Mobility and Political Upheaval in an Age of Inequality

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Abstract

Appropriate public policy on inequality hinges critically on understanding inequality's effects on the living conditions of the poor, on social mobility, and on nationalist populism. This paper describes two empirical regularities. First, an increase in inequality typically does not coincide with immiserisation of the poor and lower middle class. Over 80% of economies where inequality has risen since 2000 have also increased the average incomes of their populations' bottom 50%. Second, for political upheaval, individual well-being and expectations on its trajectory matter more than inequality. When these causal factors diverge, the role of inequality is, thus, diminished. Public policy needs to counter misinterpretation and misinformation on inequality with rigorous analysis and empirical evidence.

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Keywords: bottom 50%; disinformation; growth; income gap; income inequality; top 10%; upward mobility

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1 Introduction

The unanimity is deafening. In April 2014 Pope Francis tweeted "Inequality is the root of social evil".[1] Just a few months earlier, in December 2013, President Barack Obama had declared "the defining challenge of our time"—to ensure the US economy worked for every working American—faced its greatest obstacle in "dangerous and growing inequality and lack of upward mobility" jeopardising that basic bargain for middle-class America.[2]

Worldwide this narrative on inequality has become clarion call for social and policy redress. Beyond its significance in domestic policy-making, inequality is charged with responsibility for the nationalist populism that is both causing nation-state withdrawal from globalisation and undermining the international rules-based order. As characterised in Nolan (2019), a grand narrative is emerging where societies have polarised "into a small elite with highly paid, secure jobs on one side, and on the other side are growing numbers of people, including an increasingly 'squeezed' middle class, in insecure, poorly-paid work", with this rising inequality leading to "erosion of solidarity, social trust and faith in democratic institutions", "election of Donald Trump, the UK's Brexit vote, and the broad rise of populism".

This paper seeks to add empirical detail to this global debate, so that analysis and policy-making can draw on an ever more complete evidence base. The paper presents new calculations on income inequality and mobility, and relates them to narratives of political upheaval.

Why is it important to accumulate yet more evidence on inequality dynamics? After all, the fraction of wealth accruing to the top 1% has already been established to be at historical highs (Piketty and Saez, 2003). What more does one need to know? Despite the conviction often found in such statements, however, important lessons need to be drawn from the unexpected and unfortunate outcomes that misunderstanding inequality has sometimes produced.

Most observers would agree that deprivation, poverty, and social immobility underpin many other social ills. But suppose we find those causal factors diminishing at the same time inequality is rising. Then expending resources to reduce inequality could be counter-productive, or at minimum

[1] http://twitter.com/Pontifex/status/460697074585980928

[2] The President's 04 December 2013 remarks to THEARC, Washington DC, available at https://obamawhitehouse.archives.gov/.

unhelpful. The question then is one not of further refining our estimates of inequality but of extracting their implications. Attempting to rein in inequality while not repairing key underlying causes would be a case of only treating visible symptoms without curing the patient.

As an example, in 1999 in the US the White House began to push for increased mortgage lending to lower- and middle-income American households. Rajan (2010) documented how this connected with a governmental strategy of alleviating political pressures emerging from rising US inequality. An increasingly identifiable American under-class had for decades seen little change in its economic circumstances. That 1999 White House policy action was a response that treated the symptoms of US income inequality, and thus was politically expedient. Among American households, home ownership rose from around 65% to just under 70%.

However, this move failed to treat the root cause of poverty and inequality. It confronted visibly the challenge of American inequality but it did not solve the deeper problem of stagnant incomes among the under-class. Instead, the policy ended up creating a bulge of housing loans that could not conceivably be paid off without significant change in the economic conditions of the poor.

The instrument by which the White House enacted this policy was the 1977 Community Reinvestment Act (CRA). In 1998 CRA institutions provided only 3% of housing loans to low- and middle-income Americans. Within a decade, such loans had grown to be 50% CRA-originated, and had acquired a new label: subprime mortgages. When the bubble burst in the subprime mortgage market and borrowers began to default, contagion rippled across American states. This triggered a national collapse in the US housing market that, in turn, precipitated the 2008 Global Financial Crisis.

