution around 1985. Poland, still a planned-economy at the time, is in the middle, while Taiwan and Italy are higher up in the ranking. This reshuffling in country ranking reflects the different patterns during the period (Figure 2). Italy and Taiwan show a small decrease in the income share of the middle 60 per cent, whereas the United Kingdom and the United States exhibit the largest falls (which are however smaller than the difference between these two countries and the Nordic countries in 2004). The main evidence of Figure 2, however, is that between the mid-1980s and the mid-2000s the middle class lost income shares to the benefit of the richest top fifth in all countries but Denmark.

3. Fixing income boundaries for the middle class

The approach discussed in the previous Section treats the definition of middle class in terms of the cumulative distribution, $F(y)$, where y denotes (equivalised disposable) income, or the "people space" in Foster and Wolfson's (1992) terminology. The middle class are those between F_1 and F_2 in Figure 3. However, it is not obvious why we should take F as the

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in measured inequality attributable to the technical changes implemented in the US Current Population Survey between 1992 and 1993 (Ryscavage, 1995; Burkhauser et al., 2009).

primitive concept. Indeed, such an identification rules out any discussion of the size of the middle class. The middle class cannot "shrink" or "expand".

We turn therefore to definitions that treat *y* as the primitive concept: people are in the middle class whose income lies between y_1 and y_2. The economics literature is said to be "converging" (Ravallion, 2010, p. 446) on the definition of these income limits relatively:[5] as 75 per cent and 125 per cent of the median. Is there any rationale for these limits?

The lower cut-off has a natural linkage with the poverty threshold. Indeed, the Census of Population conducted in Sweden in 1810 contained the following specific instructions for officials about how to define classes:

> "In order to determine the various statuses of society of households, those who could be called *rich* are those who have a surplus of about 500 rix-dollars in excess of their annual expenditure; the *moderately rich* are those who have less, also those who for their sustenance do not need to incur debts; the *poor* are those who manage not without difficulty: they also include property owners who are in debt in excess of their assets; the *destitute* are those who have to be sustained by gifts and contributions from others" (cited by Soltow, 1989, p. 47).

This may lead us either to accept "…the premise that middle class living standards begin when poverty ends", as put by Ravallion (2010, p. 446), or to take instead a more conservative approach and fix a level so as "…to ensure that the lower endpoint of the middle class represents an income *significantly above the poverty level*", as suggested by Horrigan and Haugen (1988, p. 5). Thus, in the EU, the former criterion would bring us to identify the lower bound with the at-risk-of-poverty line, set at 60 per cent of the median, whereas the second criterion would rationalise the 75 per cent cut-off as defining the "margins" of poverty as plus a quarter the at-risk-of-poverty line. The middle class can then be said to be those "comfortably" clear of being at-risk-of-poverty.

On the contrary, use of 125 per cent of the median as an upper demarcation has little evident rationale apart from that of symmetry. The middle class range is in fact relatively short in proportionate terms: 125 is 5/3 times 75. If the lower group had the same proportionate range, then it would extend from 45 per cent to 75 per cent of the median. Yet we know that there are a significant number of people with incomes below 40 per cent of the median. At the other extreme, it seems unrealistic to suppose that a third or more of the population falls in the "upper class", as found by Pressman (2007, p. 187, Table 2) by applying the 125 per cent cut-off to LIS data. By analogy with the rationale just discussed for the bottom cut-off, which implies that there exists a "lower middle class" made of people whose income is in the range 60 to 75 per cent of the median and who are neither poor nor in the middle class, we could however postulate that there is an "upper middle class" between the middle class and the rich: by taking the 125 per cent cut-off to be a quarter less than the income level that identifies the rich, then the implicit "richness line" would be equal to 167 per cent of the median. (This would amount to partition the population into five rather than three income groups.)

By using the 75 and 125 per cent cut-offs we find that the middle class would include at most half of the population in the 14 countries considered here around 2004; it would be as

[5] Absolute income limits are more common in analyses of the middle class in developing countries or at the global level (Milanovic and Yitzhaki, 2002; Banerjee and Duflo, 2008; Ravallion, 2010), but were also used in earlier studies for the United States (Bradbury, 1986; Horrigan and Haugen, 1988).

small as one fourth of the population in Mexico, and somewhat less than a third in the United Kingdom and the United States (Figure 4). As a consequence, the upper income group would account for a population share ranging between 27 per cent, in Denmark and Norway, and 39 per cent, in Mexico. Even splitting this group and setting the richness line at 167 per cent of the median as above, the rich would still comprise almost 20 per cent of the population in the United Kingdom and the United States, and well above it in Mexico.

If the middle class is to be distinguished from the "rich", a much higher cut-off than 125 per cent seems to be required. The results of Grabka and Frick (2008, p. 22, Figure 4) for Germany in 2006 show that one has to go above 150 per cent of the median to enter the top 20 per cent: indeed, they choose this income level as the upper limit of the middle class (and 70 per cent of the median as the lower limit). Peichl, Schaefer and Scheicher (2008, p. 15) further raise the richness line at twice the median, specifying that it is "arbitrary but common practice", whereas Brzezinski (2010) also considers lines equal to three and four times the median. Danziger, Gottschalk and Smolensky (1989) define the rich as families with incomes more than nine times the poverty line; Rank and Hirschl (2001) raise this multiplier to ten. With a US poverty line approximately one third of the median disposable household income (Smeeding, 2006, p. 71), these values implies a cut-off around 300 per cent of median income. How can these choices of the upper demarcation level be justified?

Use of a relative measure is common. Over a century ago, Watkins argued that the definition of "rich" is essentially relative: "the rich of former days would not even be 'respectably poor' in New York City to-day" (1907, pp. 3-4). So y_2 could be taken as rising with the median (or mean). But what percentage of the median should be taken? The criterion considered here is the capacity to employ another person (for personal services, child care, etc.). Suppose that the person employed has a disposable income equal to the poverty line. The gross cost would be 60 per cent of the median times $(1+\tau)$, where τ is additional employment cost. The second parameter is the proportion of total income spent on such personal services, denoted by θ. The upper threshold is then $(1+\tau)/\theta$ times 60 per cent of the median. So that values of τ and θ equal to 25 per cent imply a cut-off of three times the median. Lower values for τ (for example where the outlay is tax deductible) imply a lower cut-off; lower values of θ imply a higher cut-off. So $\tau=0$ and $\theta=0.20$ imply that the cut-off would again be 300 per cent of the median, but $\tau=0.10$ and $\theta=0.33$ would give a cut-off of 200 per cent of the median.[6]

As we raise the upper cut-off to 200 per cent of the median the size of the middle class increases considerably: it reaches 71 per cent in Scandinavian countries, and exceeds half of the population even in countries where incomes are distributed more unequally like Italy, the United Kingdom, and the United States (Figure 5). The share of the well-off would still be above 10 per cent in the these three nations; it would fall to 3-4 per cent only as the upper cut-off is raised to three times the median. All in all, however, the ranking of the 14 countries is little affected by fixing the upper demarcation line alternatively at 125, 167, 200 or 300 per cent of the median, and the resulting sizes of the middle class are highly correlated.

