

Anna Soci
University of Bologna

Inequality and Democracy
The UK case in the last thirty years

April 2012

Paper prepared for
the Italian Academy for Advanced Studies at Columbia University

Inequality and Democracy

- The UK case in the last thirty years –

- 1. Introduction**
- 2. Economics and Politics**
- 3. Theory (or Theoretical Linkages)**
 - 3.1 *Economics and Income Inequality***
 - 3.2 *Inequality and Democracy***
- 4. A focus on Inequality**
 - 4.1 *Defining Economic Inequality***
 - 4.2 *Measuring Economic Inequality***
- 5. Stylized Facts**
- 6. Case-Study and Work-Plan**
- 7. The Empirical Approach**
 - 7.1 *First Stage: to Inequality***
 - 7.2 *Second Stage: from Inequality to Democracy***
 - 7.3 *A Third Stage?***
- 8. Concluding remarks**

References

1. Introduction (*)

At the very beginning of this research I read a fascinating book – considered a popular non-academic book, though written by the two academics Richard Wilkinson and Kate Pickett – titled The spirit level: why equality is better for everyone.

In this work Wilkinson and Pickett consider the income distribution in 23 rich countries (U.S. included) and plot the ratio between the income received by the top 20% of the population to that received by the bottom 20% - as a measure of inequality - against the Index of health and social problems built on the UN Development Program data (averaged for the reporting period 2003-2006) for the same countries. This index – like the well known Human Development Index (HDI) – is a simple average of the data for the following social phenomenon: *level of trust, mental illness* (no data for Denmark), *life expectancy, infant mortality, obesity, children educational performance* (no data for UK), *teenage birth, homicides, imprisonment rates, social mobility*. Without entering into the details, the main and robust message coming out from the book is that among the 23 rich countries the more unequal ones do worse according to almost every quality of life indicator. The U.S. – the most unequal country in the sample – is the most striking example of that, followed by Portugal and the UK (both places where the gap between rich and poor is relatively large), whilst the Scandinavian countries invariably rank last. The message is clear: social problems were caused by material life conditions the more affluent countries should have performed better than the less affluent (still in the same basket of rich countries). Instead, the evidence suggests that it is the relative position *within* a society to matter the most: where income differences are bigger, social distances are bigger and social stratification more remarkable.

() This work would not have been possible without the collaboration of Anna Maccagnan and Daniela Mantovani, who collected the data and made the computer-job. Their precious presence is particularly acknowledged.*

To argue that whether there is an overall better chance of getting fat or dying young if you live in an unequal society does not mean that almost everyone is going to benefit from increased equality sounds methodologically correct,¹ in so far as that depends on whether the disadvantages of inequality are distributed across the social scale, or whether they cluster at the bottom. However, it is undeniable that the book takes the problem of social unease connected to the overall richness of a country to the surface. The problem we should think about – which is one of the themes of my research – is what those people frustrated, mentally disturbed, with short life expectancy, likely to die in their infancy, obese, with low education, likely parents when teenagers, probable killers, candidates to the jail, socially locked-in, what those poor, distressed, unhappy people are going to do in their connection with the wealthy social democratic environment they are in. One doesn't have to believe in equality to be concerned about that, the concern already reached the most important media. On last March 21st in the NYT Eduardo Porter wrote that *“Once inequality becomes very acute, it breeds resentment and political instability, eroding the legitimacy of democratic institutions. It can produce political polarization and gridlock, splitting the political system between haves and have-nots, making it more difficult for governments to address imbalances and respond to brewing crises. That too can undermine economic growth, let alone democracy”*. On March 28th in The Washington Post Harold Meyerson writes that *“the consequences of this concentration of wealth and income extend beyond the purely economic. A middle class enduring prolonged stagnation isn't likely to fund projects the nation needs to undertake—such as rebuilding our infrastructure or increasing teacher pay — or, ultimately, to retain its faith in the efficacy of democracy. The rise of super PACs,² the low rates of taxation on capital gains and hedge fund operators, the ability of the major banks to fend off reform — all testify to the power of a neo-plutocracy beyond democratic control..... A nation where 93 percent of income growth goes to the top 1 percent is not a nation that will embark on great projects, or long command the allegiance of its people”*. Last but not least, in the November 20th Financial Times Lawrence

¹ D. Runciman, (2009)

² Political Action Committee: groups organized for the support of politicians.

Summers titled his paper *“We have to do better for inequality”*, and shifted the attention for the first time from the mantra of growth and growing to the less honk concern of income distribution: *“the extent of the change in income distribution is such that it is no longer true that the overall growth rate of the economy is the principal determinant of middle-class income growth – how the growth pie is distributed is at least as important. That most of the increase in inequality reflects gains for those at the very top at the expense of everyone else further belies the idea that simply strengthening the economy will reduce inequality”*. In Italy, the journalist-voice-from-America Federico Rampini wrote on the April 4th La Repubblica *“I super-ricchi non esitano più ad intervenire direttamente come "azionisti" nelle scelte di governo. [Avremo] una "plutonomia": un sistema in cui i ricchi definiscono le leggi, scrivono le regole, dettano l'agenda ai leader del mondo...”* A list of the richest American families with a summary evaluation of their wealth follows in the article, and I am not going to report it here, but the message is clear: why should the richest not control the political power in order to keep or even augmenting their wealth?

It is worthwhile remembering, as a final touch, the detailed tales about American politics and its tight connections to money and interest groups offered by the well known book by Hacker and Pierson, [The winner-take-all-politics](#), and the debate associated to it.³

2. Economics and Politics

As you may not know, the term which designates nowadays my discipline – economics – has not always been this one. The founder fathers called it Political Economy, and it is only recently that it became Economics.

Since economics is the discipline that studies allocation of resources, production, exchange, distribution, all things that imply social interaction, politics – the art of governing the “public” thing – immediately becomes a piece of this game. Thus, economics, at least at its macro-level, cannot be taken as a distinct subject from politics. This is precisely what our “classics” were doing: the trio Smith, Ricardo, and Marx, always wrote about Political Economy,

³ J. S. Hacker and P. Pierson, (2010).

analyzing the interaction between the political and the economic sector. The replacement of the “embarrassing” label *Political Economy* with the more neutral *Economics* comes in two steps: first, William Jevons substitutes *Theory* to *Principles* in the 2nd edition of the *Theory of political economy* (saying that the term *theory* was more scientific than the term *principles*) and soon after (1890) Alfred Marshall retained *Principles* but changed *Political Economy* and entitled his famous book as *Principles of Economics*. And the political side of the economic science gets out from the scene⁴. Let me report what Jevons writes on this change:

*“Among minor alterations, I may mention the substitution for the name Political Economy of the single convenient term Economics. This term, besides being more familiar and closely related to the old term, is perfectly analogous in form to Mathematics, Ethics, Æsthetics, and the names of various other branches of knowledge, and it has moreover the authority of usage from the time of Aristotle. Mr. Macleod is, so far as I know, the re-introducer of the name in recent years, but it appears to have been adopted also by Mr. Alfred Marshall at Cambridge. It is thus to be hoped that Economics will become the recognized name of a science, which nearly a century ago was known to the French Economists as la science économique. Though employing the new name in the text, it was obviously undesirable to alter the title-page of the book”.*⁵

Recently, the reintroduction of politics – however in a way which political scientists look at suspiciously – has led to a new [meaningful] label: Political Economics, as we will see below. Before this last evolution but still in recent times, the Public Choice field of economics picked up the inheritance of the early stage though in a different perspective. In the 1960s the idea of politicians and public officials not pursuing the good of the citizens and, on the contrary, striving for power started to become a regular assumption and a large number of analyses of politico-economic interactions based on the assumption of self-interested politicians and bureaucrats flourished⁶. The interaction between the economy and the polity (a **polity** is generally understood to mean a geographic area with a corresponding government) has been analyzed in various quantitative and empirical ways. The most widely used model of Public

⁴ The very profound successive and definitive transformation of the discipline to a formalized corpus is documented by R. Weintraub, (2002).

⁵ W. S. Jevons, (1879), *Preface to the second edition*, p.5

⁶ See, for all, J. M. Buchanan and G. Tullock, (1962).

Choice based on the assumption of politicians maximizing their own utility is the ultra notorious *Median Voter Model*,⁷ whose most straightforward prediction is that income redistribution will be popular when the mean income is higher than the median income.⁸ In other words, it is assumed that each individual has a well defined preference on a combination of taxes and transfers, as a function of his income and wealth. In a majoritarian democratic system the selected combination will be the one preferred by the voter who stays exactly in the middle of the distribution. On a more general terms, since the median voter's distance from the average capital endowment in the economy will increase with wealth inequality, she would approve a tax rate that is higher the more unequal the distribution of wealth, which in turn would reduce investment and economic growth. Thus in a democracy we would expect higher inequality to be associated with lower growth.

Since the median voter theorem is valid only in specific circumstances, the theory linked to it has not been supported empirically, not surprisingly, and has been gradually abandoned. Malign economists say that only political scientists keep using it.

In the 1970s, the Political Business Cycles kind of models became prominent. Starting from the seminal contribution of Nordhaus⁹ in 1972, and running through the 1970s, 1980s, and 1990s,¹⁰ a variety of models with rational voters and opportunistic politicians appeared. I wish to stress the word “rational” – which is one of the epistemic pillars of the discipline – and the word “opportunistic”, which has no particular negative connotation, simply meaning that the politician is self interested, his interest being his re-election or more generally power. From the appearance of these contributions onwards, the new label of *political economics* came into fashion, something that many political scientist, at least in Italy and UK, do not like particularly both because the theoretical economic setting is the same as always, formalized and fully within the mainstream tradition, and because the political side of the plot is not properly

⁷ D. Black, (1948). For a review of the median voter literature see J. Londregan, (2006).

⁸ A. H. Meltzer and S. F. Richard, (1981).

⁹ W. D. Nordhaus, (1975).

¹⁰ A. Alesina and H. Rosenthal (1995) is the contribution that later received most attention, but also T. Persson and G. Tabellini, (1990), (1999) and (2003, 2005) cannot be avoided to be quoted.

investigated, they say. In fact, these class of politico-economic models take the fundamental “rules of the game”, the constitutional or institutional setting which structures (human) political interaction in society, as exogenously giving. What they study is the interaction of political and economic activities by comparing the different outcomes of institutional rules.

This problem of exogeneity *versus* endogeneity – which is one of the main problems in economics – remains unsolved. This is still, in each field or subfield of economics, a main issue, since in a social interaction context nothing can be taken as given, being everything the product of the action *within* the society. However, the researcher has to start from some point otherwise he reaches nowhere. He has to take something as exogenous, as given, especially if he is running the empirical test of a theory. This problem exists in other disciplines too but it is, as far as I know, less controversial or less influential, since hard sciences hinge upon human behavior less extensively than social sciences. Though the math allows, in principle, to handle everything as endogenous, this is seldom implementable in the models – usually small – that a single researcher or a small group of researchers generally are dealing with. The scholars engaging in “political economics” are obviously aware of the causality problem: institutions determine policy decisions and outcomes, but the latter also influence the institutions existing. However, to identify the causalities is difficult, and several attempts have remained unsatisfactory. Moreover, while recent contributions relating the economic and political sectors are impressive, they have to some extent remained within a specialist community of scholars. Their effect on general economics is not very large, but compared to the former self-contained economic theory that completely disregarded politics, much has been achieved.

3. Theory (or Theoretical Linkages)

3.1 Economics and Income Inequality

There is no long tradition of systematic work on the concept of income inequality or on the size distribution of income.

The theory of distribution – which has been for long time a (if not *the*) main subject in Economics (better, Political Economy at that time, as we have just seen) – was pointing at the

functional distribution of income. The concern of the classics was to explain and evaluate the way total production would distribute to the factors (of production): capital, labour and land. Profit, wage and rent. Full stop. “*To determine the laws which regulate this distribution is the principal problem in Political Economy*”.¹¹ From the second half of 18th century *class* was a main concept, and remained such until the neo-classical or marginalist revolution, which we can date around the late 19th/early 20th century. The term *class* disappeared. The more neutral term *group* did not, but the concept itself of group did, giving place to that of the *representative agent*. However, the focus was still on the functional distribution of income within a theory that was explaining it through the concept of (marginal) productivity. And since the productivity is the meter for the reward, the earnings cannot be equal because productivity is not equal across people.

Economic equality topic was never really central to the concerns of the profession. Economists preferred to focus on the way to improve the conditions of the people in the bottom part of the income distribution either theorizing on the employment conditions and on promoting growth or, surprisingly but not that much perhaps, sometimes arguing that a more egalitarian distribution might be detrimental to the production through its effects on savings. If a society has less rich people and less poor people, it has also less savings, since rich save and poor do not save. Less savings means less investment, and less production. It was Keynes who (first?) said that savings is a vice and not a virtue (in the short run. “And in the long run, we are all dead”, as one of the most quoted sentences of his tells). He advocated the importance of a reduced savings in favour of an increased consumption, as the main method to augment production in an economy working below capacity. Thus, an income-turn towards equality results (prospectively) in an increased total income.

The reasoning above applies to developed economies since in developing countries the main problem is not a lack of (aggregate) demand. The main problem there is a lack of productive capacity. So, the prime concern must be about investment instead of consumption

¹¹ D. Ricardo, (1821), *Preface*, p. 5.

(and savings, again, but not only savings since it is well known that savings must be intermediated by an efficient financial market in order to become investment). However, it was only after WWII that developing countries started becoming an issue and the problems related to their extreme poverty became visible and generated attention and concern in the whole society. Notwithstanding that, the (sadly right) theory that moving towards more equal distribution of income would not lead to any economic growth still kept the issue of the personal income distribution out of the economists' sight. Only very recently the interest evolved into the *personal* distribution of incomes - the distribution *among* persons - and one of the reasons for that happening is simply the fact that developed advanced-economy countries are now experimenting inequality. In the 21st century prolonged unemployment, wage dispersion, ever increasing accumulation of wealth, extreme richness co-existing with very low incomes, were the main factors that let personal distribution of income start becoming an issue. The distribution of factors is still relevant but as a means to understanding the personal distribution, in a world where capital takes the form not only of real, material assets, but also of human capital (self-investment in education and training) and people cannot be identified anymore by a single source of incomes being the coexistence of wage, interest income, and rent, quite possible.

Given that, do we have a theory of personal income distribution? "No unified theory of personal income distribution exists; instead the literature offers a series of building blocks which provide parts of an explanation".¹² Before turning to some elucidation of this statement let me briefly review what theory has offered to the income distribution field until the recent resurgence of interest.

1. Pareto's α

Pareto is considered the beginner of studies in income distribution. In his *Cours d'économie politique* he examines fiscal data for England, Prussia, Saxony, the Swiss canton of

¹² A. B. Atkinson and F. Bourguignon, (2001).