The CRA-vectored attempt to repair US income inequality led to widespread economic damage worldwide, with the global poor suffering terribly from loss of jobs and destruction of savings. This example illustrates how attacking symptoms without treating the fundamental cause can lead to inappropriate policy actions with disastrous unintended consequences.

Nonetheless, the temptation remains a powerful one to equate inequality with ever worse indictment of systemic social failure. To disentangle these, this paper takes a first lead from how Piketty (2014, p. 327) reported "the poorer half of the population are as poor today as they were in the past,

with barely 5 percent of total wealth in 2010, just as in 1910." The passage goes on to argue: "Basically, all the middle class managed to get its hands on was a few crumbs". But how much did the poorer half of the population actually get in the historical co-evolution of inequality and growth? Did the middle class fall even further behind—i.e., fail even to keep the same share as they had previously—and if so what exactly was the growth rate of their incomes? The current paper addresses these questions by examining the income dynamics of that bottom 50%.

By broadening the discussion beyond just inequality measurement, but keeping nonetheless to the same spirit of investigation, this paper also takes the stance that important for analysis is not just what happens to the "top 1%", but instead how people across the spectrum view the prospects for their leading enabled, meaningful, and satisfying lives. For those in the bottom half those life chances are better revealed by their income dynamics—their opportunities for upward mobility—than by inequality alone.

This paper will begin with presenting some quick findings on mobility and inequality dynamics in three economies: the US, China, and France (Section 2):

1. The US has experienced rising inequality and falling incomes among the poor, i.e., downward mobility;

2. China has seen rising inequality too but, conversely, strong upward mobility;

3. France, on the other hand, has experienced upward mobility but while inequality had been previously increasing, since 2000 that rise has been held in check and France has seen only flat or declining inequality.

The obvious question is how much these findings generalise? Section 4 addresses this, focusing on the period since 2000 to allow as wide a cross section of economies as possible. This paper finds that of the 47 economies that have seen an increase in inequality, 38 (i.e., 81%) have also raised the average incomes of the poorer halves of their populations (Table 3 in Section 4). Focusing on the same economies as in Section 2 gives a context for the entire cross-section. China is at one extreme among the "Champions of Mobility": It has seen the average income of the bottom half of its population rise more than three-fold since 2000. On the other extreme

of economies with downward mobility, the US, the largest most populous economy in the group, the average income of its bottom half has, instead, fallen 8%. The US, therefore, has indeed seen its poor immiserised: The rise of an angry and politically active underclass there is easy to understand. In a middle group is France with its inequality approximately constant, and at the same time experiencing upward mobility. Despite this, however, political upheaval in France has been notable.

The danger is that such pivotal nations, the US and France among them, inappropriately, end up setting the global agenda. Public policy problems that should be addressed at the level of the individual nation, if incorrectly thought to be universal, can displace yet other important global challenges that more appropriately occupy the attention of the international community.

The second key finding of the paper warns on this possibility. The paper documents how a grand narrative of inequality driving political upheaval has emerged even when in reality the situation of the poor and underclass improve, when it is these circumstances that matter for driving or alleviating social discontent, and when inequality moves in a direction that incorrectly signals what matters. Public policy, therefore, needs to take into account the possibility of disinformation overwhelming rigorous empirical evidence. This is especially important in discussions on inequality and social mobility, where political and populist rhetoric can easily dominate national conversations.

The remainder of this paper is organised as follows. As already described, Section 2 takes a quick first look at some of this paper's key empirical findings specifically for China, the US, and France. We will see a diversity of experience on growth, inequality, and mobility across these economies. Section 4 addresses the question of how widespread across the world these characterisations are.

But before then Section 3 puts a context to these general empirics by recording in one place some of the most immediately relevant statements on inequality. The aim of the Section, however, is not just to show that inequality is of research interest. Instead, this Section points to how a particular narrative on inequality has become the dominant one in public policy thinking.

Section 5 addresses how this might have come about by assessing the relationship between inequality and mobility on the one hand, and indica-

tors of political upheaval on the other. We will see that political activity typically thought to be driven by high inequality and low social mobility can occur even when inequality is falling and upward mobility. This paper conjectures that these dynamics are driven by a kind of disinformation, where the experience in high-profile, highly-visible situations are assumed to carry over, inappropriately in some cases, to other contexts.