What do these estimates tell us about the evolution of the middle class? According to all four upper cut-offs, since the mid-1980s the middle class would have shrunk in ten countries and would have expanded in two other, while results are mixed for the remaining

[6] Medeiros (2006) proposes to define the richness line starting from the amount of income that would be necessary to wipe out poverty. Thus, the richness line is a level of income such that the sum of all personal incomes in excess of this level exactly matches the aggregate poverty gap. The problem with this definition is that the affluence score would fall whenever a government reduces poverty: but countries that do well on this account may still have a rich upper class.

two (Figure 6, bottom panel). In some nations the extent of the variation depends noticeably on the cut-off definition, suggesting different patterns of change of the underlying distribution. The size of the shrinkage varies across nations, but the fact that it shows up in the majority of the countries may reinforce the concerns of those who fear that the middle class is (gradually) disappearing. Is this worry well-founded? To some extent, the answer depends on the simultaneous changes in the proportions of the poor and of the rich. Regardless of the level of the upper cut-off, in all ten countries where the middle class shrunk both proportions increased, indicating that income distribution polarised. Yet, the top panel of Figure 6 shows that, with few exceptions, the share of the rich went up more than that of the poor, so that the overall net change was towards higher rather than lower income ranges. Italy stands out as the only country where there was a shift from the top to the middle together with a (more moderate) shift from the middle to the bottom.

4. Endogenous income limits and polarisation

In his study of the shrinking middle class hypothesis in the United Kingdom during the 1980s, Jenkins (1995, p. 410) argues that considering the entire income distribution by means of kernel density estimates may reveal information that would be missed by using a specific middle class definition, such as the fact that "… the shift away from the middle was asymmetric, with the increase in density within the higher income ranges much greater than the increase at the lowest income ranges". This idea is further developed by Burkhauser et al. (2009) who use kernel density estimation to compare the income distributions of the United Kingdom and the United States. The comparison of the frequency density functions for 1979 and 1989 enable them to identify two intersections, and to show that during the decade the middle mass shifted towards both the left and right tails, but disproportionately more towards the higher incomes in both countries. These intersections are located at 33 and 130 per cent of the UK median income, and at 24 and 158 per cent of the US median income in 1989. There is no reason to assume that these income levels are those delimiting the middle class: but they tell us that, in those two specific episodes, any other pair of cut-offs would yield a lower absolute reduction of the size of the middle class. More interestingly, if both lower and upper cut-offs are set sufficiently higher than these income levels, one may find that the size of the middle class did rise rather than decline.

This example illustrates that the arbitrariness of any delimitation of the middle class may lead to contradictory results. This is shown in Figure 6 by the cases of Norway and Italy, where the variation in the share of the middle class changes of sign as the upper cut-offs is raised, even in a non-monotonic fashion in Italy. The search for the conditions under which an unambiguous judgement can be reached stimulated Foster and Wolfson's (1992) analysis of "polarisation", a concept which tries to capture the spreading away from the median that underlies the phenomenon of the vanishing middle class.[7] In addition to exploring partial orderings generated by polarisation curves, Foster and Wolfson (1992) also proposed an index based on these curves. Figures 7 reports the change in this index, in the version used by Wolfson (1994), between the mid-1980s and the mid-2000s for the 14 countries of our

[7] In a different approach, Esteban and Ray (1994) and later Duclos, Esteban and Ray (2004, p. 1747) characterise polarization as "… the interplay of two forces: identification with one's own group and alienation vis-à-vis others". They focus on pure income polarisation, so that the clustering of population is based on the comparison of income levels only, but they conjecture about the possible extensions to pure social polarisation measures, where income plays no role, and to hybrid measures. In this context, social classes are "endogenously identified".

sample. The evidence of this Figure is broadly in line with that of Figure 6: income distribution polarised in all countries except for Mexico, Norway, Denmark and Italy. The results in Figure 7 also show that inequality and polarisation are two interconnected but distinct phenomena, as their variations differed in size and even moved in opposite directions in three countries.

5. Property and the class structure

The instructions for the Swedish Census of 1810 were based on the ability to make ends meet, taking as a reference the necessary expenditure. Nothing in those instructions implies that income should be the only variable used in the class definition. Rather, the reference to debts seems to suggest a broader concept of economic resources, incorporating income and wealth and the possibility to access credit.

Income is a good proxy of living standards, but fails to represent the full amount of resources on which individuals rely to cope with the needs of everyday life and to face unexpected events. Real and financial wealth also matters. Individuals may have earnings below the poverty threshold and still reach a decent standard of living thanks to their past savings. A sudden income drop need not result in lower living conditions if they can decrease accumulated wealth, or if they can borrow. On the other hand, income can be above the poverty threshold, yet individuals can feel vulnerable because they have no savings to face an adverse income shock. Assets and liabilities are fundamental to smoothing out consumption when income is volatile, playing an insurance role intertwined with that of private or public formal insurance mechanisms. More fundamentally, the possession of tangible and intangible assets is a major determinant of personal longer-term prospects. The chances in one's life depend on the set of opportunities open to an individual, which are, in turn, a function of her or his intellectual and material endowments. In the presence of capital market imperfections, individuals with low endowments may be stuck in a poverty trap. Conversely, a minimum endowment may reinforce the sense of responsibility of individuals and their attitude to pursue more efficient behaviours (Bowles and Gintis, 1998).

Are these considerations relevant for the definition of the middle class? They probably are. The condition of being comfortably clear of the risk of poverty hinges on the buffer stocks that would prevent people from falling into poverty should something go wrong. One way of accounting for this is to look at "asset-poverty". While income-poverty refers to a static condition where income is insufficient to maintain the minimally acceptable living standard, asset-poverty captures the exposure to the risk that this standard cannot be secured, for some period of time, if income suddenly falls (Haveman and Wolff, 2004; Brandolini, Magri and Smeeding, 2010). According to this definition, the asset-poverty line may be taken to coincide with a fraction of the standard income-poverty line: by setting this fraction at one half amounts to require that wealth holdings are sufficient to maintain the individual at the standard of living corresponding to the poverty line for at least six months.