Vaud, and a sample of Italian municipalities as well as the cities of Basel in Switzerland and Augsburg in Germany in the XV century, and he finds that the income distribution can be approximated by

$$N_x = A/X^\alpha$$

where N_x is the number of individuals with income equal to, or greater than X ; and A , α , are constants. X belongs to an interval $[h, \infty]$ where h is the greater than 0 initial value of the empirical distribution, and both A and α are positive. The graphic representation is a decreasing hyperbola, and the α was interpreted by Pareto as an inequality measure since it represents how much the proportion of people with an income equal to or greater than a certain level varies (specifically, decreases) with income. This parameter appeared to be remarkably constant over time and space, with a value always within the range from 1.5 to 1.7. Thus, Pareto could comment: *“L’inégalité de la répartition des revenus paraît donc dépendre beaucoup plus de la nature même des hommes que de l’organisation économique de la société. Des profondes modifications de cette organisation pourraient bien n’avoir que peu d’influence pour modifier la loi de la répartition des revenus.”*¹³ [The inequality in the distribution of incomes seems therefore to depend much more on the human nature itself than on the economic organization of the society. It could well be the case that deep modifications of this organization had but than little impact on the law that governs the distribution of incomes]¹⁴.

The Pareto formula is generally presented in a linear version – as Pareto himself did in his book – as

$$\log N_x = A - \alpha \log X$$

A vivid debate followed this “discovery” – the story is long and goes beyond the aim of this paper – until 1939, when Bresciani-Turroni published on *Econometrica* an article where he kindly thanked Pareto for his meaningful insights on the income distribution issue suggesting at the same time that data did not always support “his α ”. In Bresciani-Turroni’s words: *“Pareto’s*

¹³ V. Pareto, (1897), p. 1047.

¹⁴ English translation in A. Brandolini, (2011).

law is but an "empirical" and not a rational law of the distribution of incomes. Pareto did not attribute any importance to this distinction, which was stressed by Edgeworth in his controversy with Pareto [p. 130] ...Pareto's conclusions as to the relation between the average income and the degree of inequality might not be accepted; yet he has drawn attention to a fundamental problem of economic policy [p. 132]...Other more appropriate indexes of inequality have been elaborated. Yet Pareto conceived for the first time the idea of measuring the inequality in the distribution of incomes" [ibidem].¹⁵ It is nowadays widely recognized that the functional form proposed by Pareto to describe the shape of income distribution is however able to model its upper tail, the richest portion.

The Pareto's α story might help explaining the absence of theorization about income distribution, together with the different concern of economics at that time: after all, Pareto offered a theory, and a lot of effort was then devoted to providing her with a statistical measure.

2. Kuznets' inverted U

Work on the distribution of income by size is very recent dating back to Kuznets's 1953 seminal work¹⁶ and his foremost quoted 1955 article.¹⁷ Kuznets looks at market-income for the United States, England and Germany on a family rather than an individual basis: two big differences with respect to Pareto: a difference in the data typology – market- instead of fiscal-data – and in the recipient unity. "A scant sample, but at least a starting point for some inferences concerning *long-term* changes in the presently *developed* countries".¹⁸ Kuznets interest was on the relationship between income distribution and the development of a country, and his conjecture was that inequality would increase with income at early stages of development and decrease at higher levels of income – after a period of stability – due to two

¹⁵ C. Bresciani-Turroni, (1939).

¹⁶ S. Kuznets, (1953).

¹⁷ S. Kuznets, (1955). The article is his presidential address delivered actually on December 29, 1954, at the 67th Annual Meeting of the American Economic Association

¹⁸ S. Kuznets, *cit.*, p. 4, italics added.

different reasons. The first part of the hypothesis relies on inequality being relatively less when most people are in the traditional sector and going up when society develops. The explanation is based on a classical dualism between sectors: average incomes in the traditional (agricultural) sector are lower than in the modern (industrial) one, and overall differences persist when the process of transmigration from the backward sector to the advanced one has ended up due to the diversification of jobs in the industry. As development goes on inequality goes down along with the State presence and action in smoothing it down, in a role that belongs to advanced societies. In fact, as industrialization proceeds governments start taking a more active role in redistribution, which is one reason why inequality declines with development. Development is supposed to increase redistribution because it transforms a dispersed agrarian workforce into a more clustered workforce who can readily be organized, and it is associated with greater political sensitiveness. Thus, plotting an inequality index against per capita GDP originates an “inverted U” shaped curve. In the last part of this 1955 paper Kuznets devotes one paragraph to the differences between developed and underdeveloped countries, and he conjectures that “the secular income structure is somewhat more unequal in underdeveloped countries than in the more advanced”.¹⁹ Thus, Kuznets’s “inverted U” can be represented also in a multi-country space, where countries are captured on a different point in time along their development path.²⁰ Worthwhile remembering, in Kuznets’ words, that “in concluding this paper.....I am acutely conscious of the meagerness of reliable information presented. The paper is perhaps 5% empirical information and 95% speculation, some of it possibly tainted by wishful thinking”.²¹ In an ex-post perspective, Kuznets inverse U did received enough validation until the 1970s experience, but is not supported any longer by data, and it is not invoked almost anymore as a theory for inequality.

What after that? Very little. First and foremost, “no unified theory of income distribution exists; instead the literature offers a series of building blocks which provide part of the

¹⁹ S. Kuznets, *cit.*, p. 23

²⁰ E. L. Glaeser, (2005).

²¹ S. Kuznets, *cit.*, p. 26

explanation”²² where the lack of a unified theory may also be due to the relative novelty of the phenomenon of income inequality in western rich economies, as previously recalled, in addition to its complexity .

The body of research on inequality starting from the second half of the 1970s was primarily concerned with data, concepts and measures clarification, and temporal trends detection. Probably for these features “the linkage between theory and empirics has sometimes been looser than in some other areas of economics, with a tendency for empirical research to prioritize careful treatment of the available data”.²³

As it is reported in a 2006 paper by Atkinson and Brandolini,²⁴ the macro-econometric literature concerning the determinants of income inequality - and not the relationship between income inequality and something else, typically growth - is fairly young (and scanty). Some literature started to appear in the late 1980s, when the phenomenon of *rising* inequality began to take place. The oldest paper – according to the authors – dates back to 1986 and the next one is in the middle of the 1990s. All are based on a panel of countries - each having its own time span of data - instead of on a single country through time. As far as I know, and as Atkinson himself is pointing out, there are no econometric works on the determinants of personal income distribution following directly from a theoretically founded model, reflecting both the low interest economists have in inequality, as already recalled, and a lack of a comprehensive theory to work with, already mentioned as well.

What it is generally told is that the increased competition from newly industrialising countries (NIC) and the technical change occurred in the last decades operated - separately or in conjunctions – to a shift of the demand away from unskilled- towards skilled-labour. The reduced demand for less skilled labour together with the relative supplies of the two kinds of workers fixed in the short run in a free labour market would raise the premium for skilled workers and would imply a decline in the relative wage of unskilled workers, thus provoking

²² A. B. Atkinson and F. Bourguignon, (2001), p.7267.

²³ W. Salverda, B. Nolan, and T. M. Smeeding, (2009), “Introduction”, p.10.

²⁴ A. B. Atkinson and A. Brandolini (2006).

substantial wage dispersion (the US case). Whether unemployment benefits and/or minimum wages would place a floor (meaning that the relative wage of the unskilled workers cannot fall), the demand shift will result in a greater unemployment (the Europe case).

What happens in the top part of income distribution – the top-incomes case – is unclear, though our main concern should be on that portion since the main component of the current inequality originates from there (as we will see in the next section). In order to understand what is going on nowadays in advanced economies we should investigate what happens to the top percentile and *within* the top percentile group. The skill bias explanation has little to say directly about why the top percentile has increased relative to the top decile, and the impact of technical change in replacing routine manual jobs only indirectly affects top earners. Factors such as globalisation and technological change are likely to operate also *via* the remuneration of the executives in a hierarchical structure or via the rents earned by the “superstars”. Again hinging on Atkinson, some – very few actually – models exist that might be useful, and, unfortunately, they do not seem easily testable.²⁵ Moreover, in the top part of the distribution there are both labour and capital incomes, and capital incomes historically accounted for the bulk of top incomes. As Piketty (2001) has demonstrated for France,²⁶ the composition of income changes radically within the top 10 percent: for those in the “first” 5 percent, earnings (in 1998 in France) accounted for 90 percent of their income; for those in the top 0.01 percent, capital income accounted for over 60 percent of total income. [On the contrary, in the U.S. the composition of the 0.01% “has changed considerably between 1960 and 2000. *Salary income* has been driving up top-incomes and has now become the main source of income at the very top”.²⁷ This brings us to theories concerned with the accumulation of capital. Do we have a testable theory for the evolution of this component? No. What we have is something that, according to Atkinson - who is one of the few tackling this problem theoretically²⁸ - is by far too

²⁵ A. B. Atkinson, (2003). He quotes H. Simon (1957) and H.F. Lydall, (1959) for the first aspect, and S. Rosen, (1981) and R. Frank and P. J. Cook, (1995), for the second.

²⁶ T. Piketty, (2001). The whole reported reasoning comes from A. B. Atkinson and T. Piketty, (2010).

²⁷ T. Picketty and E. Saez, (2006), p.202.

²⁸ A. B. Atkinson and D. J. Harrison, (1978).

unrealistic. In addition, in order to understand and explain the (if any) shifting mix of capital and earned incomes, we need theories that bring the two income sources together in a single model. What happens at the top crucially depends on the joint distribution of income sources. Are those with large capital incomes also those with high salaries, accumulating assets over their careers, or are they separate groups?²⁹ Again quoting Atkinson “ *micro-based models..... probably provide the most promising strategy to develop convincing empirical tests of the determinants and consequences of income and wealth concentration— probably more promising than standard cross-country regressions. However our data set, especially because of its lack of systematic decomposition between labour income and capital income components, and of systematic series on labour and capital tax rates, is unfortunately insufficient to do this in a fully satisfactory manner at this stage.*³⁰

Thus, something is in the air³¹ that we are not yet able to assess properly, that has not yet fully modelled. Both the bottom and the upper part of the earning distribution show that the very capitalism has changed since the 1970s. We have a labour market driven by skill-biased technological progress, which implies movements *within* the distribution at the bottom, and a principled-agents context at the top of the distribution: salaried dependent workers – that is what executives are – that are able to change the nature of the firm, transforming production into finance, and promoting themselves in a degree very often independent on the firm performances. Their promotions may be influenced also by the globalization of the market for managers, who are highly mobile: globalization has raised the rents of those with the very highest abilities. Taking a position a bit extreme, for the sake of provocation, technological change and globalization can be seen as a partly endogenous business’s choice to weaken the labour bargaining position built up so successfully in the 1950s and 1960s.

²⁹ A. B. Atkinson, (2003), p. 501.

³⁰ A. B. Atkinson, T. Piketty and E. Saez, (2010), p.703.

³¹ Marshall used to define trade as “*something in the air*”.

Capitalism has been transformed. I do not intend here to stop and talk about this “new” capitalism, which many authors are describing.³² I wish just to recall that what exists now in the production sphere of the western rich economies is an unbalance presence of the secondary and tertiary sectors: services account for something in between 60 and 80% of the GDP, and industry for about 20%, with agriculture on the way of disappearance (for our country of investigation, UK, the proportion in 2010 is 77% for services, 22% for industry, and the remaining 1% for agriculture). This had implied a radical change in the amount and in the quality of the “classical” factors of production (labour and capital, those who get the slices of the pie), a supremacy of financial capital over the real capital, a real capital more and more sophisticated and – what accounts more – more and more mobile (Multinationals mean also huge firms, with their own logic) and a more and more request for human skills. On the top of that, the possibility for financial capital to fly in the time one pushes a button where it likes best. As Summers writes: “When George Eastman revolutionized photography, he did very well and, because he needed a large number of Americans to carry out his vision, the city of Rochester had a thriving middle class for two generations. By contrast, when Steve Jobs revolutionized personal computing, he and the shareholders in Apple (who are spread all over the world) did very well but a much smaller benefit flowed to middle-class American workers both because production was outsourced and because the production of computers and software was not terribly labour intensive”.³³ The mutation of capitalism reverberates on inequality through the new rent-seeking positions that have been created. Using abused words, globalization has challenged equality.

In the new wave of capitalism, a crucial role in the inequality story has been played by the credit market, by the changed nature of the banking system due to the financial de-regulation, by the interest rates charged on borrowing and by the “credit rationing” type of behaviour from the side of the banks. If we believe that education is one of the main engines for escaping from inequality, its cost means something for what has happened. Real interest rates in the majority

³² Among others, see, for instance, A. Glyn, (2006), or Stiglitz J., (2003).

³³ L. Summers, (2011).

of OECD countries increased sharply in the 1980s, and though in the 1990s they were lower than in the first half of the 1980s they were well above the level of the 1960s. Low income families could not afford directly the cost of high quality education for their children, and could not afford it indirectly as well, due to the high cost of borrowing and to the selection operated by the banks, more inclined to concede loans whether the university study would provide future high-remuneration career (typically: business school).

Cutting the possibility of changing the relative income position in the social ladder means replicate inequality.³⁴ The literature on the intergenerational transmission of income inequality seems very pessimistic about the possibility of escaping from inequality for the future generations: “Income inequality shows a strong trans-generational tendency: it is regularly transmitted from parents to children. A disadvantaged family background negatively affects a child’s prospects in terms of both educational attainment and wage earnings”.³⁵ Useless to comment how harmful this low intergenerational mobility turns out to be for the dampening of inequality (and how pernicious it may be for the attractiveness of the democratic institutions to their citizens).

In concluding this section, and in the aim of connecting it to the previous one, let me quote a particularly accurate econometric contribution reporting as a main result that *“income inequality is relatively stable within countries and it varies significantly across countries”*³⁶ [technically: the observed inter-temporal changes are small relative to the observed differences across countries]. Both statements are not surprising and both reflect the same aspect: at the end, inequality depends on the country-specific socio-politico-(economic) framework in so far as the State does not actively counteract the (unequal) market outcomes. This framework cannot be but different from country to country – no single “story” holds for all – and cannot be but sluggish to change. Institutions, social norms, constitutional settings, and other structural

³⁴ M. Franzini and M. Raitano, (2009), with a review of the literature.

³⁵ M. Franzini, (2009), *Introduction*.

³⁶ H. Li, L. Squire and H. Zou (1998), p. 26.

aspects of a country generally do not change quickly, either in developed countries or in the developing ones. We will be back to that in the discussion of my operative choices.

3.2 Inequality and Democracy

Before approaching this challenging though slippery theme, it is necessary to clear which concept of democracy I am referring to. As a mere symbol of the complexity of the topic, let me report three nice definitions of democracy. Democracy is:

- ✚ *a system that makes it possible to get rid of a government without spilling blood (Popper)*
- ✚ *the worst form of government except for all the others (Churchill)*
- ✚ *the voice of the people which creates institutions, and these institutions in turn control the government and make it possible to change it without violence. In this sense, the demos is the sovereign that gives legitimacy to the institutions of democracy (Dahrendorf)³⁷*

Without going at all into the debate on what democracy is – I leave it to the political theorists³⁸ – I will refer throughout the paper to the concept of “polyarchy” as developed by Dahl³⁹, limiting myself only to stressing what in modern terms is not considered sufficient any longer to have a full democracy: i) the most popular definition of democracy, which equates it with regular elections, and ii) the commonplace that identifies democracy with majority rule. Both are considered to be a fallacy: modern democracies offer many channels to citizens besides the elections (associational, partisan, functional, territorial, collective, individual....) in order to let the citizens have voice, and democracies are nowadays required to accompany the majority rule principle with the protection of minority-rights.⁴⁰

³⁷ R. Darhendorf, (2003).

³⁸ For all, G. Sartori, (1987), and R. A. Dahl, (2000). An important readings on this theme is also J. Schumpeter, (1943).

³⁹ R. A. Dahl, (1971).