Section 6 concludes.

2 Quick Findings

This paper employs straightforward and easily interpretable measures of a number of key concepts for income distribution dynamics. By **inequality**, the paper means the difference, measured in inflation-adjusted purchasing power parity 2018 € Euros, between the average income of the top 10% and the average income of the bottom 50% of the income distribution across people. Section 4 will refer to this inequality as Q, and denote the average income of the bottom 50% by y_{B50}. If the average income of the bottom 50% rises, then say there is **upward mobility**; if it falls or remains constant, say there is **downward mobility** or **immobility**, respectively. These direct concepts of mobility sit in contrast to the intra-distribution churning measures—switches in ranks, changes in percentiles, and so on—that other research use for analysing mobility. The Technical Appendix, Section 7, describes why, from the perspective developed here but also perhaps more generally, many more complex definitions turn out to be problematic.

To illustrate the issues, consider a hypothetical numerical example, calibrated to match key features in the data. Take two societies, one where the bottom 50% has average income growing 4% a year—there is upward mobility—and the other where the bottom 50% has average income falling 1% a year.

The two panels in Figure 1 show different inequality and income dynamics. In the society depicted in panel (a) the bottom 50% have average incomes rising 4% a year, and so over four decades, average incomes of the poor grow nearly five-fold. However, the top 10% have average incomes rising 6% a year, implying that over four decades the rich will have their average income increase over 10-fold. The gap between the top 10% and bottom 50% therefore more than doubles over 40 years. Society (a) has

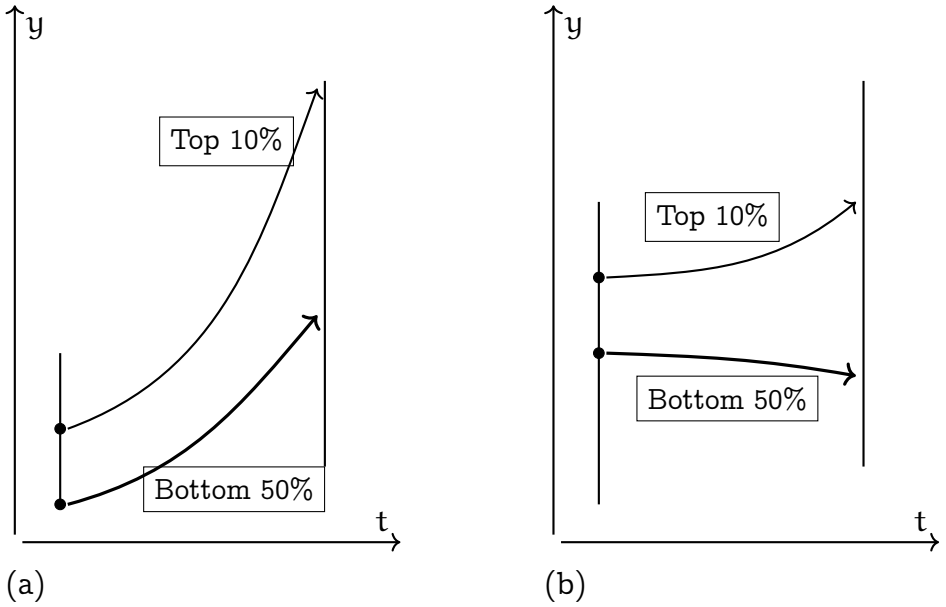

Figure 1: Growth, Inequality, and the Left-Behind. What do inequality and rich-income dynamics imply of outcomes for the poor?

inequality growing sharply but its poor are better off over time. Panel (b) shows the opposite experience for the poor. In the society in panel (b) the bottom 50% have average incomes falling by 1% a year. Here, the poor are becoming poorer. Over four decades the average income of the poor in this society shrinks to only two-thirds its initial value. The top 10% have average income rising 0.5% a year implying that over four decades that average income has grown only by one-fifth. The rich are not becoming a great deal richer over time. The gap between the top 10% and bottom 50% has risen but by slightly less than two-fold. Over time society (b) has a smaller rise in inequality, an upper class becoming richer only gradually, but a lower class worse off at the end of time sample not just relatively but in absolute terms. What happens to inequality and to the rich provide no reliable indicator of what happens to the poor.