The concept of asset-poverty is useful because it singles out persons who may experience some difficulty in coping with a negative event. The associated sense of precariousness may be at odds with that of security that is often seen as an attribute of the middle class. In the context of this paper, we may then use the measure of asset-poverty either to identify which part of the middle class is more vulnerable or, more radically, to reduce its size by excluding the asset-poor individuals from its ranks.

The importance of this issue may be examined by means of the LWS database which contains household-level data on both income and wealth for ten rich countries. Given data availability, we have selected five countries: Germany, Italy, Norway, Sweden, and the

United States. Data for the United States come from a different survey from that included in the LIS database, while those for the remaining countries are drawn from the same original source, although for a slightly earlier year (except for Italy). In spite of these differences, results are reasonably close to those presented in the previous sections: the larger share of the middle class is observed in the two Scandinavian countries, followed by Germany, then Italy, and finally the United States, regardless of the level of the upper income cut-off (Figure 8).

Household-level information on wealth is generally reputed to be of lower quality than that on income; moreover, the degree of standardisation of definitions and collection procedures is low. Therefore, cross-country comparability is far from perfect, despite the ex post harmonization carried out at LIS. In particular, it has to be noted that wealth may be relatively understated in Norway, owing to the valuation of real property on a taxable rather than market basis, and in Germany, where certain items are only recorded for values exceeding a minimum level. To define asset-poverty we consider both financial assets alone, which include assets that can be easily monetized, and "net worth", which includes all marketable assets net of all debts (excluding the value of business equity, because unavailable in some countries). Following Haveman and Wolff (2004, p. 151), the former can be seen as an indicator of "emergency fund availability", while the latter is an indicator of "the long-run economic security of families". Coherently with this interpretation, to measure asset-poverty we take a shorter reference period for financial assets than for net worth: three vis-à-vis six months (which correspond to asset-poverty thresholds equal to one fourth and one half of the income poverty-line, respectively). The results in Figure 8 show that a considerable proportion of middle class individuals are asset-poor. When cut-offs are set at 75 and 200 per cent of the median, about half of middle-class Germans and Americans do not have enough liquid assets to sustain their standard of living at the poverty line for at least three months: these proportions fall to a third or less when the focus is on net worth. In all five countries, the size of the middle class would be significantly cut, should we exclude asset-poor individuals. The effect is less pronounced in Italy, especially when net worth is considered: it reflects the pervasiveness of home ownership and relatively high housing prices, but also the segmentation and low generosity of public income-support schemes that induce people to accumulate precautionary savings.[8]

In brief, accounting for wealth helps to qualify purely income-based definitions of the middle class and tends to affect international comparisons. We have focused on the role of assets in protecting people's standard of living from a sudden drop of their earnings, but other aspects may be relevant from the perspective of identifying the middle class, such as the role that wealth plays in sustaining upward mobility.

6. Class and occupation

The link between income and employment position is undoubtedly close, and both variables can contribute to draw the class distinctions. Yet, their conceptual primacy varies across disciplines. As seen, economists tend to move from the former to the latter. In their study covering 13 developing countries around the world, Banerjee and Duflo (2008) define the middle class as comprising all households with a daily per capita expenditure[9] lying

[8] The balance between private wealth and public insurance is closely linked to the encompassing nature of welfare state institutions as discussed by Korpi and Palme (1998).

[9] In the context of this paper, expenditure and income can be taken as close substitutes, alternatively chosen mostly on the basis of empirical considerations.

between 2 and 10 dollars at purchasing power parities, and then proceed to examine the features that characterize consumption, investment, educational and occupational patterns relative to the poor and the well-off. The conclusion is pertinent to our discussion, and worth quoting at length:

> "Nothing seems more middle class than the fact of having a steady well-paying job. While there are many petty entrepreneurs among the middle class, most of them do not seem to be capitalists in waiting. They run businesses, but for the most part only because they are still relatively poor and every little bit helps. If they could only find the right salaried job, they might be quite content to shut their business down. If the middle class matters for growth, it is probably not because of its entrepreneurial spirit" (Banerjee and Duflo, 2008, p. 26).

Most sociologists would take the other way round, and focus on the positions in the labour market to fix the demarcation lines across classes. Social differentiation may be specified in terms of occupational prestige and status within a "social-hierarchy approach", or in terms of the employment relations entailed by the position of individuals in the productive process within a "class-structure approach" (Erikson and Goldthorpe, 2008, pp. 28-35). Goldthorpe and McKnight (2006) adopt the second approach and show how the employment-based class position impinges on individuals' economic security, economic stability and economic prospects. As regards the last dimension, for instance, they compare age-earnings profiles for British full-time employees, and conclude that there exist clear class differences that have been made "more rather than less apparent" (p. 126) by the changes occurred between 1975 and 1999.

Wave VI of the LIS database contains a much improved coverage of labour market variables. However, original sources were not all designed to provide a careful description of labour market status, not even for the main respondent. Thus, the variable "occupation of the household's head" (D14), that would provide the information needed in the class-structure approach, presents as many as 496 different categories in the United States and 280 in Germany, but is missing for Italy and Sweden. For the last two countries, the variable "skill level in employment of the household's head" (SKILLHD) constitutes a reasonable substitute, although national specificities limit its cross-country comparability, as apparent from Table 1. Possibly for this unavoidable patchwork nature, no routine is available, to our knowledge, to compute standard social classifications from the LIS data, which is instead the case of other comparative project like the European Social Survey (see Leiulfsrud, Bison and Jensberg, 2005). For the four countries just mentioned we have tried to reconstruct the simplified version of Goldthorpe's classification to study its overlapping with an income-based class partition. No need to say that this exercise must be seen as tentative.

In Golthorpe's simplified classification, the "intermediate class" comprises routine nonmanual employees, lower-grade technicians, supervisors of manual workers and small employers and self-employed workers; it is distinct from the "working class" (skilled and unskilled manual workers, low-skilled routine nonmanual workers), on one side, and the "salariat or service class" (all professionals, administrative and managerial employees, higher-grade technicians), on the other (Table 2). We apply this classification, by combining the information on occupation (Germany, the United States) or skill level in employment (Italy, Sweden) with that on the status in employment (ACTIVHD), only to active household's head. Results are therefore not comparable to those presented above. According to this classification, the intermediate class accounts for between 51 per cent in Italy and 63 per cent in Sweden; Italy appears to differ from the other countries, also for the higher share

of the working class and the lower share of the service class (Figure 9). If we focus on the middle class identified on the basis of income, using the same cut-offs as before but applied to the median values for the restricted group of household's heads, we can observe that in all countries it includes a sizeable proportion of working class, together with some proportion of individuals in the top class (Figure 10). The social stratification by occupation and the clustering by income levels do not coincide.