⁴⁰ T. L. Karl and P. Schmitter, (1993).

Polyarchy is by far the most commonly used concept of democracy especially when the interest is in (an attempt of) evaluating it. As formulated by Dahl, the minimum requirements for political democracy are: i) freedom to form and join organization; ii) freedom of expression; iii) the right to vote; iv) eligibility for public office; v) the right of political leaders to compete for support; vi) alternative sources of information; vii) free and fair elections; viii) institution for making government policies depend on votes and other expressions of preference. As we will see, the problem with Polyarchy (or perhaps with any political variable) is still its measure.

The relationship between Inequality and Democracy is a two-way relationship as every other connection between Politics and Economics: institutions can affect inequality (both in diminishing it – through redistribution – and increasing it, *via* blameless or deliberate malfunctions), and inequality can shape institutions empowering some groups more than others, thus giving origin to a sort of vicious circle.

The difficulties to a correct working of democracy when population is divided by income and wealth are widely dealt with in the political science literature.⁴¹ Eventually, *“since Aristotle, who observed that great economic inequality leads the wealthy to seek a share of power matching their share of resources and so to subvert democratic government, scholars of politics have theorized that the proper functioning of a democracy depends on a relatively equal distribution of economic resources”*.⁴²

When inequality grows differences between population-groups start to appear or to strengthen, and through time what would distinguish these groups is their social distance, which can also be enormous and lead to social exclusion through differences in the consumption sphere, in health and housing conditions, in the access to education and to the labor market, and in the social-relation network (the so-called social capital) and social mobility. As Tocqueville had already stated in his unforgettable *De la démocratie en Amérique (1835 and 1840)*, the degree of equality is the best predictor of democracy stability, and of the quality

⁴¹ See, for instance, T. L. Karl, (2000), N. Bermeo, (2009); L. M. Bartels, (2008); E. Thorbecke and C. Charumilind, (2002).

⁴² F. Solt, (2008), p. 48, stress added.

itself of democracy. Extreme income inequality is not as far dangerous as in provoking dramatic outcomes as riots or similar – “our” western democracies are perhaps immune from that, who knows – but it works in a subtle way in so far as it *“has a far more insidious impact on the way democratic institutions actually operate. Organizations as diverse as Human Rights Watch, Freedom House... have all pointed out how powerful economic and political elites have bent laws to their bidding, enfeebled courts, violated rights, corrupted politicians, and run roughshod over constitutions and contracts. This makes the state even more susceptible to influence-trafficking, further increasing inefficiencies and exacerbating inequalities”*.⁴³

On top of everything, and even more worrying to me, is the fact that the failure of a proper functioning of the democratic institutions weakens their legitimacy and invites to an estrangement from political life and participation. In my opinion the problem is not inequality as such but the deterioration of trust⁴⁴. The trend of de-participation leaves empty spaces that may well lead to an oligarchic power (in the specific case of a wealth-driven power, the *plutarchy*, in the Hacker-Pierson terminology, or *plutonomy* elsewhere), or a power that is centred more and more on the interest of the few.

The relationship between income inequality and democracy is mediated by that one between inequality and socio-political processes, which are mostly studied in connection to growth as the main target to achieve.⁴⁵ This means to look at all that can discourage capital accumulation, or to look at the inefficiencies of a distortive tax system in order to finance the redistribution: typical economic mechanisms I am not interested in here. If the same relationship is not studied in connection to growth, the interest goes towards political conflicts and democracy-stability in contexts where frequencies of riots, political assassination, and probability of government collapse are the possible outcomes. Yet, this is something far from my interest here.

⁴³ T. L. Karl, *cit.*, p. 154

⁴⁴ In this direction, see C. Fried, (2000).

⁴⁵ J. Benhabib and A. Rustichini, (1991); A. Alesina and R. Perotti, (1996); T. Persson and G. Tabellini, (1994).

On the contrary, an important hint that goes in the direction I too am going to is the linkage between income inequality and democracy through the channel represented by education, which has in itself the gene of “social equalizer” (education is taken as the fundamental basis for equality since Tocqueville’s writings). As we have just seen, the relationship is two-way in so far as education affects income inequality through earnings and the labour market in general, and income inequality affects education mainly through the restraints on the accessibility to high-level schooling: low-income (and low-education as well) families are excluded from the credit market, and cannot afford high quality education. What accounts more here is the fact that a higher inequality implies less widespread education, since rich people resist more to the funding of public schooling through taxes, leading to an underfunding of large-scale education. Public spending on education is on average lower in countries like Britain and the United States where the rich participate more in the political process than the poor and higher in countries like Sweden and Denmark, where levels of political participation are approximately similar across the income scale. Many other facets of this complex link between inequality and education can also subsist, all suggesting that low-educated populations might be more easily victim of political manipulation, and less interested to the institutions of democracy and to its functioning, which do constitute its quality. This is a conclusion that is difficult to test empirically since it requires qualitative data, but I will take it into full consideration in explaining the quantitative relationship between inequality and democracy.

It seems⁴⁶ that there is a certain degree of connection – both at the theoretical and empirical levels – between income inequality and crime, or violence at the micro-level. This might lead to some reduction in the quality of democracy. Lastly, there is a large body of empirical evidence about the negative relationship between income inequality and health indicators across countries and within countries and communities. However, it is more difficult

⁴⁶ E. Thorbecke and C. Charumilind, (2002).

to envisage immediately the effect of health conditions on democracy and I am not considering it any longer.

4. A Focus on Inequality

4.1 Defining Economic Inequality

Inequality is a word that never goes alone and that clarifies itself when accompanied by something else. Inequality of what? Resource inequality, opportunity inequality, gender inequality.....

Inequality must be measured, and nothing could be more difficult both conceptually and technically. I will leave both questions to somebody else: the first – how to define inequality – mostly to philosophers; the second – how to measure it – to statisticians and mathematicians. I will keep myself rigorously within the domain of Economics, where inequality is generally associated with income (or wealth, or consumption)⁴⁷, and it is measured by consolidated, though somehow questioned, indices, almost exclusively on a one-dimensional basis. In this context, inequality is clearly defined, meaning nothing but “difference” in distribution.⁴⁸ Difference or disparity would perhaps be better words, though inequality sounds more evocative.

However, we cannot avoid raising a question. Though strictly tied to Economics, can we assess economic inequalities just by looking at cash income? Of course, no, we cannot. People can have quite decent or even high living standards even if they have (relatively) low incomes. The simplest case is when they can produce much of what they need through home production (farmers), but we can think of people who hinge upon their built up savings or of a State which provides public goods or services almost free of charge. The reason why cash income is used is

⁴⁷ However, wealth is rarely investigated because data for wealth are difficult to be obtained. On the contrary, consumption (expenditure for goods and services) is used in economies where income data are less available. Consumption expenditure tends to be more equally distributed than income.

⁴⁸ For instance, Kuznets – one of the leading scholars in the field – admits that “when we say [income] inequality we simply mean [income] differences, without regard to their desirability as a system of reward or undesirability as a scheme running counter to some ideal of equality”. Quoted by A. B. Atkinson, (1983), p. 4.

because it is easily measured, and this helps cross-country comparisons. Notwithstanding that, we should never forget that money income is only a partial measure of welfare. Mentioning welfare takes us to the multidimensionality problem, which entails both technical and theoretical difficulties, as we will briefly see in the next section.

4.2 Measuring Economic Inequality

Before proceeding, let us just mention three related sets of problems. The length of the time period matters because, other things equal, transitory fluctuations smooth out with time, thus reducing measured inequality. The unit of account matters as well, and a choice must be made among family, individual, household. Equivalence scales (like the OECD one)⁴⁹ must be used in order to be able to compare households with a different number of people and/or with a different composition. Income definition is not unique: with or without capital gains and imputed rents, pre-tax, after tax, or before tax but after some fiscal deduction, comprehensive of in-kind benefits or not. Last but not least, at least two different sources make a great difference: fiscal (administrative) data or survey data? All these choices have to be left to the kind of problem under observation.

The measure of inequality is a wide and technically challenging topic, well documented in brilliant surveys.⁵⁰ Worthwhile reminding that inequality is measured by a huge amount of different indexes, and which one to select for the analysis is not neutral with respect the illustration of inequality and, of course, to its evaluation, both verbally and mathematically. This is the reason why, probably, economists and almost everybody out of the specific and highly restricted circle of “people working on inequality” (mostly statisticians/mathematicians) use the Gini index. Though seldom, the Theil index is also used because it is an entropy index and can be decomposed.

Here I limit myself to elucidating some problems, starting with the multidimensionality, and to listing the most commonly used measures in the one-dimension case.

⁴⁹ The incomes of each component are summed together and this amount is divided by a number given by the sum of 1.5 for each adult (more than 14 year old) and 0.3 for each child (13 year old or less).

⁵⁰ S. P. Jenkins and P. Van Kerm, (2009); F. A. Cowell, 2000.

The most known approach in the multi-dimensions context is the “capabilities approach” proposed by Sen,⁵¹ according to which the two relevant categories are functionings (good health, literacy, and so on) and capabilities. Capabilities are nothing else but the amount of functionings that each of us can hinge upon, and which can be considered as an indicator of freedom. The capability approach is almost entirely a theoretical approach. In fact, *“the problems [in its empirical implementation] that are new to the multivariate case are the weighting structure of the functionings and their degree of substitutability..... Both these aspects are not technical hitches but the expression of implicit value judgments”*.⁵² As an example of the two problems, let us take a simple representation of a multidimensional index in an additive and in a non-additive version

$$S_i = \sum_j w_j x_{ij} \qquad S_i = \left\{ \sum_j w_j x_{ij}^{-\beta} \right\}^{-1/\beta} \qquad i = 1 \dots N \text{ and } j = 1 \dots J$$

where x_{ij} is the j th attribute of individual i th, w_j the correspondent weight and β is the degree of substitutability ($\beta = -1$ perfect substitutability, con $\beta = \infty$ perfect complementarity). How to fix the weights? One possibility is to treat all attributes equally, either for a desire of minimizing interferences, or from a lack of information; the “let the data speak for themselves” is an alternative; the use of mathematical algorithms is another. And what about β ? Shall we use a constant elasticity of substitution (CES) function? Or other and more complex kind of functions? As an example of how things work in practice, it should be mentioned that the HDI, (Human Development Indicator) which is “the” well known eye-catching indicator used by the UNs considers income together with life expectancy and educational achievement⁵³, simply averaging among the three.⁵⁴

⁵¹ A. K. Sen, (1980). Among Sen’s numerous contributions, let us mention A. K. Sen, (1992).

⁵² A. Brandolini, (2008), p. 29.

⁵³ This last item is calculated as a compounded average of the adult population education and of the young population schooling.

⁵⁴ The HDI measures the average achievement in human developments in a country by taking a simple arithmetic mean of three indicators: the logarithm of GDP per capita (Y), life expectancy at birth (L) and education. The indicator for education is itself a composite index combining adult literacy (A), with a two-third weight, and gross enrolment in primary, secondary and tertiary school (G), with a

Connected to welfare economics – and with some built-in degree of ethical value⁵⁵ – is the Pigou-Dalton-Atkinson⁵⁶ approach, within which the famous Atkinson’s index originates, based on the entirely new *equally distributed equivalent* level of income concept: “the level of income per head which if equally distributed would give the same level of social welfare as the present distribution”.⁵⁷ Without going too far into Atkinson’s index, it is worthwhile noticing that it has an immediate interpretation: “If [it is equal to] 0.3, for example, it allows us to say that if incomes were equally distributed, then we should need only 70% of the present national income to achieve the same level of social welfare”.⁵⁸ In other words, the index points at a distributive inefficiency in so far as it measures the welfare loss caused by an unequal distribution. Theoretically appealing, the implementation of Atkinson’s index suffers from the specification of the “social welfare function”, which is highly questionable.

Undoubtedly, in nowadays Economics there is a wide interest, and associated research, towards the concept of well-being. The development of the Economics of happiness, as a new topic on a micro-basis, and the gigantic effort, on a macro-basis, of the Stiglitz-commission⁵⁹ in order to provide a robust theoretical basis for enlarging the concept of GDP and revising the entire national accounting scheme, testify that. Within this broad interest towards capturing aspects that go beyond the simple “income”, the scholars in the Economics of inequality –

one-third weight. All four elementary indices are normalized by taking the proportional country’s achievement over a prefixed scale.

⁵⁵ Saying that a distribution is “more” unequal than another means also having a criterion according to which it is not preferred.

⁵⁶ A. C. Pigou, (1920); H. Dalton, (1920); A. B. Atkinson, (1970).

⁵⁷ A. B. Atkinson, (1970), *cit.*, p. 250. “We can then define as our new measure of inequality as 1 minus the ratio of the equally distributed equivalent level of income to the mean of the actual distribution. If [the index] falls, then the distribution has become more equal: we would require a higher level of equally distributed income (relative to the mean) to achieve the same level of social welfare as the actual distribution. The measure has, of course, the convenient property of lying between 0 (complete equality) and 1 (complete inequality)” [*ibidem*]. Intuitively, the closer to the mean is the level of income per head which if equally distributed would give the same level of social welfare, the more equal the distribution is. Whether the two concepts coincide (perfect equality), the ratio is 1 and the index is 0.

⁵⁸ *Ibidem*

⁵⁹ J. E. Stiglitz, A. K. Sen, J.-P. Fitoussi, (2010).

mainly statisticians – are elaborating theoretically refined and empirically challenging measures that, however, have not yet come out from the specialists’ inner circle to reach the wider set of applied economists. Modern Economics is a very young discipline, pretty much specialized into subfields often scantily communicating, and time is required for the spreading of its advances.