As a matter of logic and arithmetic, a rise in inequality can come with any one of upward mobility, downward mobility, or immobility. Economic growth overall is an important co-determinant, and when sufficiently high relative to the change in inequality can imply upward mobility even when inequality increases (Bourguignon, 2003; Milanovic, 2016; Quah, 2003). Thus, inequality alone provides neither sufficient statistic nor overwhelming causal factor. Empirical evidence indicates that, on average across coun-

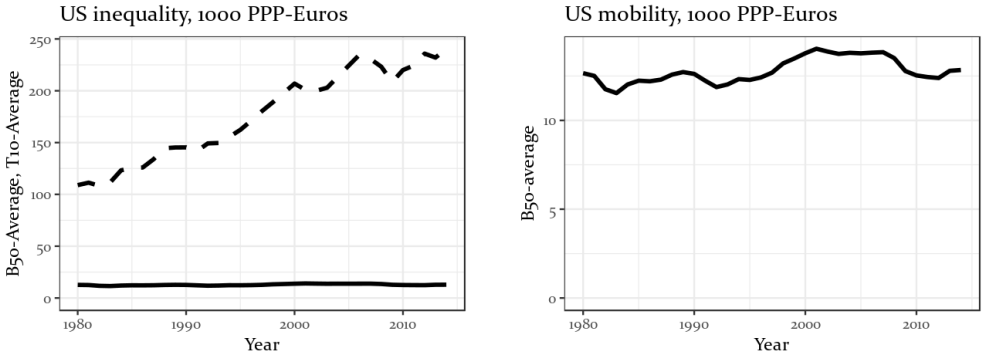

Figure 2: The first panel shows US inequality: in the last four decades the average income of the top 10% has nearly tripled, dramatically increasing the separation from the average income of the bottom 50%. The second panel shows the state of US mobility (this is just the line towards the bottom of the first panel): the poorer half's average income is actually lower in 2014 than in 2000, and only about the same level as in 1989 and 1980.

tries, it is economic growth that dominates outcomes for the poor (Dollar and Kraay, 2002).

What is of interest in the current study, however, are specific individual national experiences, not just what happens on average. A diversity of these is given by the examples of the US, Chinese, and French cases, summarised in Figures 2–4 and Table 1. Subsequent sections will be considering as large a cross section of economies as possible, and so study the period since 2000. Here, for just the three national economies, the year 1980 instead is a convenient starting point.

Figure 2 shows that the average income of the top 10% in the US has nearly tripled, dramatically increasing the separation from the average income of that economy's bottom 50%. Thus, the first panel shows high and rising inequality. The second panel shows the state of US mobility: (this is just the line towards the bottom of the first panel) the poorer half's average income is lower in 2014 than in 2000, and only about the same level as in 1989 and 1980. Thus, for the US there was immobility over the longer term and even downwards mobility over significant stretches of time.

Figure 3, for China, shows the average income of the top 10% dramatically rising as well. In the four decades since 1980 this has risen nearly 10-fold, dramatically increasing the separation from the average income of the bottom 50%. Thus, Chinese inequality is high and rising. But in the second panel, for Chinese mobility (magnifying the line towards the bottom of the first panel clarifies that) even as Chinese inequality has risen,

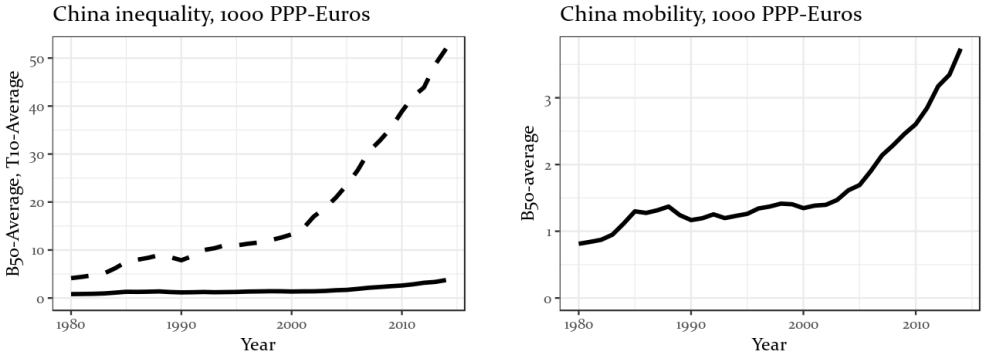

Figure 3: The first panel shows Chinese inequality: in the last four decades the average income of the top 10% has risen nearly 10-fold, dramatically increasing the separation from the average income of the bottom 50%. The second panel shows Chinese mobility: even as Chinese inequality has risen, so too the poorer half's average income has almost quadrupled. This is a higher rate of increase than even that of the average income of the US top 10%.