7. Conclusions

The relationship between class and income distribution goes back to the origins of economics, at least to the famous opening of Ricardo's *Principles of Political Economy and Taxation* (1821) that the principal problem in political economy is to determine the laws which regulate the distribution of "the produce of the earth among … the proprietor of the land, the owner of the stock of capital necessary for its cultivation, and the labourers by whose industry it is cultivated". At that time, it may have been reasonable to suppose that there was a close correspondence between these three classes and their different positions on the income scale. Today, this relationship has been blurred by the development of institutions that stand between the productive sector of the economy and the households sector, the state as well as many other private intermediaries (Atkinson, 1983, Chapter 9). But the entire social stratification has become more complex: the middle class, that is the object of this paper, did not even feature in Ricardo's synthesis.

Social class and income distribution largely belong to separate fields of analysis − a favourite terrain for sociologists the former, a topic for economists the second. Indeed, it is common among economists to think of classes simply as income groupings. As we have seen, the middle class has been then identified by setting limits either in the people space, $F(y)$, or in the income space, y. While in the former the size of the middle class is fixed and attention is focused on the evolution of the income share, in the latter it is the population size to be the main concern. This approach provides an interesting complement to analyses that focus on the bottom or the top of the of income distribution. Our analysis of 14 countries in the mid-1980s and the mid-2000s, selected among those for which data are available in the LIS database, has for instance shown that:

- around 2004, both the size of the middle class (for different income cut-offs) and its income share are largest in the Nordic nations and corporatist continental European countries; they are both smaller in Italy, the United States and the United Kingdom, and especially Mexico;
- between the mid-1980s and the mid-2000s the middle 60 per cent of the population lost income shares to the benefit of the richest top fifth in all countries but Denmark;
- when identified on the basis of various relative income cut-offs, since the mid-1980s the middle class appears to have shrunk in ten countries and to have expanded in two other countries; these results are confirmed by the evolution of Foster and Wolfson's polarisation index.

These results confirm that the study of inequality may gain from considering the entire distribution. On the other hand, when we delve into the composition of middle income groups we find that they are internally highly heterogeneous. We have shown this to be the case both as regards wealth holdings and the position in the labour market. Economists often underline the importance of having a large middle class for economic growth, either for its consumption patterns or for its propensity to accumulate human and physical capital, as well as for democracy and the political stability of a society. Yet, it is reasonable to wonder whether a pure income characterisation of social classes is analytically satisfactory. Perhaps, it is time to

bring together again the analyses of the personal incomes, of the position in the division of labour, and of the ownership structure.

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Appendix: data and measurement assumptions

All estimates reported in this paper are computed from the LIS or LWS databases (http://www.lisproject.org), which provide the best source of internationally comparable microeconomic data on household income and wealth (Smeeding, 2004). The original surveys from which the income data used in this paper were drawn and the corresponding income reference year are reported in Table A1.

The income variable used in the paper is disposable money income (DPI; LIS_DPI in LWS datasets) which is given by the sum of all cash incomes earned by the household (wages, salaries, earnings from self-employment, cash receipts from property, unemployment compensation, welfare benefits, public and private pensions, child and family allowances, alimony), net of income taxes and social security contributions. However broad, this definition excludes capital gains, imputed rents, other unrealized types of capital income, home production, and in-kind income. These items may account for an important share of the economic resources at the household disposal, and their inclusion in the income definition may affect measured inequality.

To account for the economies of scale stemming from cohabitation, total household income is adjusted by the "square root equivalence scale", traditionally used in the analysis of LIS data (e.g., Atkinson, Rainwater and Smeeding, 1995). Equivalent income is hence obtained by dividing total household income by the square root of the household size. This value is then attributed to each person in the household to derive the distribution among persons. To minimize the impact of outliers all records with zero income are dropped, and observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income.

Table A1: Sources of LIS data

Country	First year	Second year	Survey name
Austria	1987		Austrian Microcensus
		2004	Survey on Income and Living Conditions (EU-SILC)
Canada	1987		Survey of Consumer Finances (SCF)
		2004	Survey of Labour and Income Dynamics (SLID)
Denmark	1987	2004	Income Tax Register
Finland	1987	2004	Income Distribution Survey (IDS)
Germany	1984	2004	German Social Economic Panel Study (GSOEP)
Italy	1987	2004	Survey of Household Income and Wealth (SHIW)
Luxembourg	1985	2004	Socio Economic Panel (PSELL), Survey on Income and Living Conditions (SILC)
Mexico	1984	2004	Household Income and Expenditure Survey (ENIGH)
Norway	1986	2004	Income Distribution Survey (IF)
Poland	1986	2004	Household Budget Survey
Sweden	1987	2005	Income Distribution Survey (HINK)
Taiwan	1986	2005	Survey of Family Income and Expenditure, Taiwan Area
United Kingdom	1986		Family Expenditure Survey (FES)
		2004	Family Resources Survey (FRS)
United States	1986	2004	Current Population Survey (CPS), March Supplement

Source: Luxembourg Income Study.

Asset-based measures are based on the LWS database, which provides household-level data on income and wealth for ten rich countries. Data were made comparable by a thorough process of ex post harmonization, but important differences in definitions, valuation criteria, and survey quality could not be adjusted for. Moreover, the degree to which LWS-based estimates match aggregate figures varies across surveys. The original datasets are listed in Table A2.