Beyond the one- and multi-dimension aspect, a second general question about measures relies on their “relative” vs. “absolute” version, with the former prevailing both at academic and official statistics levels. *“Inequality measures are described as relative when they are invariant to proportional transformations (scale invariance) and absolute when they are invariant to additive transformations (translation invariance)”*⁶⁰. As an example, *“there are good reasons for considering absolute income levels. With a doubling of real incomes from their 2005 values, per capita income in the United States remains 10 times that of China, but the absolute difference increases from \$37,583 to \$75,166. The world would be getting richer, but the differences between countries would be becoming larger in absolute terms. One way in which this can be reflected is by taking the absolute mean difference rather than the relative mean difference. The absolute mean difference has increased throughout the period, accelerating upward after 1950. This alternative—rather neglected—measure of inequality gives a different perspective on the evolution of world income distribution”*.⁶¹ Again, *“this absolute criterion was imaginatively advocated by Kolm as follows: “In May 1968 in France, radical students triggered a student upheaval which induced a workers’ general strike. All this was ended by the Grenelle agreements which decreed a 13% increase in all payrolls. Thus, laborers earning 80 pounds a month received 10 pounds more, whereas executives who already earned 800 pounds a month received 100 pounds more. The Radicals felt bitter and cheated; in their view, this widely increased income inequality” [Kolm S., Unequal Inequalities, Journal of Economic Theory, 12, 1976, 416-442, p. 419]. Kolm’s example looks persuasive. Yet, much of its appeal fades away when we consider income reductions rather than increases. Atkinson cites the case of the sailors of the British Navy, Atlantic Fleet, at Invergordon, who in 1931 opposed a shilling a day*

⁶⁰ A. B. Atkinson and A. Brandolini,, (2010), p. 6

⁶¹ *Ibidem*, p. 7

reduction in their pay since "... they did not regard it as fair that they should bear a bigger proportionate cut than the officers" (1983, p. 6).⁶²

Let us come now to the most usual and "simple" context: the one-dimension and relative kind of measure. "There are fifteen well known statistical measures of income inequality. These can broadly divided into three groups: (A) measures of variation (or dispersion); (B) measures of skewness and (C) measures derived from the empirical laws of income distribution".⁶³ Without entering into the technical details, and reminding that from 1975 (the date of this quotation) onwards other indexes surely joined the list, I just mention here for a common knowledge seeking, some well known indexes belonging to the one or the other of the groups. The first group includes the most common and known indices, like the variance, the coefficient of variation (the ratio between the variance and the mean), the relative mean deviation, the entropy indexes (like the Theil index or the mean log deviation), which have the nice properties of being decomposable into groups thus rendering possible the calculation of inequality *within* and *between* groups, and, of course, the Gini index, "*which is by far the most popular measure of inequality worldwide*".⁶⁴ The second group has some indices aiming at measuring the asymmetry of a distribution. In the third we find the Pareto's alpha, for instance, and all the specific shares possessed by various subgroups of the population, like the share of income owned by the richest 5 percent of the population, the P90/P10 inter-decile ratio [the ratio of the upper (lower) bound value of the ninth decile to that of the first] and – in a non-exhaustive list - the P50/P10 inter-decile ratio, which is the ratio of median income to the upper bound value of the first decile [all, scale-invariant]. The P90/P10, measuring the ratio of the income of a person in the 90th percentile to that of a person in the 10th percentile, is very common, especially in developed countries, for a number of reasons. First, such ratios are fairly straightforward and easy to interpret, for example, a ratio of 5 means that the income of the poorest person in the top 10 per cent of income distribution is five times that of the richest

⁶² A. Brandolini, (2011), *cit.*, p. 8.

⁶³ T. Stark, (1972), Appendix 3, p. 137, italics and stressing added.

⁶⁴ B. Milanovic, (2011), p. 29.

person in the bottom 10 per cent. Second, it is easy to calculate, and in developed countries, there is often a longer time-series of data that makes it possible to examine changes in income inequality over time. An obvious disadvantage is that the P90/P10 does not reflect what happens in other parts of the income distribution. All these indicators have different upper and lower bounds and relative advantages or disadvantages over one another. For instance, relative to other indices the mean log deviation is more sensitive to changes at the bottom of the distribution, and the squared coefficient of variation is more sensitive to changes at the top, while the Gini coefficient is less sensitive to changes at the two extremes of the distribution.

Statistical theory and empirical findings confirm that measurement assumptions may considerably influence the results. In general, “using different scalar inequality measures to compare distributions may lead to contradictory conclusions, one distribution appearing more unequal than another with respect to one measure, but the opposite being true with another measure”.⁶⁵ What to choose, then? Besides the nature of the problem under investigation, one way to choose within the large number of inequality indices available is to evaluate them in terms of their properties. This is perhaps one of the reasons why the Gini index is so widely adopted as a measure of inequality.

The GINI

In 1912 Corrado Gini, an Italian statistician and sociologist, published *Variabilità e mutabilità* (Variability and Mutability),⁶⁶ where he developed a measure of statistical dispersion which became the foremost index for the measure of inequality.

In order to understand the technical meaning of the Gini index, we must go back to the concept of the size-distribution of income. Everything starts with (personal) income data collection, and with income recipient units (individuals, households or families) put together into (annual) income-classes of regular size (from € 0 to 1000, from 1000 to 2000, and so on).

The household is an extended version of the family. Family is a concept related to personal identity data registration while Household identifies people living together both for

⁶⁵ A. B. Atkinson and F. Bourguignon, (2002), p. 7269.

⁶⁶ C. Gini, (1912).

economic and parental motivations. The household concept is the most widely adopted one, both for measuring poverty and inequality

The histogram is then transformed into a continuous curve through approximation techniques which are called parametrical estimations. The log-normal is one of them and it has two parameters: mean and variance. Other functions – used in the income-distribution applied literature – are the Singh-Maddal and the Dagum (with three parameters), and the four-parameter generalized β of the second kind. From this income distribution curve we go to a frequency distribution of income showing recipient units ranked according to the size of their income. The recipient units are put together into groups of equal size with an indication of the share of total income accruing to each group. The most usual groupings are percentiles, deciles and quintiles. The size distribution of income described in percentiles can be graphically expressed by the “Lorenz- curve”,⁶⁷ which joins together the plotting of the cumulative shares of population, arranged by rising income on the horizontal axis (up to 100%) and the shares of income enjoyed by the corresponding fractions of population (cumulative percentages of income, up to 100% as well) on the vertical axis.

Now that we know the Lorenz curve into a square, let us look for the GINI.

The meaning of the Gini (then transformed into a coefficient, as we will see) is the evaluation of the area between the diagonal of the square and the Lorenz curve. Intuitively, the bigger this area is the more inequality is present. But, does the same area mean the same inequality? No, as you can easily see when looking at four different Lorenz curves equally determining the same area. Is more equal a society where more people have low income or a society where more people has high income, within the same global inequality? Who is the minority, the rich or the poor?

Anyhow, once the area is calculated, its value is “purged” by every dimensional feature by being transformed into a coefficient: the Gini is nothing but the ratio of “our” area – the one bounded by the Lorenz curve and the diagonal – and the area of the triangle (one half of the

⁶⁷ M. O. Lorenz, (1905).

square). When there is perfect equality the Lorenz curve coincides with the diagonal, and the Gini value would be zero: when it is inequality to be perfect, its value would be 1. While in the linear case the computation of the Gini is easy, in the non-linear case some math has obviously to be involved, and things might not be so easy. But we leave that to statisticians and mathematicians.

Being a ratio, Gini – how it is commonly called – has many advantages (comparability, scale and population independence, transfer principle obedience):

- ✓ scale independence: if every income is multiplied by a constant, the index doesn't change
- ✓ population independence: if every income is repeated k times, the index doesn't change
- ✓ transfer principle: if income is transferred from a rich person to a poor person the resulting distribution is more equal

But Gini index, like other measures of inequality, suffers from a number of drawbacks. First, it considers only one dimension of inequality (but this is common to all the one-dimensional measures); then, economies with equal Gini can have very different distribution [a society whose Lorenz curve is linear from (0,0) to (0.5,0) and then linear to (1,1) – that is a society where half of population has no income, and the other half shares all the income equally – has the same Gini of a society in which 75% of population equally shares 25% of income and the remaining 25% of population equally shares the 75% of income: the Lorenz curve is linear from (0,0) to (0.75,0.25) and then is linear to (1,1); it is influenced by the thinness of the chosen measurement unit (*the granularity*); does not identify where in the income distribution the rise (or fall) in income inequality may have occurred; it may remain unchanged while the distribution changes also significantly because redistributive forces work in different directions at different points. Regarding the Gini inadequacy to capture where in the income distribution the rise (or fall) in income inequality may have occurred, if this is our interest we have to look at some decomposition of data and confront it separately with the global distribution.

5. Stylized Facts

The expression “stylized facts” is an economic jargon. With the aim of defining it for this seminar, I surfed the web and I found in Wikipedia something that I myself might have written.

From Wiki:

The expression “stylized facts” was introduced by the economist Nicholas Kaldor in the context of a debate on economic growth theory in 1961 [Nicholas Kaldor, Capital Accumulation and Economic Growth. In: Lutz/Hague (eds.): The Theory of Capital, London, pp. 177-222],^[2] expanding on model assumptions made in a 1957 paper [Nicholas Kaldor, “A model of economic growth”, The Economic Journal 67 (268), pp. 591-624]. Criticizing the neoclassical models of economic growth of his time, Kaldor argues that theory construction should begin with a summary of the relevant facts. However, to handle the problem that “facts as recorded by statisticians, are always subject to numerous snags and qualifications, and for that reason are incapable of being summarized”, he suggests that theorists “should be free to start off with a stylized view of the facts – i.e. concentrate on broad tendencies, ignoring individual detail”. With respect to broad tendencies that result from such a process, Kaldor coins the term “stylized facts”.

Which are the stylized facts of the phenomenon of (income) inequality? Are there any stylized facts of the relationship between democracy and inequality? These are my next steps. Since the trend in income inequality is nowadays widely documented in a very precise and detailed way, in what follows I will largely hinge upon the existing literature.

The conventional version of the story about historical trends in inequality is that its reduction “in developed countries started only with the 1st WW. In reality, Kuznets had already observed that this process had started in Denmark before the 1st WW, Soltow’s data are also indicative of a long trend of inequality reduction dating from well before the 1st WW in Norway, and Kravis indicates a pattern of narrowing inequality in the US between 1890 and 1920. The pre-1st WW situation in Great Britain was basically stable but there are also some indications of a reduction in inequality at that stage. However, it has to be admitted that the reduction in inequality has been sharper and more general since the 1st WW than at any time before.”⁶⁸ It is of some interest noticing for what follows that at the beginning of the 1970s and relating to the

⁶⁸ F. Paukert, (1973), p. 120, Footnote 1

post-war period, *“the data ...support the hypothesis expressed but not fully tested by Kuznets and Oshima that with economic development income inequality tends to increase then becomes stable and then decreases”*.⁶⁹ In reality, another wide empirical study conducted over a sensibly longer post-war period (1947-1994), put into light *“that the very fact that inequality has been shown to be relatively stable while incomes have almost certainly increased significantly during the 40-year period under study suggests that there is unlikely to be much support in the data for the systematic relationship between inequality and income suggested by Kuznets”*.⁷⁰

Things however changed undoubtedly after the 1970s. What happened after that moment? *“In the past twenty-five years, we have witnessed a sharp reversal of that equalizing tendency. Not only in the United States and the United Kingdom, but almost everywhere: income distribution has become more unequal in China, Russia, and India. The latter three could be explained away by arguing that they are still at the middle (developing) stage. But this explanation does not work for West European countries and the United States. There, the declining portion of the inverted U curve was transformed since the Thatcher-Reagan era into a rising portion. Thus, we now have something that looks like a reclined letter S, a shape like this ~”*.⁷¹ Two interesting and suspicious stylized facts are that: 1) the decline in the wage-share (over GDP) by around 10% across 17 OECD countries since 1976 affected - though to different degrees - most industrial sectors, thing that reflects more than just changes in the structure of GDP from industries with a higher wage share towards those with a lower one;⁷² 2) with few exceptions, changes in the income share of the richest 1% of the population account for most of the increase in the income share of the top decile of the income distribution. Overall, over the entire period from the mid-1980s to the mid-2000s, the dominant pattern is one of a fairly widespread increase in inequality (in two-thirds of all countries). The rises are stronger UK and US, in Finland, Norway and Sweden (from a low base), in Germany, Italy, and the Netherlands

⁶⁹ F. Paukert, *cit.*, p. 121

⁷⁰ H. Li, L. Squire and H. Zou, (1998), p. 42.

⁷¹ B. Milanovic, (2011), p. 91.

⁷² A. Glyn, (2006).

(from a higher base).⁷³ Gini index, mean-log deviation, standard coefficient of variation, inter-decile ratios like P90/P10, P50/P10, different data sources [OECD, LIS (Luxembourg Income Study), and Eurostat], all tell the consistent story of an increase in inequality. In addition, though this is another story, countries that achieve the largest redistribution through taxes and transfers generally record the lowest inequality in the distribution of household disposable income, although with considerable variation across countries.

It is worthwhile spending some few words on what happened in the high portion of income distribution since, accordingly to Atkinson, this is the very relevant, important, intriguing, stylized fact: the so called “top-incomes problem”. This is the problem that especially the US are facing now, that fills the newspapers, that echoes from the media, that everybody is talking about.

*“During the post-1970 period, one does observe a major divergence between rich countries. While top income shares have remained fairly stable in France and other Continental European countries over the past three decades, they have increased enormously in the United States..... The United Kingdom and other Anglo-Saxon countries tend to be somewhere in between the European pattern and the U.S. pattern. Note that the rise of United States top-income shares is not due to the revival of top capital incomes, but rather to the very large increases in top wages (especially top executive compensation). As a consequence, top executives (the “working rich”) have replaced top capital owners (the “rentiers”) at the top of the U.S. income hierarchy over the course of the 20th century. This contrasts with the European pattern, where top capital incomes are still predominant at the top of the distribution (albeit at lower levels than at the beginning of the 20th century). This provides yet another example as to why it is vital to be able to break down income distribution series by income source (without such a decomposition, it is virtually impossible to understand the forces at play)”.*⁷⁴ Also in Atkinson’s view, the data on the widening in income-distribution tell a different story for the US and the continental Europe, since: *“we have not seen a significant rise at the top in mainland European*

⁷³ A. B. Atkinson, (2003), p. 495

⁷⁴ T. Piketty, (2005). The same point is made also by T. Piketty and E. Saez, (2006), p. 202.

countries; the bottom decile in the US has not fallen relative to the median in recent years over the last ten years [rather they have increased. Between 1987 and 1996 the ratio increased from the 44 per cent to 48 per cent]; the rise in dispersion in the Anglo-Saxon countries is pervasive, affecting nearly all occupational groups".⁷⁵

Accordingly, the unifying explanation – the Transatlantic Consensus - of globalization as “the” main cause for increase in inequality does not hold: the falling demand for unskilled labor together with the increasing demand for the skilled one should have led to increased wage dispersion in the US – where the labor market enjoys a wide flexibility – and to a rise in unemployment in Europe, where the labor market conditions put a floor on the wage fall. It is true that earnings dispersion has been widening, but this is mainly due to what is happening at the top. *“First, the personal distribution of income is subject to a wide variety of forces, operating in different sectors of the economy, and in different markets, so that we need to look not just at wages but also at the capital market recognizing that there has been a shift towards capital income and a rise in the real rate of return [in the majority of the G7]; second, the explanation should not be limited to a simple competitive supply-and-demand story, but should incorporate the institutional determinants of wages and employment, and recognize the role of convention and social norms; third, for these reasons, we should not expect the same developments in all countries, particularly given the role of national policies; put differently, the evolution of income inequality is not simply the product of common economic forces: it also represents the impact of institutions and policies over which we have choice”.⁷⁶* Looking at the top-incomes, Atkinson and Picketty report that *“there was in fact considerable diversity of experience over the period from 1949 to the beginning of the twenty-first century ... and during the 50 years since 1949 individual countries followed different time paths.⁷⁷ There is just one case — Finland — where there is a pattern of rise/fall/rise... Of the remaining 15 countries, one can distinguish a group of 6 ‘flat’ countries (France, Germany, Switzerland, the Netherlands,*

⁷⁵ A. B. Atkinson, (2000), p. 14.

⁷⁶ *Ibidem*, pp. 16-17.

⁷⁷ A. B. Atkinson and T. Piketty (eds.), (2010), p. 682.