so too the poorer half's average income has quadrupled. This is a better rate of increase than even the average income of the US's top 10%. China's poor have grown much better off compared to four decades past, even as the separation between them and China's rich has risen. Thus, increases in inequality, in general, do not equate to immiserisation of the poor and lower middle class.

Figure 4 provides the third example. It depicts French inequality and mobility. In the last four decades the average income of France's top 10% has risen 50%. This is a large increase but far smaller than its counterpart in either China or the US. Moreover, inequality as measured by the separation between average incomes of the top 10% and the bottom 50%, has been declining since the mid-2000s. Indeed that separation in 2014 is only about the same magnitude as in 2000. The second panel shows French mobility (magnifying the line towards the bottom of the first panel clarifies how): the French poorer half's average income has actually been rising. The poor's average income in France has increased 38% from 1980. While not as good a performance as for China, this is an order of magnitude better than the US's.

Table 1 summarises the critical message from Figures 2–4. Its critical points, repeating the message given earlier in Section 1, are:

1. The US has seen rising inequality and downward mobility;

2. China has experienced rising inequality and, at the same time, strong

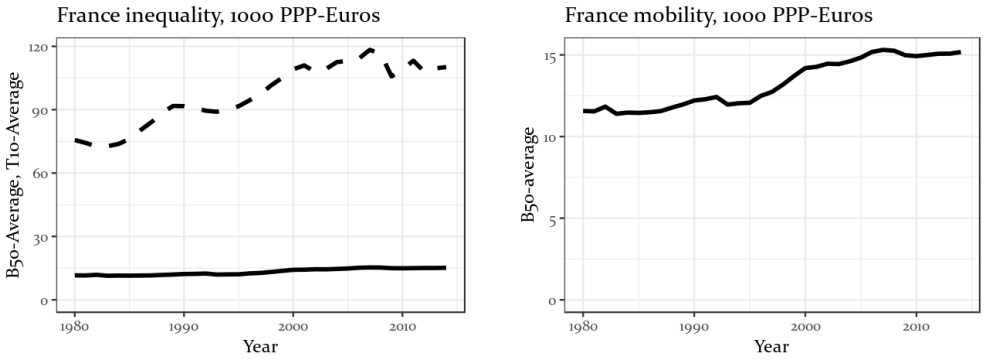

Figure 4: The first panel shows French inequality: in the last four decades the average income of the top 10% has increased 50%. This is large but far smaller than its counterpart in either China or the US. Moreover, inequality as measured by the separation between average incomes of the top 10% and the bottom 50%, has been declining since the mid-2000s. Indeed that separation in 2014 is only about the same magnitude as in 2000. The second panel shows French mobility: the French poorer half's average income has actually been rising. The poor's average income in France has increased 32% from 1980. While not as good a performance as for China, this is an order of magnitude better than the US's.

In 1000€	Inequality Q			Bottom 50% y_{B50}		
	1980	2000	2014	1980	2000	2014
USA	96.3	193.1	227.7	12.7	13.8	12.8
China	3.3	11.9	48.2	0.8	1.3	3.7
France	64.1	94.9	95.0	11.5	12.2	15.2

Table 1: Source: Author's calculations from Section 4: That Section also defines Q and y_{B50} The range of experiences is wide: 1. The US has seen rising inequality and downward mobility—between 1980 and 2014 inequality rose by 136%, while the average income of the bottom half remained constant, with that 2014 average income lower than in 2000; 2. China has experienced rising inequality and, at the same time, strong upward mobility—from 1980 to 2014 the average income of the bottom half of the population increased by 275%, while inequality rose 15-fold; 3. France has, since 2000, seen both upward mobility and flat inequality; since 1980, average income of the bottom half of the population has risen 32%.

upward mobility—average income of China's bottom 50% has risen faster than average income of the US's top 10%;

3. France has had upward mobility while inequality remained roughly flat since 2000.

But which of these findings is the norm and which unusual relative to the experiences of all the different nations across the world? Section 4 will address these and related questions. However, it is useful before then to get a sense of the challenge that inequality poses for research and public policy.