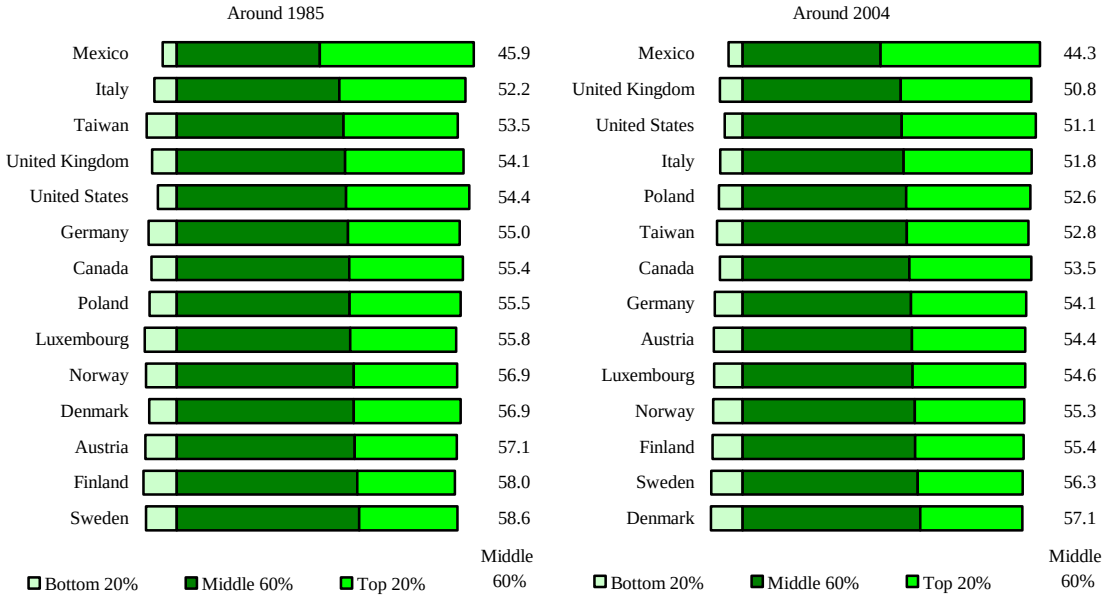
Net worth does not include business equity, as the information is only available in some countries. This variable is not used for Norway and Sweden, as the valuation of real property on a taxable basis make the results for these two countries less comparable to those of the others. Wealth is equivalised with the square root equivalence scale and then attributed to each person in the household.

Table A2: Sources of LWS data

Country	Wealth year	Income year	Survey name
Germany	2002	2001	German Social Economic Panel Study (SOEP)
Italy	End of 2004	2004	Survey of Household Income and Wealth (SHIW)
Norway	End of 2002	2002	Income Distribution Survey (IDS)
Sweden	End of 2002	2002	Wealth Survey (HINK)
United States	2001	2000	Panel Study of Income Dynamics (PSID)

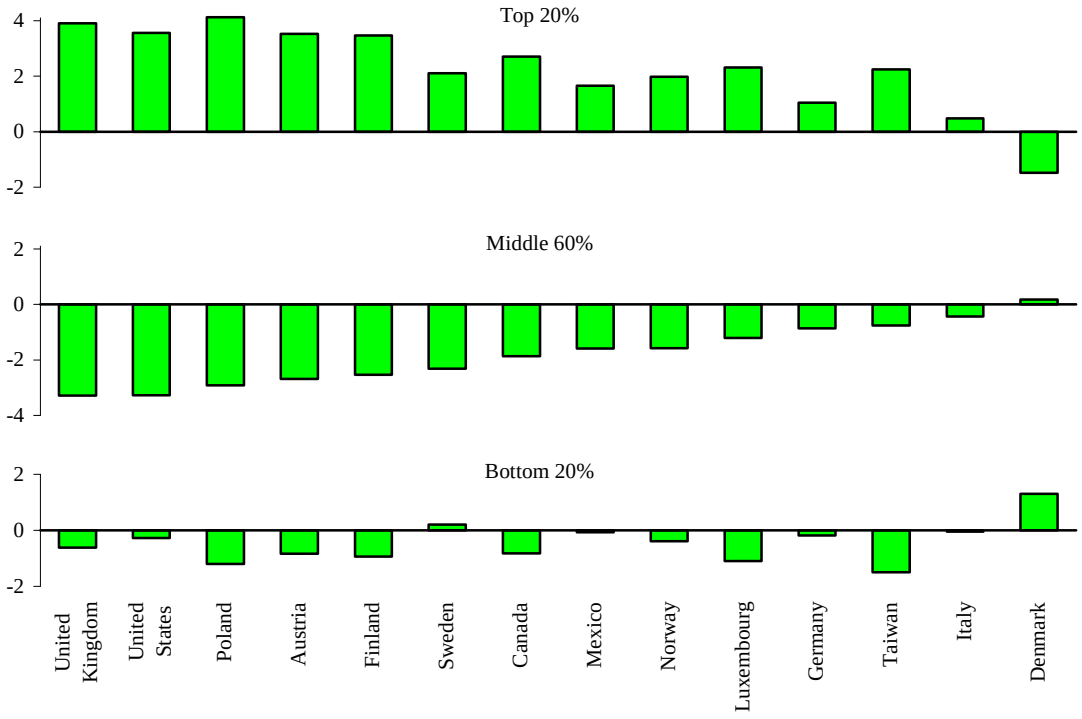
Source: Luxembourg Income Study.

Figure 1: Income share of the bottom, middle and top income groups in selected countries around 1985 and 2004 (per cent)



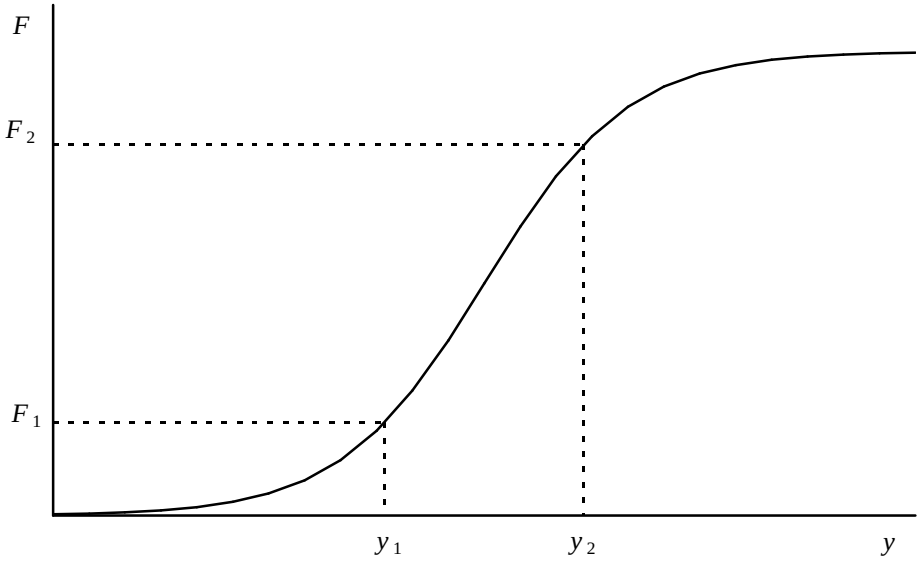
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 2: Change in the income share of the bottom, middle and top income groups in selected LIS countries between around 1985 and around 2004 (percentage points)