Japan, Singapore), and a group of 9 'U-shaped' countries (UK, USA, Canada, Australia, New Zealand, India, Argentina, Sweden, Norway). ... [They] appear to fit, to varying degrees, the U-shape hypothesis that top shares have first fallen and then risen over the post-war period"..... And as for the composition within the top 1%, "in Table 13.5 we assemble the findings for the 'next 4 per cent' (those in the second to fifth percentile groups) and the 'second vingtile group' (those in the sixth to tenth percentile groups). In many cases—15 out of 19—the top 1 per cent are different, in the sense that the changes in income concentration have particularly affected this group. For some countries, the 'next 4 per cent' exhibit some of the same features as the top 1 per cent (as in the UK in recent decades), so that it would be fairer to talk of concentration among the top 5 per cent, but typically the second vingtile group does not share the same experience. Being in the top 1 per cent does not necessarily imply being rich, and there are also marked differences within this group. The very rich are different from the rich".⁷⁸

Just few words and two Tables about disposable income, which measures the amount of resources – wealth and human capital aside – that people can count on. "The countries ... fall into some distinctive clusters. Inequality, as measured by the decile ratio, is least in Nordic countries plus the Netherlands and the Czech and Slovak Republics with values of three or less. The two other Benelux countries (Belgium and Central Europe (France, Switzerland, Germany, Austria, Slovenia) and three other Eastern European countries (Hungary, Poland, Romania) come next at 3.2-3.6. These precede the Anglo-Saxon nations (Canada, Australia, Ireland and the United Kingdom), which have decile ratios comprised between 3.9 and 4.6, and the Southern European countries (Italy, Spain, Greece and Portugal) plus Israel, whose ratios fall between 4.5 and 5.0. Only the United States, Estonia, Mexico and Russia have values in excess of five⁷⁹ The United States has the highest inequality of disposable incomes, although the dispersion of market incomes is on the high side but not far from most other countries; it is below the values recorded for France and the United Kingdom, besides Poland and Israel. The fact is that the percentage reduction in before-tax-and-benefit inequality in the United States is

⁷⁸ *Ibidem*, p. 687

⁷⁹ A. Brandolini and T. M. Smeeding,, (2008), p.6.

a mere 22 per cent. If we exclude Taiwan, where redistribution has a tiny impact, only Switzerland shows a reduction as low as the United States, but the Swiss start from a much more equal distribution and end with a Gini index below the average. These percentage reductions are very consistent with the patterns of aggregate public spending. High-spending Northern and Central European nations have the highest degree of inequality reduction, from 36 to 45 per cent; the Anglo-Saxon (excluding the United States) nations are next with 28 to 33 per cent reductions; the United States and Switzerland are, as just seen, at the bottom of the scale.....The nations which redistribute the most are not necessarily the ones who have the greatest degree of market income inequality: before-tax-and-benefit incomes in Finland and the Netherlands are far more equally distributed than in the United States".⁸⁰

6. Case-Study and Work-Plan

In order to make the work plan as clearer as possible, I list here all the features of the research, motivating what I am doing step by step.

Am I concerned with:

✓ Efficiency? Ethics? NO

A long-lasting question is the trade-off between equity and efficiency. In its extreme version, redistribution and state intervention are dangerous because they reduce the benefits of free market economy and can eventually make the people they want to help worse off. A very common sentence is that "The poor will be better-off with a small slice of a large cake than a large slice of a small cake". I strongly believe that equality is desirable independently of its consequences on economics since it is the central component of social justice. However, in my talk I would avoid completely this aspect, which is a philosophical one and goes out of my skills and beyond the aim of this paper. Nor I would talk about the efficiency issue, which is mainly connected to growth. Thus, instead of treating (in)equality as an ethical issue, or treat it as an

⁸⁰ *Ibidem*, p. 8-9

economic variable, I would assume a cynic view arguing that equality *is desirable* since inequality is dangerous.

Am I interested into differences across countries, or solely into what happens in one country?

✓ **“Between” or “Within”? WITHIN**

As far as I know, all the existing studies (not so many, indeed) provide cross-country analyses, focussing on differences among countries. I am not interested in comparison for several reasons: developing countries differ in fundamental ways from the developed ones and I would never put them together; democracies in transition have to be studied separately as well. What I want to look at here belongs to the universe of the developed countries with fully grounded democracy. Even within this universe things are different: the kind and the intensity of policies, their timing, the country-specific social norms, their position in the global economic context and so on. Thus, I will choose to concentrate on a single country, and I will perform a time-series analysis. In fact, I am persuaded that the effect of inequality causing a reduction of democracy in a country that was initially highly democratic, must be a long through-time effect. In a future step of the research I will proceed with a comparison – within the universe of rich, developed, long-lasting democratic countries – to test why the current rising inequality pertains sensibly more to English-speaking countries than to the continental Europe. Language cannot be obviously the explanation!

Shall I care about..

✓ **Poverty, deprivation, social exclusion? NO.**

People are interested in both world inequality and world poverty, but the two literatures are separate,⁸¹ with an uneasy relationship between them.⁸² Here the perplexities about the technicalities of multidimensional indices apply (see below)

Am I considering...

✓ **What Inequality? MONETARY INEQUALITY**

⁸¹ A. B. Atkinson and F. Bourguignon, (2002).

⁸² A. B. Atkinson and A. Brandolini, (2010).

Since no reliable multidimensional well-being indices still exist,⁸³ analyses of inequality are usually performed using monetary indicators only.

✓ **What monetary inequality? INCOME INEQUALITY**

Consumption instead of income is less significant for the phenomenon of inequality (people can use piled-up savings or indebtedness) and it is used when income data are not available.

The study of global household wealth is at an embryonic stage. Wealth data are becoming to be collected since very recently on a standardized basis (LWS), but data on the level of wealth remains poor for many countries. Information on the pattern of wealth within countries is even scarcer. The precise definition of personal wealth has not been agreed, and the appropriate methods of valuation are not always clear. Much work remains to be done to refine the estimates of wealth level by country, to improve the estimates of wealth distribution within countries, to explore the pattern of wealth holdings within families, and so on. For evident reasons (inheritances, multiform aspects of wealth some of which widely depending on market-price fluctuations, and so on) wealth is not considered as a good indicator for monetary inequality.⁸⁴ However, especially with regards to the present widening of inequality wealth is reputed to be an important variable.

✓ **What measure of Income Inequality? The GINI COEFFICIENT, the P90/10, the P90/5, the SHARE of TOP 1%, 5%, 10% and the SHARE of BOTTOM 1%, 5%, 10%, and the Foster-Wolfson polarization index.**

Following the warnings on the different results that different indexes can produce, and being aware that Gini does not reveal opposite movements within the distribution, we consider also the classical *intra-distribution* inequality indexes like all the various forms of inter-decile ratios. In addition, just in order to have an idea though preliminary of what happens to the

⁸³ A. Brandolini, (2008).

⁸⁴ A. B. Atkinson, (1983).

middle of the distribution, we use also the F-W polarization index.⁸⁵ All these measures are computed on market-incomes, for the part aiming at connecting “new capitalism” and inequality. These same measures will be calculated on a disposable income concept for the part aiming at evaluating the relationship between inequality and democracy, on the hypothesis that the degree of people’s discomfort towards democracy and institutions depends on the effective amount of resources they have, or they have access to.

✓ **What definition of democracy?**

I will hinge upon the concept of “Polyarchy” elaborated by Dahl, which represents by far the definition referred to by the largest number of researchers on this field. Since data shortage on these concepts - always relevant – become impressive when using a time series analysis instead of a cross country one, the variable(s) for democracy is based *on* Dahl’s concept, it is *not* the Dahl’s concept. My hypothesis is that the variables used here would imply a deterioration of the quality of democracy within the effective participation, enlightened understanding and control of the agenda categories.

✓ **Where (and when) to apply the analysis to? UK**

(from 1972 to 2009 for “inequality estimation” and from 1973 to 2004 for “democracy estimation”)

From the stylized facts it appears that the phenomenon of rising inequality – though a general one in rich OECD countries – applies particularly to UK and US. Many researchers are working on the US case, which is THE case. The “Winner-take-all-politics”⁸⁶ opened a wide debate here

⁸⁵ This index is based on the principle that polarization depends on the distance of incomes from the median. After having ordered incomes from the lowest to the highest one a curve is calculated, which represents the distance (normalized on the median) of the incomes from the median. As for the Lorenz curve, cumulative distributions are then calculated, getting a figure symmetrical with respect to the median. “In this paper we propose a range-free approach to measuring the middle-class and polarization... The approach yield two polarization curves which like the Lorenz curve in inequality analysis, signals unambiguous increases in polarization”, J. E. Foster and M. Wolfson, (2010), p. 247.

⁸⁶ J. S. Hacker and P. Pierson, (2010).

in the US: in a plethora of comments, an entire issue of Politics and Society was devoted to it⁸⁷ with contributions of economists, sociologists and political scientist. In a way, what happened so markedly in the US – the American exceptionalism - has been already casted into a framework by Hacker and Pierson: *“policy has, through new laws and through the politically imposed failure to update policy to reflect changing social circumstances, or “drift,” played a critical (if far from exclusive) role in generating winner-take-all inequality; and a marked change in the distribution of organized political power has played a central (if, again, far from exclusive) role in promoting these policy changes. Of course, rising inequality also has had broad economic roots, from the globalization of trade and finance to changes in workplace and financial technologies. Yet these economic trends cannot easily explain why inequality has taken such a stronger hold in the United States than it has in other rich democracies buffeted by similar forces, nor why America’s inequality explosion has been fueled so strongly by gains at the top. To answer these questions requires taking seriously the transformation of U.S. government policy over this period. Economic forces did not sweep through a stable policy landscape; rather they were channeled by very specific policy choices—both the rewriting of rules to enable winner-take-all outcomes and the deliberate failure to update rules in ways that would challenge those outcomes. And to complete the circle, organized groups that benefited from the winner-take-all economy — and which took advantage of a new political playing field tilted toward their interests — demanded and supported these policy choices”.⁸⁸* In other words, the American exceptionalism has already its own explanation in the absence of a consolidated quantitative explanation, on a single country basis, of a less policy-dependent evolution of income inequality. This is why I chose to focus on UK, an as much consolidated democracy and rich western country with a sharply increasing inequality. Nobody is working on the UK case, which is subtler and more interesting to me, also because the income composition at the very top is less earnings- than wealth-based and, moreover, because UK is a country with higher taxation level and that redistributes more than the US. In addition, I like to remind that UK is the country that invented the modern Welfare State and was a country with a level of inequality much lower than the U.S.

⁸⁷ *Politics & Society*, 38(2), 2010.

⁸⁸ J. S. Hacker and P. Pierson, (2010), p. 266-7. This same opinion is shared also by P. Krugman throughout his book *The conscience of a liberal*, (2007).

✓ **How to articulate the investigation?**

What I intend to do is a quantitative assessment of how much the current rising income inequality in UK is determined by the “new” (financial) capitalism and of how much inequality impacts on the UK old and mature democracy. In the first part, I do not intend to explain inequality but only to link it to the “epochal” economic passage we are in. In the second part I am simply looking for “movements of de-democratization within the democratic regime” as it has been recently put speaking about the US.⁸⁹

First: how much of inequality has been determined by the nowadays capitalism?



1. Inequality as a dependent variable

Second: is inequality able to “deteriorate” democracy?



2. Inequality as an independent variable

Between the two steps the concept of income on which inequalities indices are drawn upon has to be changed. While in the first part of the research I am interested to what the changing nature of capitalism has produced on inequality – and the right concept here is *market income* – in the second part I investigate on the effect of inequality on democracy, and the right concept here is disposable income, the income after public transfers are added and taxes and social security contributions are deducted, that is to say the amount of resources people enjoy effectively. It is widely recognized⁹⁰ that the differences across countries are in part due to different government policies, and that good government policies can make a difference in reducing inequality. Thus, it is important to assess whether – *after redistribution* – inequality can still lead to a political dissatisfaction. The difference between the Gini index for market incomes and the Gini index for disposable incomes is in fact a common measure of the level of redistribution.

⁸⁹ J. J. Linz and A. Stepan, (2011).

⁹⁰ For instance, the last two OECD Reports on inequality.

✓ **How to estimate the effects?**

The quantitative procedure I will use differs between the two steps of the analysis.

In the first one (where inequality is the dependent variable) a linear regression analysis is used in the form of the Ordinary Least Squares (OLS) method that allows estimating from the data the unknown parameters that link the dependent variable to the independent ones. Given:

- The **unknown parameters**, denoted as β ,
- The **independent variables X**.
- The **dependent variable**, Y.

A regression model relates Y to a function of X and β .

$$Y \approx f(\mathbf{X}, \beta)$$

In the second one (where “democracy” is the dependent variable), a probit model is used, that is to say a regression model in which the dependent variable is a dummy variable. In this type of model, the probability that the variable Y takes value equal to 1, given the vector of independent variables X is modeled⁹¹:

$$\Pr(Y=1 | X) = \Phi (X\beta)$$

7. The empirical approach

7.1 First stage: to inequality

In this Section the description of the variables, the estimation procedure, and the Tables for the results – all related to the *inequality* context – are presented.

⁹¹ The Probability that Y=1 is not a linear function of X, such as in a OLS regression, because it could lead to an estimated probability greater than 1 or lower than 0. The Probability that Y=1 is therefore a function Φ of $X\beta$, where Φ is the cumulative density function of the standard normal distribution. By construction: $0 \leq \Phi(X\beta) \leq 1$

Dependent variable: INCOME INEQUALITY



Variables for inequality:

- 1) The Gini index
- 2) The Foester-Walfson polarization index
- 3) The interdecile ratio P90/10
- 4) The interdecile ratio P90/50
- 5) The share top 1%
- 6) The share top 5%
- 7) The share top 10%
- 8) The share bottom 1%
- 9) The share bottom 5%
- 10) The share bottom 10%

All the indexes relate to market-income, which includes labor income (from employment and self-employment) and other incomes, *i.e.* investment-income and income from private pensions. The indexes have been calculated on individual weekly market-income coming from two surveys: the Family Expenditure Survey that covers the period 1971-2000 and the Family Resources Survey, collected from 1994 to 2009. The time span of the estimates is 1972-2009.

Independent Variables:

1) EDUCATION: Proportion of people aged 20-24 with education level lower than A-level (lower than a high-school type). Source: our elaborations on General Household Survey for 1972-2006 and on Family Resources Survey for 2008 and 2009. The GHS is one of the most important surveys collected every year on families and households in the UK. It collects data on households, families and people, family information, including marriage, fertility, cohabitation, education, health, smoking, drinking, migration, etc. Range: [0-100]. <http://www.esds.ac.uk/government/ghs/>

2) UNION DENSITY: it is a weighted average of two ratios. The first is the ratio between total wages of unionized workers and total wages in the economy and the second is the ratio between total salaries of unionized workers and total salaries in the economy. The weights are the quota of wages and salaries on the total. Source: ICTWSS, Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts). Range: [0-100]

3) FTSE: it is the English Stock Market Price index provided by the Financial Times together with the London Stock Exchange. Source: DATASTREAM. Range: from 111 (1975) to 3300 (2007).

4) FREEDOM TO TRADE. This index is taken from the Economic Freedom Dataset (Gwartney, Hall and Lawson 2011). The Economic Freedom Dataset includes data on Economic Freedom in different domains (http://www.freetheworld.com/datasets_efw.html). The components of the index are the following: “taxes on international trade”, “regulatory trade barriers”, (i.e. non-monetary trade obstacles), “size of the trade sector relative to expected”, “black market exchange rates”, (expressing the difference between the official and the black market domestic currency exchange rate), and “International capital market controls”, summarizing capital controls and foreign investment restrictions (Gwartney, Hall and Lawson 2011b). The higher the index, the higher is the “freedom to trade”. Range: [0 to 10].

5) M2 AS A RATIO GDP (M2/GDP). M2 is the “more liquid” definition of money: currency plus demand deposits. GDP is the Gross Domestic Product. Source: World Bank.