3 Related Literature

Examples in Section 1 have highlighted a clear and powerful political narrative on the overwhelming significance of inequality. Those specific cases happened to come from Pope Francis, Barack Obama, and Thomas Piketty, but the message itself has been communicated on many different levels.

For over two decades technical work on endogenous growth has considered inequality to be potentially causal for aggregate growth (early papers include, e.g., Benabou, 1996; Galor and Zeira, 1993; Persson and Tabellini, 1994). More recent writings have no longer felt need theoretically to justify interest in income disparities, not least as the measured increase in inequality has been so large and so striking. Instead, the latest work have focused on the painstaking task of documenting the degree and form of inequality settling into economies across the world (Alvaredo, Atkinson, Piketty, and Saez, 2013a; Milanovic, 2005, 2016; Piketty and Saez, 2003), with Piketty (2014) providing a magisterial overview and relating inequality's evolution to differentials between economic growth and returns on capital. The penetration of these writings on the global public consciousness has been profound.

Forum (2015) named inequality the biggest challenge facing the world—ahead of, among other things, the failure of global leadership, geostrategic rivalry, and global climate change. There was no confusion over related distributional outcomes such as poverty or the lack of upward mobility: the evidence featured was that on the rise of national income shares accruing to the richest 1% across a range of nations (Alvaredo et al., 2013b).

Basu (2018), former World Bank chief economist, pronounced on the geopolitical implications of domestic inequality:

> Around the world, the effects of alarmingly high economic inequality are spilling over into politics and society. Economic insecurity is a driving force behind violent conflicts in the Middle East and the rise of fascist elements in some European countries, not least Hungary and Poland. Even in older democracies such as the United States, economic marginalization has led to a strengthening of chauvinist and supremacist identities and other social problems such as the opioid epidemic.

In this reckoning, within-nation inequality is causal for violence, drug addiction, the rise of fascism and nationalist populism, and thus tensions across nations.[3] Basu (2018) makes important normative points about ethics, but what many readers will take from the article is how inequality is driving "violent conflicts, [...], the rise of fascist elements [...], a strengthening of chauvinist and supremacist identities, and other social problems".

Beyond economics, inequality can appear as a convenient conduit by which specific political outcomes emerge out of different socioeconomic forces. In the language of probability theory, we might say inequality is a sufficient statistic. Thus, Rodrik (2018, pp. 1–2) describes how, apart from globalization, different forces might drive the rise of populism:

> I do not claim that globalization was the only force at play—nor necessarily even the most important one. Changes in technology, rise of winner-take-all markets, erosion of labour-market protections, and decline of norms restricting pay differentials have all played their part. These developments are not entirely independent from globalization, insofar as they both fostered globalization, and were reinforced by it. But neither can they be reduced to it.

[3]The article does refer to poverty, once, in a statement about the World Bank showing 10 percent of the global population still living below $1.90 per day. But it is inequality that occupies almost all the discussion, and the connection between inequality and global poverty is never made explicit.

All these alternative drivers, while indeed different from globalization—the point Rodrik (2018) emphasises—matter, however, only in how they raise inequality. In other words, while they cannot be reduced to globalisation, they can, instead, be collapsed to inequality: changes in technology advantage the skilled workforce, and destroy routine or physical jobs held by the unskilled, hence increasing disparities between rich and poor; winner-take-all markets concentrate incomes at the very top end of the income distribution, and so raise inequality; labour-market protections help support the lower end of the income distribution, so their demise allows the bottom to fall even further; and of course once pay differentials are no longer held in check by social or other norms, inequality is free to rise without bound. Indeed, the impact of globalization itself, to a large degree, is imagined to work through rising inequality—if not in income alone then certainly in power and control, with international cosmopolitan elites on one extreme, and ordinary people on the other.