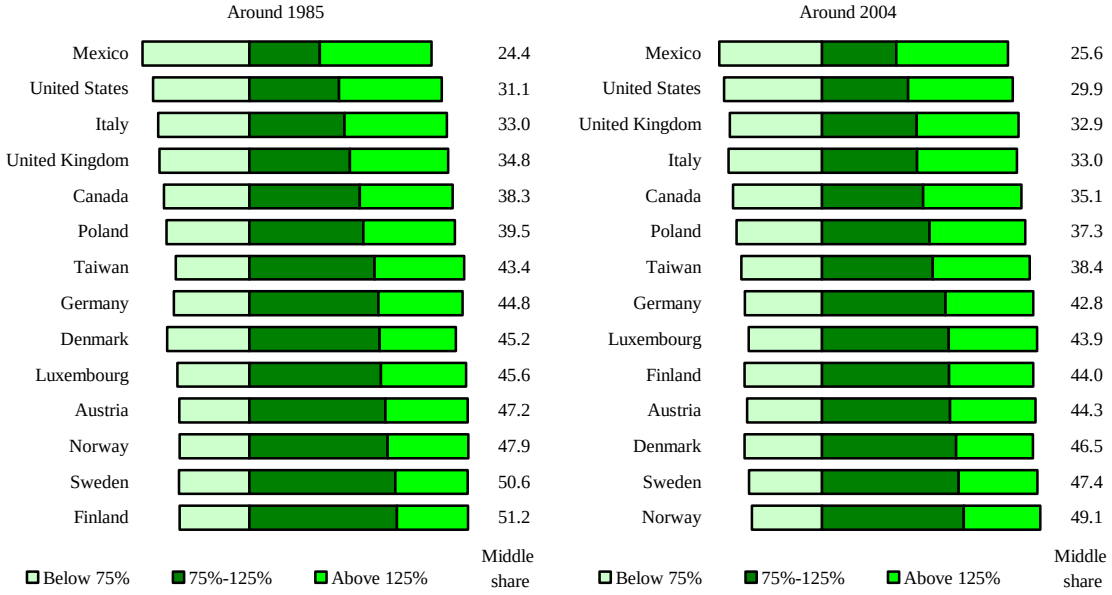
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 3: Income cumulative distribution function



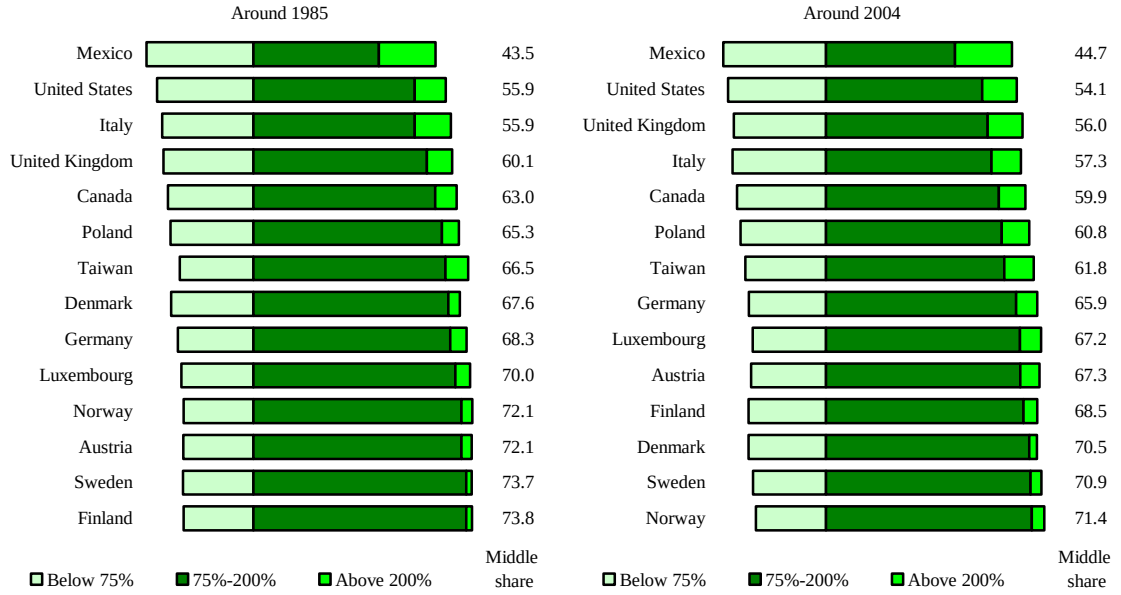
Source: Author's elaboration.

Figure 4: Population share of the bottom, middle and top income groups in selected countries around 1985 and 2004 (per cent)



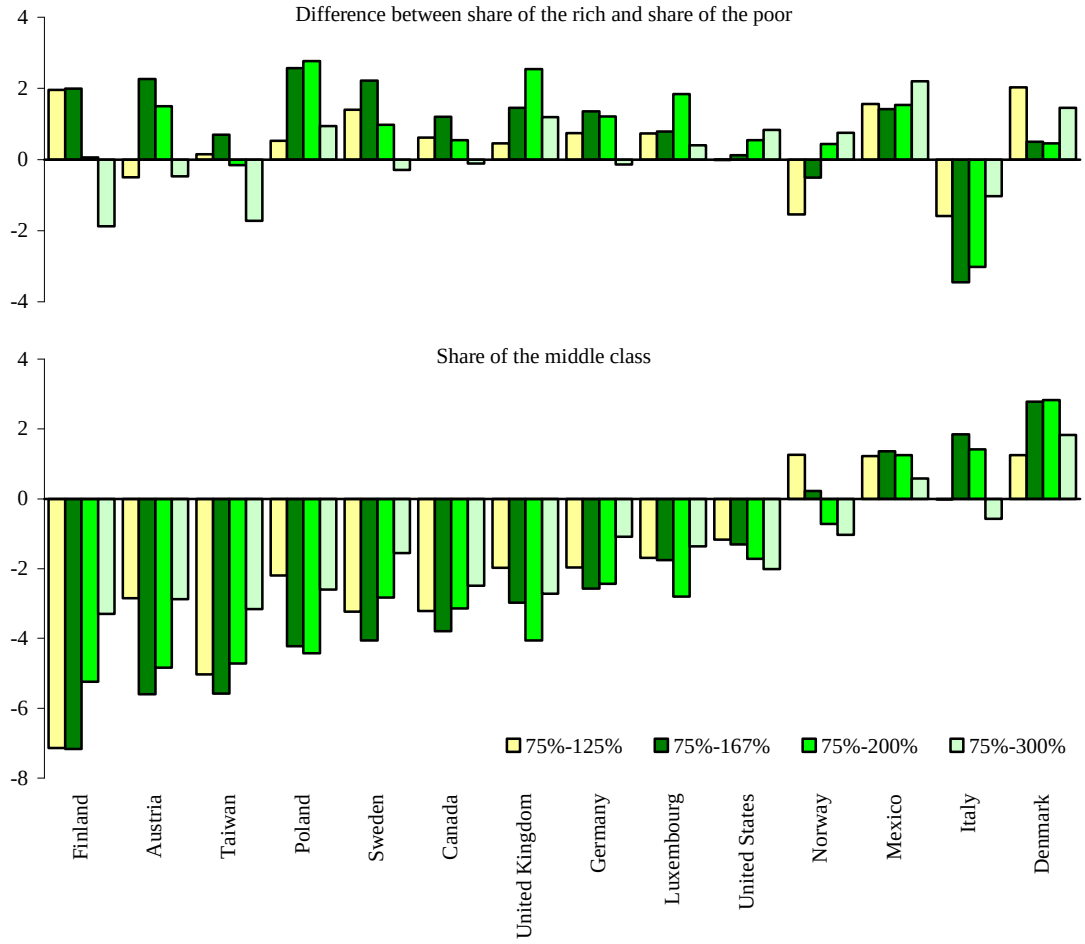
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 5: Population share of the bottom, middle and top income groups in selected countries around 1985 and 2004 (per cent)