6) FES is a dummy variable that takes value equal to 1 if the index of market income inequality has been drawn from the Family Expenditure Survey, 0 if from the Family Resources Survey. This variable controls for systematic differences in the collection of income data between the two surveys.

7) CREDIT MARKET REGULATION (CMR). This index is taken from the same dataset as above: Economic Freedom Dataset (Gwartney, Hall and Lawson 2011). It includes “ownership of banks”, “foreign bank competition” (measuring the presence of foreign banks in the banking

sector), "extension of credit to the private sector", "interest rate controls" and "negative real interest rates". Range: [0 to 10]. The higher the index the freer is the credit market.

8) A time trend (**YEAR**) has been added in a second step in order to remedy for the non-stationarity that seemed to be present at the beginning. Since the results (and the extremely high R-squared) did not change and since the Durbin-Watson test was not sustaining any serial correlation of the residuals, that seemed to exclude the non-stationarity in variance - we did not proceed with any co-integration analysis or any estimation on the differences. This is something that might be done in a future step.

As far as the estimation procedure is concerned, the OLS method has been used and the variables are estimated in levels: thus the reading is "the unit variation in y following a unit variation in x". Estimations in logs have also been performed, in order to be able to read the coefficients more immediately in terms of % variations, i.e. elasticity. These Tables are not provided here, but are available on request.

The results presented relate to the **ten Models [1-10]** – having as dependent variable the ten inequality indicators we have calculated (the Gini index, the Foster Wolfson polarization index, the inter-decile ratios P90/10 and P90/50, the top 1%, 5%, 10% income shares, and the bottom 1%, 5%, 10%) – in the two **versions (A) and (B)**, which differ solely for the variable which is intended to represent the money/credit market. In the **(A) version**, the variable selected is "M2/GDP", while in the **(B) version** the variable is "CMR". The results for these **20 Models** are in **Tables I**.

Table I.1

**Models [1-10]
Version (A): with M2/GDP
(level-level model)**

	(1) Gini	(2) FW	(3) P90/10	(4) P90/50
Education Range (0-100)	0.0016*** (4.10)	0.0028*** (4.54)	0.26*** (3.01)	0.012*** (4.09)
Union density Range (0-100)	-0.0036*** (4.44)	-0.0069*** (5.47)	-0.35* (1.93)	-0.029*** (4.75)
FTSE*1000 ⁹² (111 to 3321)	0.0044 (0.77)	-0.0099 (1.14)	-1.30 (1.03)	-0.0048 (1.11)
Freedom to trade (0-10)	0.011*** (2.98)	0.015*** (2.80)	1.39* (1.77)	0.076*** (2.84)
M2/GDP (0-100)	0.000038 (0.33)	-0.00026 (1.49)	-0.055** (2.18)	-0.0014 (1.61)
Fes	0.0097* (1.80)	0.042*** (4.99)	4.16*** (3.49)	0.13*** (3.11)
Year	0.00029 (0.30)	0.0015 (0.98)	0.33 (1.53)	0.013* (1.80)
Constant	-0.15 (0.08)	-2.46 (0.83)	-633.3 (1.49)	-23.5 (1.63)
Observations	40	40	40	40
R ²	0.908	0.882	0.773	0.906

Absolute *t* statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

⁹² In order to avoid showing very low numbers, the estimated coefficient of the FTSE has been multiplied by 1000.

Models [1-10]
Version (A): with M2/GDP (continued)

	(5) Share Top 1%	(6) Share Top 5%	(7) Share Top 10%	(8) Share Bottom 1%	(9) Share Bottom 5%	(10) Share Bottom 1%
Education Range (0-100)	0.00048* (1.81)	0.00078** (2.45)	0.0010*** (3.05)	-0.00000068 (1.08)	-0.0000066 (1.39)	-0.000050*** (3.78)
Union density Range (0-100)	-0.00066 (1.21)	-0.0018** (2.69)	-0.0025*** (3.52)	0.0000023* (1.73)	0.000017 (1.69)	0.000075*** (2.75)
FTSE*1000 (111 to 3321)	0.00013*** (3.41)	0.012** (2.55)	0.0090* (1.86)	-0.000013 (1.38)	0.000034 (0.50)	0.000028 (0.15)
Freedom to trade (0-10)	0.0036 (1.51)	0.0057* (1.99)	0.0073** (2.41)	-0.0000056 (0.98)	-0.000093** (2.18)	-0.00029** (2.45)
M2/GDP (0-100)	0.00023*** (2.99)	0.00024** (2.62)	0.00020** (2.06)	0.00000029 (1.55)	0.00000030 (0.22)	0.0000061 (1.59)
Fes	-0.012*** (3.22)	-0.0078* (1.79)	-0.0030 (0.66)	0.0000066 (0.76)	-0.00014** (2.19)	-0.00063*** (3.46)
Year	-0.0010 (1.55)	-0.00067 (0.86)	-0.00027 (0.33)	-0.00000086 (0.56)	-0.0000096 (0.83)	-0.000030 (0.92)
Constant	2.01 (1.57)	1.49 (0.96)	0.81 (0.50)	0.0019 (0.61)	0.021 (0.91)	0.066 (1.03)
Observations	40	40	40	40	40	40
R^2	0.894	0.928	0.933	0.812	0.730	0.802

Absolute t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.2

Models [1-10]
Version (B): with Credit Market Regulation
(level-level model)

	(1) Gini	(2) FW	(3) P90/10	(4) P90/50
Education	0.00055	0.00071	-0.064	0.0033
Range (0-100)	(1.18)	(0.96)	(0.59)	(0.87)
Union density	-0.0024***	-0.0056***	-0.19	-0.025***
Range (0-100)	(3.13)	(4.62)	(1.05)	(3.93)
FTSE *1000	-0.0027	-0.024***	-3.60***	-0.11**
(111 to 3321)	(0.51)	(2.88)	(2.89)	(2.54)
Freedom to trade	0.010***	0.021***	2.53***	0.10***
(0-10)	(4.26)	(5.56)	(4.56)	(5.43)
CMR	0.0083***	0.013***	1.96***	0.054**
(0-10)	(3.36)	(3.30)	(3.36)	(2.66)
Fes	0.0087*	0.040***	3.83***	0.12***
	(1.86)	(5.30)	(3.47)	(3.06)
Year	0.00056	-0.000072	0.0013	0.0049
	(0.97)	(0.08)	(0.01)	(1.02)
Constant	-0.73	0.50	-5.38	-7.69
	(0.63)	(0.27)	(0.02)	(0.81)
Observations	40	40	40	40
R^2	0.932	0.906	0.807	0.917

Absolute t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Models [1-10]

Version (B): with Credit Market Regulation

	(5)	(6)	(7)	(8)	(9)	(10)
	Share Top 1%	Share Top 5%	Share Top 10%	Share Bottom 1%	Share Bottom 5%	Share Bottom 1%
Education Range (0-100)	0.00038 (0.97)	0.00039 (0.86)	0.00039 (0.89)	0.0000016** (2.20)	0.0000040 (0.68)	-0.0000077 (0.47)
Union density Range (0-100)	0.00020 (0.30)	-0.00056 (0.75)	-0.0011 (1.55)	0.00000078 (0.63)	0.0000064 (0.66)	0.000051* (1.88)
FTSE (111 to 3321)	0.013*** (2.85)	0.0097* (1.90)	0.0052 (1.06)	0.0000035 (0.42)	0.00011 (1.56)	0.00032* (1.72)
Freedom to trade (0-10)	-0.00092 (0.46)	0.00098 (0.43)	0.0034 (1.55)	-0.000012*** (3.06)	-0.00010*** (3.34)	-0.00042*** (4.98)
CMR (0-10)	0.0026 (1.25)	0.0050** (2.10)	0.0065*** (2.77)	-0.000015*** (3.72)	-0.000076** (2.40)	-0.00026*** (2.97)
Fes	-0.012*** (2.91)	-0.0081* (1.79)	-0.0036 (0.82)	0.0000090 (1.19)	-0.00013** (2.20)	-0.00058*** (3.50)
Year	0.00040 (0.80)	0.00082 (1.46)	0.00097* (1.78)	0.00000080 (0.85)	-0.0000082 (1.10)	0.0000059 (0.29)
Constant	-0.76 (0.77)	-1.49 (1.32)	-1.68 (1.53)	-0.0013 (0.69)	0.019 (1.25)	-0.0026 (0.06)
Observations	40	40	40	40	40	40
R^2	0.871	0.923	0.939	0.859	0.771	0.833

Absolute t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A comment to the results

The first part aimed at testing how sensibly the “new capitalism” would impact on inequality. The variables chosen to indicate the economic forces at work are: union density, the stock exchange market (a proxy for “financial exuberance”), globalization and money/credit market conditions. The signs of these variables – where significant – are the right and expected ones with few exceptions.

As a general outlook, some results change when passing from an indicator of liquidity to an indicator of financial deregulation, which works better both in itself and in improving the overall quality of the fit. However, the role of union density is minor, the role of the stock exchange market becomes less clear, and the control variable for education loses its (high) significance. On the contrary, the globalization variable does not show changes.

In both models union density has always the right sign: if the workers’ strength (union density) increases, inequality decreases. Unionized workers react better to attacks to their (monetary) rewards.

In both models the degree of globalization impact positively on inequality.

In both models the variables for the money and the credit markets do have effects, though they former has a less significant role (it influences P90/10 and all the top-shares only, whilst the latter impacts on all the four indexes and all the shares, with the unique exception of the bottom 1%). The variable for the financial de-regulation performs clearly better everywhere giving weight and significance to the idea that the credit market (a more complex concept than the simple liquidity concept represented by M2/GDP) has a sensible influence on inequality. All the variables for inequality react at the highest level of probability.

The stock-exchange market indicator – the “financial exuberance” variable – increases exclusively the three top-shares in version (A), the one with the liquidity variable, while it increases the top 1% and top 5% only in version (B), the one with the financial de-regulation variable, where it increases also the bottom 10% and diminishes the P90/10, the P90/50, and the polarization index. The two *interdeciles* reflect the reaction of their numerator and denominator respectively: with a top-10% unaffected and a greater bottom-10%, P90/10

diminishes; since P90/50 diminishes as well, with a top-ten unaffected the “bottom” 50% must have increased. And this explains also why the polarization index F-W diminishes. Gini does not react significantly because of all these opposite movements.

The Foster-Walfson index, which is a polarization index, specifically aims at evaluating the movements of the central part of the distribution: in other terms, it should reveal what happens to the middle-class. The phenomenon of the relative disappearance of the middle class has been stressed particularly by Milanovich, and in my opinion this is something of great relevance for the future of institutions. Be the evaluation of the middle-class positive or negative, its role is something that cannot be neglected. The impact of each variable on F-W is the same as on Gini, both in sign and significance, and only the R-squared is slightly smaller when using F-W, in both versions (A) and (B). Thus, in both versions, a decrease in the workers capability of negotiation and an exacerbation of the globalization increase polarization, i.e. have effect on the central part of the distribution, shrinking “the middle class”. A wider credit-market deregulation (only present in version B) does the same. The value of the stock exchange market influences the polarization index only in version B with a negative effect, because of the opposite influences on the two tails.

7.2 Second stage: from inequality to democracy

In this Section the description of the variables, the estimation procedure, and the Tables for the results – all related to the *democracy* context – are presented. This part hinges widely on Solt (2008), who is the only study, as far as we know, concerning advanced democratic (though with a different degree of democracy) economies. The differences between Solt’s article and this paper first lie in methodology (his is a cross-country analysis, mine is a time series analysis), then in the questions (only the second perfectly overlaps), in the source of data (many sources in Solt (2008), Eurobarometer only in this paper) and in the time span (much longer here).

Dependent variable: (the quality of) DEMOCRACY



Variables for democracy

Data for the “democracy” variable in the second step come from Eurobarometer, which is a widely used survey on public opinion about many subjects (media, politics, environment, religion...), since 1973 until now. Three questions concerning “democracy” were selected and three models with these three different variables acting as dependent variables were estimated.

1. Model 1. The dependent variable is:

Satisfaction with democracy (“ON THE WHOLE, ARE YOU VERY SATISFIED, FAIRLY SATISFIED, NOT VERY SATISFIED OR NOT AT ALL SATISFIED WITH THE WAY DEMOCRACY WORKS IN COUNTRY?”)

- 1 VERY SATISFIED
- 2 FAIRLY SATISFIED
- 3 NOT VERY SATISFIED
- 4 NOT AT ALL SATISFIED

This variable can be kept into its original form of an ordinal variable or can be transformed into a “dummy”. The first solution saves all the pieces of information but has to be treated with an “ordered” *probit* procedure, which adds a bit of complication. The second solution makes things easier but loses information, and this solution was chosen after having verified that results do not change in a significant way with the other one. The time span is 1973-2007.

2. Model 2. The dependent variable is:

Political discussion (“WHEN YOU GET TOGETHER WITH FRIENDS, WOULD YOU SAY YOU DISCUSS POLITICAL MATTERS FREQUENTLY, OCCASIONALLY OR NEVER?”)

- 1 FREQUENTLY
- 2 OCCASIONALLY
- 3 NEVER

The same consideration as before applies here too. The time span here is 1973-2009.

Model 3. The dependent variable is:

Vote intention: (“IF THERE WERE A GENERAL ELECTION TOMORROW, WHICH PARTY WOULD YOU SUPPORT?”) “. This variables tells that the person would not vote in the case of very soon elections.

- 1 I WOULD NOT VOTE
- 0 ANY DIFFERENT REPLY

A sample of non-students aged more than 15 was selected and the influence of inequality and personal characteristics on three indicators of the quality of democracy as subjectively perceived by the population was estimated: i) being very satisfied with democracy, ii) discussing political matters frequently, iii) nonvoting if there were a general election tomorrow. N.B. Nonvoting is a measure of bad quality of democracy, which means that the direction (the sign) of coefficients of this variable is an inverse one. The time span here is 1973-2004.

Two different versions of the three models were estimated, and a replication was then made for each inequality indicator as independent variables.

A. The version **(A)** includes **inequality** [the Gini index and each other inequality indicator for the 9 replications], and **control variables** such as education (high- and medium-level vs. low-level), age, gender (male vs. female), marital status (married vs. other marital status such as being single, divorced or widow). A variable year for the time trend, and a dummy variable as a correction for the different Gini index- source (FES vs.FRS) is added.

B. The version **(B)** adds more control variables: the occupational status (self-employed or entrepreneur; manager; white collar; manual worker; retired from work; unemployed; each vs. the group of non-active people).

Thus, in this second stage the **dependent variable is (the quality of) DEMOCRACY**, and the **independent variables in both versions (A) and (B) are INEQUALITY and SOCIO-DEMOGRAPHIC CHARACTERISTICS.**

As far as the estimation procedure is concerned, the *probit* methodology has been used, *i.e.* a *probit* model is estimated using maximum likelihood.

Tables II present the results. In **Tables II.1, II.2 and II.3** both the *probit* coefficients and the “marginal effects” are provided - together with the Gini index as the independent variable - in both versions (A) and (B) for the three democracy variables.