Nolan (2019) summarises this kind of reasoning as an emerging grand narrative where "globalisation and technological change have polarised society into a small elite with highly paid, secure jobs on one side, and on the other side are growing numbers of people, including an increasingly 'squeezed' middle class, in insecure, poorly-paid work", with this rising inequality leading to "erosion of solidarity, social trust and faith in democratic institutions", "election of Donald Trump, the UK's Brexit vote, and the broad rise of populism".[4]

Such studies analyse a chain that goes from globalisation and other varied fundamental causal drivers—through, in my interpretation, inequality, and then onwards—to the rise of populism.

Yet other studies simply take inequality, however exogenously arrived at, as the key driving variable in a political process of interest. Nowhere

[4]Nolan's point, expanded further in Nolan (2018) and Nolan and Valenzuela (2019), is that that causal chain applies only for the US and a few other places, and cannot be generalised. Nolan's conclusion on US exceptionalism is confirmed in Section 4 to follow as well as in Quah (2019). However, my analysis on American exceptionalism draws on information in the dynamics of income distribution alone—the US is so different from any other major economy—and not on any other data on populism. Nolan (2019) describes how across the OECD, median household income growth bears little relation to inequality. This paper, on the other hand, will document that across all nations, not just the OECD, inequality increases mainly come with increases, not declines, in incomes across the entire bottom half of the population.

is this clearer than in analyses of democratic transition using models of "distributive conflict". Haggard and Kaufman (2012, p. 495) summarise the important work of Acemoglu and Robinson (2006) and Boix (2003) in the following:

> The more unequal a society, the greater the incentives for disadvantaged groups to press for more open and competitive politics. Yet the wider the income disparities in society, the more elites have to fear from the transition to democratic rule and the greater the incentives to repress challenges from below.

Opposing forces in society—notably both derived from inequality—impact the possibility of democratic transition. Depending on which of the dynamics dominate, the probability of institutional change can rise or fall: in the models of Acemoglu and Robinson (2006), for instance, there is an inverted U-shaped relation between democratic transition and levels of inequality. Inequality, in this analysis, is at one and the same time what drives societies to shift from autocracy to democracy, or keeps the elites motivated to preserve the old regime.

Across today's wider-world cross section of nations, public concern over high inequality is not seen only in autocracies that are in queue waiting to transition into democracies. Indeed, it is in mature democracies where that public concern has become just as intense, if not more so.

Related to this understanding of inequality as both conduit and cause are those public conversations that seamlessly identify inequality as equivalent to poverty. There too inequality is tagged as the culprit for all social ills. For instance, in an interview with the authors Wilkinson and Pickett (2018), the journalist Dawn Foster (2018) wrote:

> New analysis ... showing that 14mn people live in poverty highlights just how unequal a society the UK has become. [...] The reality is that inequality causes real suffering.

As a matter of arithmetic, however, except under extreme conditions—total income held constant, the spread of income distribution veering into range of sufficiently low absolute levels—the number of people living in poverty is unrelated to how unequal society is.

Starvation, child hunger, and inter-generational recidivism are problems of poverty and immobility. Those problems remain as long as high poverty

and low mobility remain, independent of whether inequality is high or low. If inequality is lowered but high poverty and low mobility are unchanged, society will continue to experience starvation, child hunger, and persistently high cross-generational rates of incarceration.

While it is unreasonable to expect this logic to be explained in a newspaper article, the more that such publications glide over the conceptual difference between inequality and poverty, the more ingrained in society's thinking becomes this incorrect identification, and consequently the more difficult the public policy challenge on inequality.

One of the most valuable publications in this regard is the nuanced and balanced Programme (2019) report. This publication points to inequality as a significant commonality across political upheavals worldwide, but then also qualifies that observation: "while people may protest to keep pennies in their pockets, power is the protagonist of this story: the power of the few; the powerlessness of many; and collective power of the people to demand change" (Programme, 2019, p. iii). Inequality might well be a significant presence, but it also comes with other socioeconomic and political forces. In comparison with those, inequality might turn out not to the critical agent after all.

If this configuration of driving forces remains invariant, then the point might be just academic to say that it is something else that matters, not inequality, when the two always come together. However, extant findings do suggest a relevant distinction to be made, and the remainder of this paper will seek to provide more such evidence.