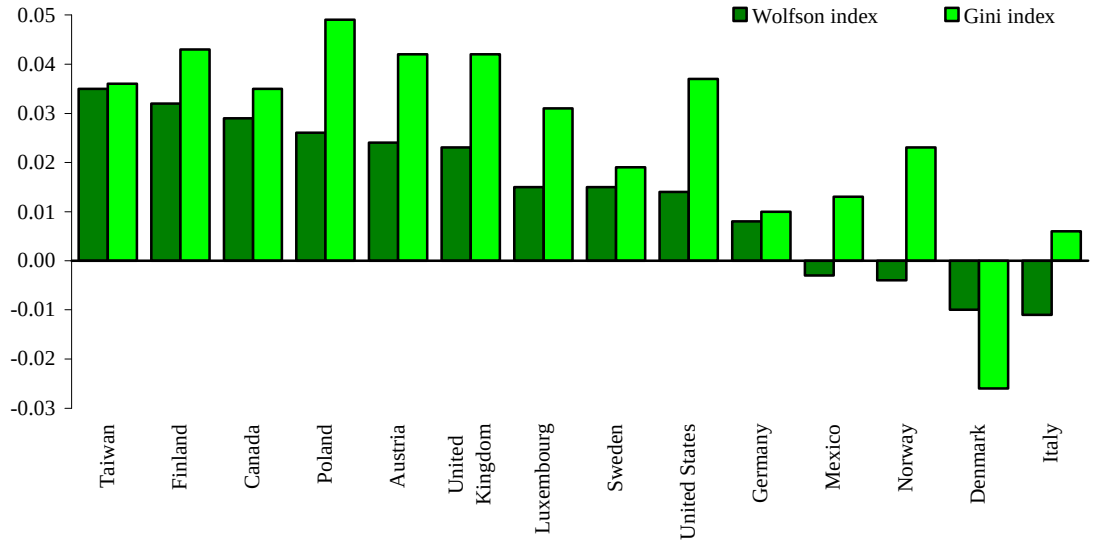
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 6: Change in population shares for different income cut-offs in selected LIS countries between around 1985 and around 2004 (percentage points)



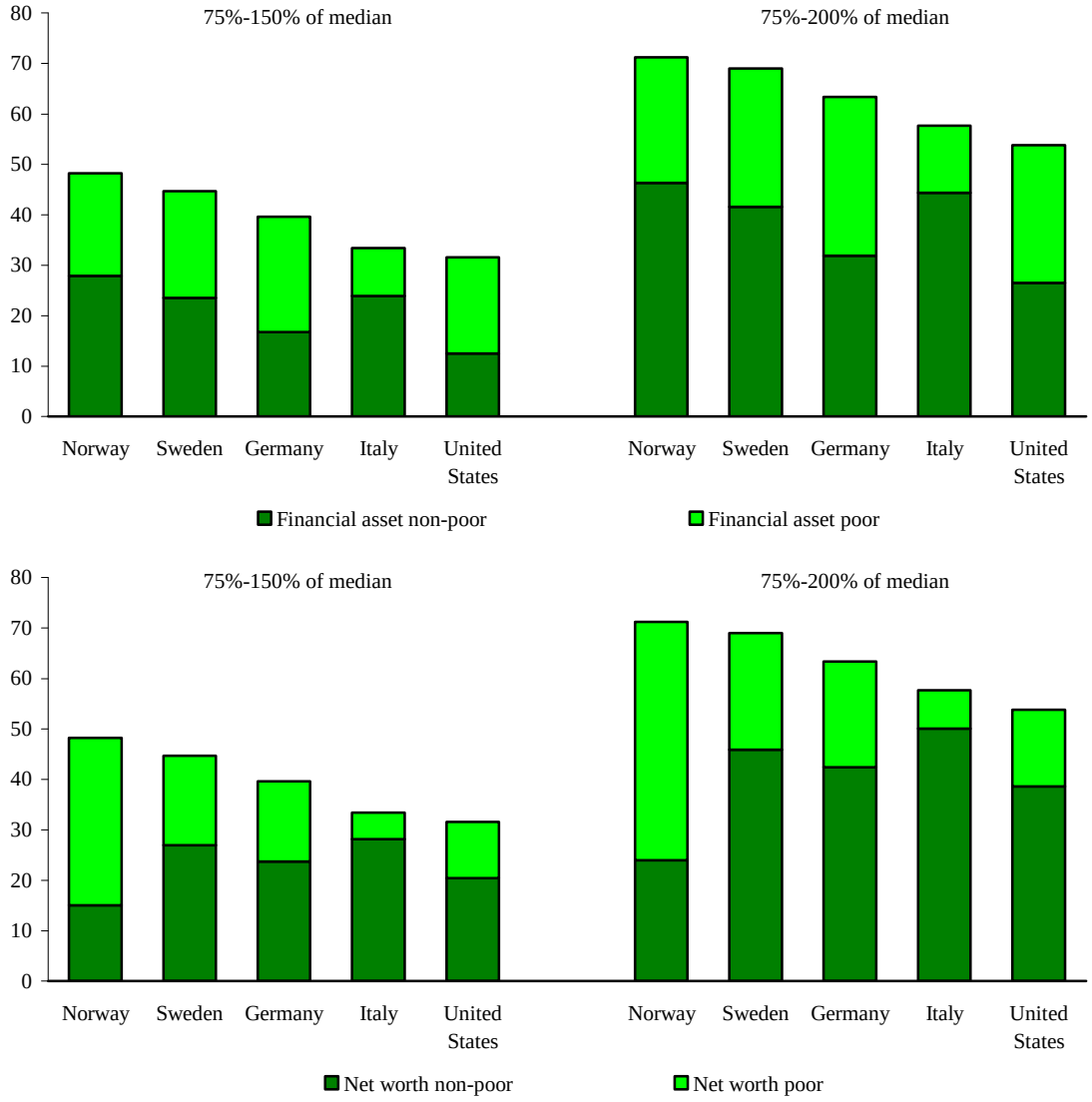
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 7: Changes in the Gini index and the Wolfson polarisation index in selected LIS countries between around 1985 and around 2004