The estimated *probit* coefficients cannot be read quantitatively as the partial effects of the independent variables on the dependent one, though their sign and the significance level – still expressed by the number of stars – can be read as in an OLS regression model. On the contrary, the “marginal effect” represents their readable version so that in the “marginal effect” column the coefficients can be read as the absolute change in the dependent variable that follows a one unit variation in the independent ones, given that all other variables do not change and are equal to their average value (and dummy variables at their mode value). For instance, in **Table II.1** the reading of the marginal effect of Age in Model (A) is the following: if Age increases by 1, the probability to be satisfied by democracy increases by 0.0011; the probability for males (with respect to women) to be more satisfied by democracy is 0.025; well-educated more than non-educated by a 0.022 and less-well educated more than non-educated by a 0.012. Since GINI index ranges from 0 to 1, the marginal effect -0.13 would be the effect whether Gini would move from 0 to 1: thus, if GINI would increase by 0.1, the probability to be satisfied with democracy would decrease by 0.013. Obviously, the same is told for the second model where employment conditions have been added to the first model. The coefficients for self-employed, managers, white collars, manual workers, retired from work and unemployed tell the different probability that these groups are satisfied by democracy with respect the control group: the non-actives. For instance, manual workers and unemployed are less satisfied with democracy than non-actives, and the difference in probability is, respectively, -0.011 and -0.016.⁹³

⁹³ More precisely, the marginal effects tell how much the probability (between 0 and 1) that $y=1$ varies with regard to x . If the variable is a continuous variable the marginal effect tells how much the probability that $y = 1$ varies with the one unit variation of x . If the variable is a dummy (male, female) the marginal effect tells how much the probability that $y = 1$ if $x=1$ relatively to $x=0$ varies, all other things being constant.

Tables II.4, II.5, II.6, present the results obtained when each other inequality indicator is used, in both versions (A) and (B) for the three democracy variables. The results for these additional **54 models** are presented with the “marginal effects” only and in a summary-way in order to check just for the divergences (if any). The Tables do not show, just for convenience, the effects of the control variables since their sign and significance level in both versions of each model are the same as in the models with the Gini.

Table II. 1

**Model 1 - Probit models on democracy satisfaction
Versions (A) and (B)**

	(A) Very satisfied with democracy	Marginal effects of model (A)	(B) Very satisfied with democracy	Marginal effects of model (B)
Gini	-0.84** (2.03)	-0.13	-0.79* (1.89)	-0.12
Age	0.0074*** (16.50)	0.0011	0.0066*** (11.54)	0.0010
Male	0.16*** (11.16)	0.025	0.18*** (10.66)	0.027
Married	0.0052 (0.34)	0.00079	-0.0033 (0.20)	-0.00050
Education: university	0.13*** (5.47)	0.022	0.089*** (3.37)	0.014
Education: secondary	0.076*** (4.30)	0.012	0.059*** (3.26)	0.0090
Year	0.0049** (2.28)	0.00075	0.0039* (1.72)	0.00059
Fes	0.032 (1.13)	0.0049	0.022 (0.73)	0.0033
Self employed/entrepreneur			-0.0022 (0.06)	-0.00034
Manager			0.042 (1.24)	0.0065
White collar			0.00029 (0.01)	0.000044
Manual worker			-0.074*** (2.81)	-0.011
Retired from work			0.0042 (0.15)	0.00065
Unemployed			-0.12*** (3.12)	-0.016
Constant	-11.4*** (2.71)		-9.33** (2.10)	
Observations	62494		60715	
Pseudo R ²	0.013		0.012	

Absolute *t* statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table II.2

**Model 2 - Probit models on political discussion
Versions (A) and (B)**

	(A)	Marginal effects of model (A)	(B)	Marginal effects of model (B)
	Frequent political discussions		Frequent political discussions	
Gini	-0.61** (2.01)	-0.13	-0.68** (2.24)	-0.15
Age	0.0062*** (19.84)	0.0013	0.0062*** (15.19)	0.0013
Male	0.27*** (25.93)	0.059	0.23*** (19.39)	0.049
Married	0.034*** (3.10)	0.0073	0.026** (2.30)	0.0055
Education: University	0.53*** (32.52)	0.14	0.44*** (24.95)	0.11
Education: high school	0.11*** (8.37)	0.023	0.081*** (6.15)	0.018
Year	-0.0045*** (2.99)	-0.00098	-0.0057*** (3.67)	-0.0012
Fes	0.028 (1.37)	0.0061	0.019 (0.90)	0.0040
Self employed/entrepreneur			0.25*** (10.26)	0.060
Manager			0.26*** (11.20)	0.064
White collar			0.12*** (6.27)	0.027
Manual worker			0.031* (1.68)	0.0068
Retired from work			0.082*** (3.94)	0.018
Unemployed			0.082*** (3.22)	0.018
Constant	7.49** (2.55)		9.91*** (3.26)	
Observations	95574		93648	
<i>Pseudo R</i> ²	0.027		0.030	

Absolute *t* statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table II.3**Model 3 - Probit models on the probability of not voting if there were a general election tomorrow****Versions (A) and (B)**

	(A)	Marginal effects of model (A)	(B)	Marginal effects of model (B)
	Would not vote if there were a general election tomorrow		Would not vote if there were a general election tomorrow	
Gini	-3.40*** (6.93)	-0.45	-3.04*** (6.27)	-0.41
Age	-0.0089*** (16.63)	-0.0012	-0.0081*** (12.63)	-0.0011
Male	-0.018 (1.12)	-0.0024	-0.00078 (0.04)	-0.00011
Married	-0.17*** (10.15)	-0.024	-0.16*** (9.25)	-0.023
Education: University	-0.31*** (9.90)	-0.035	-0.25*** (7.59)	-0.30
Education: high school	-0.079*** (4.04)	-0.011	-0.069*** (3.43)	-0.0094
Year	0.023*** (9.99)	0.0031	0.017*** (6.82)	0.0024
Fes	0.0078 (0.27)	0.0010	-0.053* (1.76)	-0.0074
Self employed/entrepreneur			-0.019 (0.51)	-0.0026
Manager			-0.24*** (5.79)	-0.029
White collar			-0.14*** (4.83)	-0.017
Manual worker			-0.049* (1.85)	-0.0065
Retired from work			-0.12*** (3.60)	-0.015
Unemployed			0.074** (2.11)	0.010
Constant	-46.2*** (10.19)		-34.4*** (6.93)	
Observations	54382		52477	
Pseudo R ²	0.026		0.027	

Absolute *t* statistics in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table II.4**Model 1- Marginal effects and significance level of the inequality indicators in the *probit* model on democracy satisfaction****Versions (A) and (B)**

	(A) Very satisfied with democracy Marginal Effects	(B) Very satisfied with democracy Marginal Effects
Foster - Wolfson Index	-0.26***	-0.27***
P90/10	-0.015***	-0.015***
P90/50	-0.012	-0.012
Share Top 1%	0.27**	0.30**
Share Top 5%	0.0068	0.036
Share Top 10%	-0.052	-0.029
Share Bottom 1%	17.74***	18.47***
Share Bottom 5%	3.50***	3.44***
Share Bottom 10%	1.72***	1.71***

* p < 0.10, ** p < 0.05, *** p < 0.01

Table II.5**Model 2 - Marginal effects and significance level of the inequality indicators in the *probit* model on political discussion****Versions (A) and (B)**

	(A)	(B)
	Frequent political discussions	Frequent political discussions
	Marginal Effects	Marginal Effects
Foster - Wolfson Index	-0.12*	-0.16**
P90/10	-0.0063**	-0.0075**
P90/50	-0.0040	-0.0080
Share Top 1%	-0.17	-0.15
Share Top 5%	-0.19*	-0.18
Share Top 10%	-0.16	-0.17*
Share Bottom 1%	2.48	2.48
Share Bottom 5%	1.15	1.42
Share Bottom 10%	0.90*	1.04**

* p < 0.10, ** p < 0.05, *** p < 0.01

Table II.6

Model 3 - Marginal effects and significance level of the inequality indicators in the *probit* model on the probability of not voting if there were a general election tomorrow

	(A)	(B)
	Would not vote if there were a general election tomorrow Marginal Effects	Would not vote if there were a general election tomorrow Marginal Effects
Foster - Wolfson Index	-0.45***	-0.45***
P90/10	-0.016***	-0.011***
P90/50	-0.11***	-0.10***
Share Top 1%	-0.62***	-0.54***
Share Top 5%	-0.72***	-0.62***
Share Top 10%	-0.67***	-0.58***
Share Bottom 1%	7.15	10.91*
Share Bottom 5%	8.27***	6.28***
Share Bottom 10%	3.39***	2.53***

* p < 0.10, ** p < 0.05, *** p < 0.01

A comment to the results

As an overall evaluation, the *Pseudo R*² – the “degree of the goodness” of the estimation – looks low but in models using micro-data it is absolutely normal that the R-squared is low, even very low.⁹⁴

Starting from **Table II.1 (Model 1: satisfaction with democracy)**, the quality of the coefficients is fairly good both for their sign and for the statistical significance in both versions **(A)** and **(B)**. Satisfaction with democracy decreases with increasing inequality and increases with age (ageing people become wiser, or more indulgent, or more tolerant); males are more satisfied with democracy than, respectively, women (do women and single have a greater sense of moral justice? Do they have more complaints against institutions that take care of them less than of others?); satisfaction increases with education (educated people vs. non-educated) and is greater for more educated people (education helps in evaluating democracy and its virtues?); the probability of being satisfied with democracy increases yearly by 0.00075; also employment condition plays a role on individual’s perception of democracy: unemployed and manual workers are less satisfied with democracy with respect to non-actives (as if less protected jobs would inoculate dissatisfaction against institutions), while self-employed, managers, white collars and retired have not a statistically significant different perception from non-actives.

Table II.2 shows **Model 2**, which still has the same independent variables but changes the dependent one: **political discussion** is now taken as an indicator of the quality of democracy. Both versions **(A)** and **(B)** are provided. The conceptual setting keeps holding, and while all the variables of version **(A)** but the time-trend do not change both their sign and significance (on the contrary, the condition of being married becomes significant), all the added variables for the version **(B)** show a positive coefficient: having a job has a positive relation with the political

⁹⁴ $Pseudo R^2 = 1 - [\log \text{likelihood of the model} / \log \text{likelihood of the model with the only constant}]$. Note: the log likelihood of a probit model is negative, and decreases in absolute value with the increase in the number of regressors. The higher the decrease of the log likelihood of the model with respect to the model with only the intercept, the closer to 0 is the ratio (log likelihood of the model / log likelihood of a model on y but only with the constant) → the higher the Pseudo R-squared of the model.

discussion (does having a job let everybody feel part of a community? Does it suggest that political discussion might be useful in one's own job-space? Does having a job just simply provide more occasions for political discussion?).

Model 3 (in Table II.3) changes the dependent variable once more, being now the third "democracy" variable: **non-voting in a general election "tomorrow"**. For all variables but Gini index the sign changes and it becomes negative. Since the variable is NON-voting, a negative sign means (still in probability) a direct effect: being male, married, having a high or medium level of education – with respect to control-groups – and ageing, increase the probability to vote. Worthwhile stressing that when inequality increases (the Gini index), still the choice is voting without any mediation: tomorrow. In my opinion this is a striking result, a strong confirmation of what political scientists call the "conflict theory" opposed to the "relative power" theory. Whether the question is what would be the political reaction towards being distressed by political situation, institutions, and so on, the reply can be either an estrangement or a more active participation. Here the reply seems to be unequivocally participation through the most powerful and really incisive way: the vote.

The *probit* models estimated on the three indicators of democracy suggest some general results. Looking first at the coefficient related to the Gini index, the finding is that a higher level of inequality significantly decreases democracy satisfaction and political discussion, while significantly increases the intention to vote. Moreover, being older, being male and having a high level of education have a positive and significant effect on the probability of being satisfied with democracy, of discussing frequently about politics and of voting if there were a general election tomorrow. Being married increases significantly the probability of frequent political discussion and of voting, while having no effect on democracy satisfaction. Also employment condition plays a role on individual's perception of democracy: unemployed and manual workers are less satisfied with democracy with respect to inactive; self employed, manager, white collar, manual worker, retired people and unemployed are more likely than inactive to

discuss about politics. Employees of any type, self employed and retired people are more likely - while unemployed are less - to intend to vote than the inactive ones.

When the other indicators of democracy are used the marginal effects are very similar and they tell us a similar story to the one told by the GINI even not in a perfectly uniform way.

The Foster Wolfson polarization index, the P90/10 and, to a certain extent, the share of the bottom incomes⁹⁵ suggest that higher inequality decreases democracy satisfaction and reduces political discussion though increasing vote intention.

The regression coefficients of the P90-50, still negative, are not significant for the variables on democracy satisfaction and political discussion, while the P90-50 has a positive and significant effect on vote intention.

The increase in the share of top incomes (1%, 5% and 10%) has a positive and significant effect on vote intention (do they want to sustain that political power which allowed them to increase their share? This might also help to explaining the above result for the P90/50...) while the effect (negative and significant though not in a uniform way) on political discussion is less clearly detectable.

The effect of the share of top incomes on democracy satisfaction is significant only with regards to the share of top 1%. This effect is positive: an increase in the highest shares of income distribution increases democracy satisfaction. When the richest become *more-richest*, they are more satisfied by democracy and go to vote in order to maintain their privilege.

Last but not least, the bottom-shares. In both models, a decrease in inequality (an increase in the bottom shares) increases the satisfaction with democracy very significantly, and increases the probability of non-voting (as if the voting option would exclusively mean a punishment), while the increase in the political discussion is a reaction of the bottom-1% only.

This is the picture that emerges.

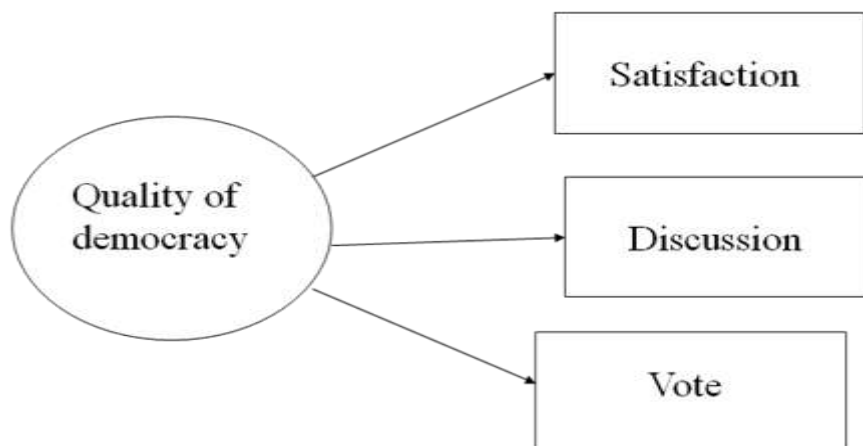
⁹⁵ An increase in the bottom-shares **decreases** inequality

7.3 A third stage?

A possible step forward would be to evaluate how much these three characteristics (satisfaction with democracy, discussion about politics, and decision not to-vote if there were a general election tomorrow) - that represent indicators of opinions and behaviors of the interviewee's perception of the "quality of the democracy" - are reciprocally related. For the sake of simplicity the dummy variable "would not vote" has been re-coded into a dummy variable taking value 1 if the interviewed person "would vote" whether there were general elections tomorrow. Thus, the more likely he is satisfied with the democracy, the more likely he talks frequently about politics and the more likely he votes when elections take place, the higher the interviewee's perception of the quality of the democracy, which, is our *latent-variable*.