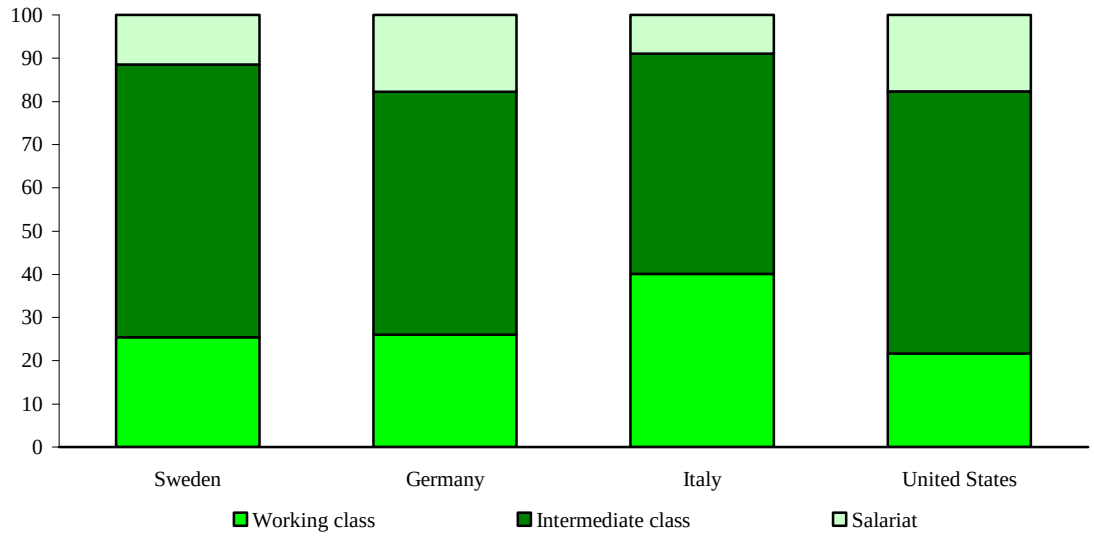
Source: Author's calculations from the LIS database, as of 20 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 8: Population share of the middle income groups by wealth holdings, in selected countries around 2002 (per cent)



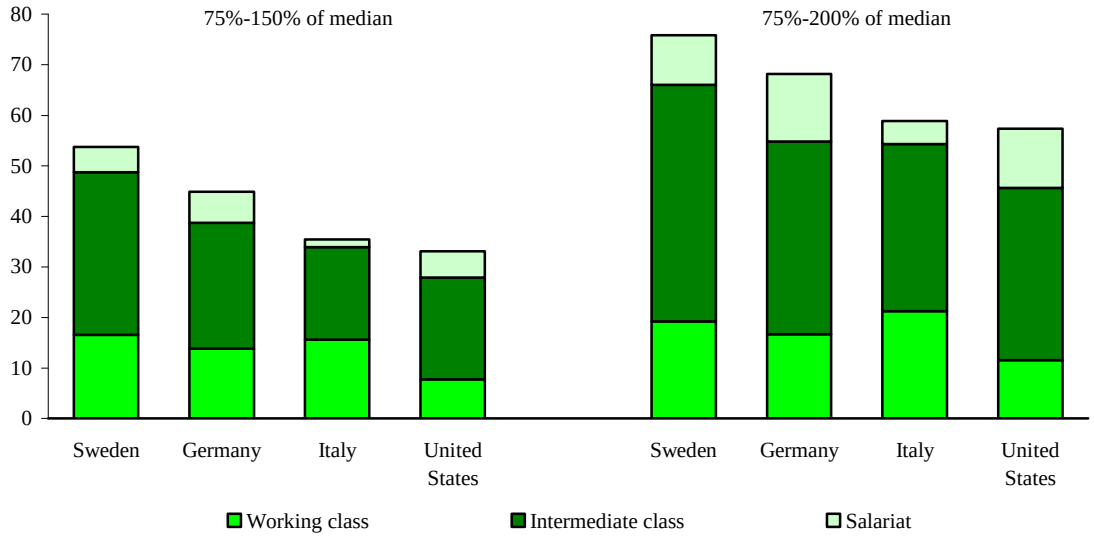
Source: Author's calculations from the LWS database, as of 25 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 9: Size of social classes according to the simplified Goldthorpe's classification, in selected countries around 2004 (per cent)



Source: Author's calculations from the LWS database, as of 27 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Figure 10: Population share of the middle income groups by social class, in selected countries around 2004 (per cent)



Source: Author's calculations from the LWS database, as of 27 June 2010. Observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income. Incomes are adjusted for household size by the square-root equivalence scale.

Table 1: Description of the LIS variable “skill level in employment of the household’s head” (SKILLHD)

Italy (2004)		Sweden (2005)	
1	blue-collar worker	10	unskilled worker in goods production
2	office worker	11	unskilled worker in services production
3	school teacher	12	skilled worker in goods production
4	junior manager / cadre	13	skilled worker in services production
5	manager, senior official	14	lower level 1 employee
6	member of the arts or professions	15	lower level 2 employee
7	sole proprietor	16	medium level employee
8	free lance	17	high level employee
9	owner or member of a family business	18	leading position
10	active shareholder / partner		
19	conscript		
20	contingent worker employed on none account		
21	other employee		
22	other self-employed		

Source: Luxembourg Income Study.

Table 2: The Goldthorpe classification of social classes

Class	Class description	Common descriptive term
I	Professionals, administrative, and managerial employees, higher-grade; large employers	Salariat or service class
II	Professionals, administrative, and managerial employees, lower-grade; technicians, higher grade	
IIIa	Routine nonmanual employees, higher grade	Intermediate white collar
IV	Small employers and self-employed workers	Independents or petty bourgeoisie
V	Supervisors of manual workers; technicians, lower-grade	Intermediate blue collar
VI	Skilled manual workers	Working class
IIIb	Routine nonmanual workers, lower grade	
VII	Semi- and unskilled manual workers	

Source: Goldthorpe and McKnight (2006), p. 110, Table 5.1.