The latent variable cannot be observed: it is simply reflected into the three indicators "satisfaction", "discussion" and "vote". Graphically, the factor-model can be represented as in Figure 1. The variable "quality of democracy" is drawn in a circle (unobservable) and affects the three observable variables in rectangles (*observables*). The arrows go from the latent to the observable variables, indicating the direction of causality.

Figure 1 – A factor model for the quality of Democracy



Mathematically we can write the model as follows:

$$\begin{aligned} \text{discussion} &= \lambda_1 \text{quality_of_democracy} + u_1 \\ \text{satisfaction} &= \lambda_2 \text{quality_of_democracy} + u_2 \\ \text{vote} &= \lambda_3 \text{quality_of_democracy} + u_3 \end{aligned}$$

The λ -coefficients are called factor-loadings and are calculated on the variance-covariance matrix of the three variables, and the variance that the three indicators have in common should represent the latent factor, “quality of democracy” in our case.

Unfortunately, the results of the factor-analysis model are poor: the three variables share very little variance, *i.e.*, they have very little in common! (See **Table III.1**)

Table III.1 – Correlation matrix of the democracy indicators

	Satisfaction	Discussion	Would vote
Satisfaction	1		
Discussion	0.02	1	
Would vote	0.043	0.039	1

This fact is reflected into the estimated factor loadings (**Table III.2**). Usually, the minimum value that the estimated factor loadings can assume for the model to be considered acceptable is 0.40, much higher than the values we find.

Table III.2 – Estimated Factor Loadings of the Factor Analysis

	Factor Loadings
Satisfaction	0.14
Discussion	0.15
Would vote	0.17

Thus, the decision was not to proceed to extract the latent variable (in order to use it as a “normal” dependent variable in a model similar to the ones already estimated separately for

the three original indicators), and the present analysis stops here, leaving this problem to a further step.

8. Concluding remarks

In the 1980s, the United Kingdom has experienced a rising inequality more than any other European country. After a decade of relative stability (the 1990s), inequality re-started to increase during the 2000s, with an accentuation in the top part of the distribution revealing a “top-income problem” that reminds the American one. Though not reaching the US levels, UK appears however to follow a different path from other continental countries. This inequality sooner or later would probably impact on institutions: the democratic polity is expected to provide at least a relative well-fare to citizens, a decent life where being able to find a job in line with own skills and to provide the children with a (good) education is not considered a luxury.

This paper attempts to test the effect of the “new” capitalism on inequality and the effect of inequality on democracy in the United Kingdom in the last thirty years.

The results coming from the empirical tests all tell us that blowing the financial sector, deregulating the credit-market, dismantling unionization, tearing frontiers down, all has having a non-ambiguous effect on the rising of inequality, no matter how it is measured. Moreover, it appears that these same characteristics are having an impact on the middle class too, shrinking it. What this might mean for the future, let us leave to sociologists.

Does inequality impact on democracy? As far as the measures for democracy used in this paper may credibly approximate its “quality”, the answer is YES. Satisfaction with democracy and political discussion decrease – and the let-us-go-and-vote option strengthens – with increasing inequality, again no matter how it is measured.

Much work has to be done in both the theoretical modelling - in order to assess the relationship between market economy and inequality – and the empirical evaluation of democracy, a concept non easily referable to any measure. This paper is just a first step.

References

- Alesina Alberto - Perotti Roberto**, "Income distribution, political instability and investment", *European Economic Review*, Vol. 40, 1996, 1203-1228
- Alesina Alberto - Rosenthal Howard**, Partisan Politics, Divided Government and the Economy, Cambridge University Press, 1995
- Atkinson Anthony B.**, "On the measurement of inequality", *Journal of Economic Theory* No. 2, 1970, 244-263
- Atkinson Anthony B.**, The economics of inequality, 2nd ed., Oxford, Clarendon Press, 1983
- Atkinson Anthony B.**, "The changing distribution of income: evidence and explanations", *German Economic Review*, 2000, Vol.1, No.1, 3-18
- Atkinson Anthony B.**, "Income inequality in OECD countries: data and explanations", *CESifo Economic Studies*, Vol. 49, No. 4, 2003, 479-513
- Atkinson Anthony B. - Bourguignon François**, "Income distribution", in **Neil Smelser and Paul B. Baltes (eds.)**, International Encyclopedia of the Social and Behavioral Sciences, p. 7265-7271, Elsevier, 2001
- Atkinson Anthony B. - Brandolini Andrea**, "The panel-of-countries approach to explaining income inequality: an interdisciplinary research agenda", in **Stephen L. Morgan, David B. Gruski and Gary S. Fields (eds.)**, Mobility and inequality: frontiers of research in Sociology and Economics (Studies in Social Inequality), Stanford University Press, 2006
- Atkinson Anthony B. - Brandolini Andrea**, "On analyzing the world distribution of income", *World Bank Economic Review* 24, 1-37, 2010
- Atkinson Anthony B. - Harrison David J.**, The distribution of personal wealth in Britain, Cambridge University Press, 1978
- Atkinson Anthony B. - Piketty Thomas (eds.)**, Top incomes: global perspective, Oxford University Press, 2010
- Atkinson Anthony B. - Piketty Thomas - Saez Emmanuel**, "Top incomes in the long-run of history", Ch.13 in **Anthony B. Atkinson and Thomas Piketty, (eds.)**, 2010
- Bartels Larry M.**, Unequal democracy; the political economy of the new gilded age, Princeton University Press, 2008
- Benhabib Jess - Rustichini Aldo**, "A vintage capital model of investment and growth: theory and evidence", *Journal of Economic Theory*, Vol. 55, Issue 2, December 1991, 323-339
- Bermeo Nancy**, "Does electoral democracy boost economic equality"? *Journal of Democracy*, Vol. 20, No.4, October 2009

Black Duncan, “On the rationale of group decision-making”, *Journal of Political Economy*, 56, 1, 1948, 23-34

Brandolini Andrea, “On applying synthetic indices of multidimensional well-being: health and income inequalities in selected EU countries”, Banca d’Italia, Temi di Discussione, No. 668, 2008

Brandolini Andrea, “1 percent vs. 1 cent – Relative vs. absolute measurement of income inequality”, paper presented at the SIS (Italian Society of Statistics) 2011 Statistical Conference, University of Bologna, 8-10 June 2011

Brandolini Andrea - Smeeding Timothy M., “Inequality: international evidence”, in **Steven N. Durlauf and Lawrence E. Blume (eds.)**, The New Palgrave Dictionary of Economics, Palgrave Macmillan, 2008

Bresciani-Turroni Costantino, “Pareto's law and the index of inequality of incomes”, *Econometrica*, Vol. 7, No. 2, Apr. 1939, 107-133

Buchanan James M. - Tullock Gordon, The calculus of consent: logical foundations of constitutional democracy, Ann Arbor, The University of Michigan Press, 1962

Cowell Frank A., “Measurement of inequality”, in **Anthony B. Atkinson and François Bourguignon (eds.)**, Handbook of Income Distribution, 87–166, North Holland, Amsterdam, 2000

Dahl Robert Alan, On democracy, Yale University Press, 2000

Dahl Robert Alan, Polyarchy: participation and opposition, Yale University Press, 1971

Dalton Hugh, “The measurement of the inequality of incomes”, *The Economic Journal*, Vol. 30, No. 119, Sep. 1920, 348-361

Darhendorf Ralph, Dopo la democrazia, Laterza, 2003

Foster James E. – Wolfson Michael C., “Polarization and the decline of the middle class: Canada and the U.S.”, *Journal of Economic Inequality*, Vol. 8, 2010, 247-273

Frank Robert - Cook Philip J., The winner- take-all society, New York, Free Press, 1995

Franzini Maurizio, European Policy Brief , European Union Socio Economic Sciences and Humanities Research, March 2009

Franzini Maurizio - Raitano Michele, “Persistence of inequality in Europe: the role of family economic conditions”, *International Review of Applied Economics*, 2009, 23:3, 345-366

Fried Charles, “Market, law and democracy”, *Journal of Democracy*, Vol.11, No.3, July 2000, 5-18

Gini Corrado, Variabilità e mutabilità, Cuppini, Bologna, 1912 [reprinted in *Memorie di metodologica statistica*, Ed. Pizetti e Salvemini, Rome, Libreria Eredi Virgilio Veschi, 1955]

Glaeser Edward L., Inequality, NBER, Working Paper 11511, June 2005, now Ch.34 in **Barry R., Weingast and Donald A. Wittman (eds.)**, The Oxford Handbook of Political Economy, Oxford University Press, 2006

Glyn Andrew, Capitalism Unleashed: finance, globalization and welfare, Oxford University Press 2006

Hacker Jacob S. J - Pierson Paul, The winner-take-all-politics, Simon&Schuster, 2010

Hacker Jacob S. J - Pierson Paul, "The winner-take-all-politics: a response", in *Politics & Society*, 38(2), 2010, 266-282

Jenkins Stephen P. - Van Kerm Philippe, "The measurement of economic inequality", in **Wiemer Salverda, Brian Nolan, and Timothy M. Smeeding, (eds.)**, The Oxford Handbook of Economic Inequality, pp. 40-67, Oxford University Press, Oxford (2009)

Jevons William S., The theory of political economy, Preface to the 2nd ed., London, McMillan, 1879

Karl Terry Lynn, "Economic inequality and democratic instability", *Journal of Democracy*, Vol. 11, No.1, 2000, 149-156

Karl Terry Lynn - Schmitter Philippe, "What democracy isand is not", in **Larry Diamond and Marc F. Plattner (eds.)**, The global resurgence of democracy, Johns Hopkins University Press, 1993

Krugman Paul, The conscience of a liberal, W.W. Norton and Company, New York - London, 2007, It. ed. Laterza, 2008 **Kuznets Simon**, Shares of upper groups in income and savings, National Bureau of Economic Research, New York, 1953

Kuznets Simon, "Economic growth and income inequality", *American Economic Review*, May 1955, 1-28

Li Hongyi - Squire Lyn - Zou Heng-fu, "Explaining international and inter-temporal variations in income and inequality", *The Economic Journal*, vol. 108, January 1998, 26-43

Linz Juan J. - Stepan Alfred, "Comparative Perspectives on Inequality and the Quality of Democracy in the United States", Review Essay, *American Political Science Review*, Vol. 9, No. 4, Dec. 2011

Londregan John, "Political income redistribution", in **Barry R. Weingast and Donald A. Wittman (eds.)**, The Oxford Handbook of Political Economy, Oxford University Press, 2006

Lorenz Max O., "Methods of measuring the concentration of wealth", in *Quarterly Publications of the American Statistical Association*, Boston, New Series No. 70, June 1905, 209-219

Lydall Harold French, "The distribution of employment incomes", *Econometrica* 27, 110-115, 1959

Meltzer Allan H. - Scott F. Richard, "A rational theory of the size of government", *Journal of Political Economy*, 1981, vol. 89, 914-927

- Milanovic Branko**, The haves and the have-nots, Basic Books, 2011
- Nordhaus William D.**, “The political business cycle”, *The Review of Economic Studies*, Vol. 42, No.2, April 1975, 169-190
- OECD**, Growing unequal? Income distribution and poverty in OECD countries, Paris, 2008
- OECD**, Divided we stand: why inequality keeps rising, Paris, 2011
- Pareto Vilfredo**, Cours d'économie politique, Lausanne, Rouge and Pichon, 1897
- Paukert Felix**, “Income distribution at different levels of development: a survey of evidence”, *International Labor Review*, Aug/Sept 1973, vol. 108, Issue 2-3, 97-125
- Persson Torsten and Tabellini Guido**, Macroeconomic Policy, Credibility and Politics, Harwood Academia Publishers, 1990
- Persson Torsten - Tabellini Guido**, “Is inequality harmful for growth?”, *American Economic Review*, 84(3), 1994, 600-621
- Persson Torsten and Tabellini Guido**, “The size and scope of government: comparative politics with rational politicians”, *European Economic Review*, vol. 43(4-6), 699-735, April 1999
- Persson Torsten and Tabellini Guido**, The Economic Effects of Constitutions, MIT Press, 2003 and 2005
- Pigou Arthur C.**, The economics of welfare, London, McMillan, 1920
- Piketty Thomas**, Les hauts revenus en France au 20e`me siècle, Paris, Grasset, 2001
- Piketty Thomas**, “Top income shares in the long run: an overview”, *Journal of the European Economic Association*, Vol., Issue 2-3, pp. 382–392, April-May 2005, 386-387
- Piketty Thomas - Saez Emmanuel**, “The evolution of top incomes: a historical and international perspective”, *American Economic Review, Papers and Proceedings*, Vol. 96, 200-205, May 2006
- Politics & Society**, Special Issue on Inequality, 38(2), 2010
- Ricardo David**, On the principles of Political Economy and Taxation [1821], in *The Works and Correspondence of David Ricardo*, edited by Piero Sraffa with the collaboration of M. H. Dobb, vol. I, Cambridge University Press, Cambridge 1951
- Rosen Sherwin**, “The economics of superstars”, *American Economic Review*, 71: 845- 58, 1981
- Runciman David**, “How messy it all is”, a review to Richard G. Wilkinson and Kate Pickett , *The spirit level: why equality is better for everyone*, Penguin 2010, in *London Review of Books*, Vol. 31, No. 20, 22 October 2009, 3-6
- Salverda Wiemer - Nolan Brian - Smeeding Timothy M.**, “Introduction” to **Wiemer Salverda, Brian Nolan and Timothy M. Smeeding (eds.)**, The Oxford Handbook of Economic Inequality, Oxford University Press 2009
- Sartori Giovanni**, The theory of democracy revisited, Chatam House, 1987

Schumpeter Joseph, Capitalism, Socialism and democracy, Routledge, 1943

Sen Amartya K., "Equality of What?", in **Sterling M. McMurrin (ed.)**, The Tanner Lectures on Human Value, Salt Lake City, University of Utah Press, 1980, 195-220

Sen Amartya K., Inequality Re-examined, Oxford, Clarendon Press, 1992

Simon Herbert, "The compensation of executives", *Sociometry* 20, 32–35, 1957

Solt Frederick, "Economic inequality and democratic political engagement", in *American Journal of Political Science*, Vol. 52, No.2, January 2008, 48-60

Stark Thomas, The distribution of personal income in the United Kingdom 1949-1963, Cambridge University Press, 1972

Stiglitz Joseph E. - Amartya K. Sen - Fitoussi Jean-Pascal, Report by the Commission on the measurement of economic performance and social progress, mimeo, Paris, 2009. Now: Mismeasuring our lives: why GDP doesn't add up. The report by the Commission on the Measurement of Economic Performance and Social Progress: Joseph E. Stiglitz, Amartya Sen, and Jean-Paul Fitoussi, New York, New Press, 2010

Stiglitz Joseph E., The roaring nineties, Penguin Books, 2003

Solt Frederick, "Economic inequality and democratic political engagement", *American Journal of Political Science*, Vol. 52, No.2, January 2008, 48-60

Summers Larry, "We have to do better on inequality", *Financial Times*, November 20th, 2011

Thorbecke Erik - Charumilind Chutatong, "Economic inequality and its socioeconomic impact", *World Development* Vol. 30, No.9, 2002, 1477-1495

Weintraub Roy, How Economics became a mathematical science, Durham, Duke University Press, 2002

Wilkinson Richard - Pickett Kate, The spirit level: why equality is better for everyone, Penguin 2010