Using survey data for China, Whyte (2016) showed that despite the principal narrative on social discontent in China—as elsewhere—blaming high and growing income inequality, in reality, instead, it is the disparity in *power* that most exercises the population. The average Chinese citizen is not particularly concerned about the income gap between rich and poor. This is consistent with Section 2 discussion on China's strong upward income mobility, at the same time that inequality has continued to rise. Chinese citizens are concerned about "abuses of power, official corruption, bureaucrats who fail to protect the public from harm, mistreatment by those in authority, and inability to obtain redress when mistreated" (Whyte, 2016, p. 9). Inequality is at worst an endogenous outcome, alongside social anger, of an unbalanced system; inequality is not a cause of social discontent.

For the US, on the other hand, when Americans were asked how much wealth inequality there was in US society, they systematically gave estimates much lower than reality (Norton and Ariely, 2011, Fig. 2). In 2005, when the survey was conducted, the top 20% of Americans held 84% of total wealth; survey estimates averaged only 59%. The bottom 40% of Americans owned only 0.3% of total wealth; survey estimates averaged almost 10%. This under-estimation of inequality was remarkably consistent across income class, political belief, and gender groups (Norton and Ariely, 2011, Fig. 3).

Such analyses highlight how difficult a concept inequality is for the typical individual to grasp. Unlike prices or other concrete signals, inequality is neither concrete for nor specific to any economic agent on which basis that agent can take direct action. Inequality is not a condition or parameter that applies to any single individual—the color of one's skin, say, or the prices and incomes against which someone can solve an optimisation problem. Instead, it is meaningful only to an entire group or society, and takes the same value for every individual in the group. Eriksson and Simpson (2012) show that powerful anchoring effects can lead to survey respondents expressing inordinately low values in both their guesses for actual inequality and their preferred levels for what inequality should be. Starmans, Sheskin, and Bloom (2017) note that in laboratory studies of small groups, people might express a preference for perfect egalitarianism, but inequality is instead the preferred outcome in larger-scale studies with more realistic population variation. How attitudes towards inequality change under a particularly simple variation—when average income changes—was studied in Hirschman and Rothschild (1973).

A final strand of literature is relevant, one that has studied rigorously the relation between inequality and populism (e.g., Nolan and Valenzuela, 2019). However, given that a first goal of this paper is to establish empirical regularities surrounding inequality and other social indicators, it will be logical to discuss those results only after first establishing those regularities.

The conclusion I take from the studies I have described is two-fold. On the one hand, both political commentary and scholarly research have hiked the stakes on inequality. Many different socioeconomic and political dynamics are now assumed to be driven by or modulated through inequality. On the other hand, inequality's micro-foundation in terms of individual understanding—that inequality differs from poverty and mobility, say—is

only very weakly established. Inequality is a difficult concept for people who have to take decisions based on their understanding of the environment in which they operate: inequality illiteracy is high but that should not drive political action.

It is helpful, therefore, to provide simpler, more direct indicators of inequality and of related concepts such as mobility that are more easily interpretable in terms of individual experience. The next section turns to three such indicators. Indeed the previous Section 2 has already informally used them, and thereby demonstrated why these indicators appeal: Their meanings are readily discussed even without extensive prior technical preparation.

4 Results: Growth, Mobility, and Inequality

The combined thrust of arguments in the previous Section 3 draws inequality out as so powerful a determining factor of socioeconomic and political outcomes, one should be able to find the impact of inequality obviously in data, and not need finely-detailed regression analysis controlling for all other possible confounding variables. That "obvious effect" approach is the one I adopt here.

Following Section 2, I analyse principally two variables over time in the cross-section of economies:

1. **Inequality**, or Q, the separation between average incomes of the top 10% and the bottom 50%;

2. **Upward mobility**, or m, the rate of increase of the average income of the bottom 50%.

Income growth rates needn't be positive. Therefore, I will refer to the income growth rate that is upward mobility m—measured as proportional rates of change, in percent per annum—as just **mobility**, when there is no possibility of confusion, and taking care not to conflate m with intra-distribution mobility or other mobility indices (e.g., Geweke et al., 1986; Singer and Spilerman, 1976). In addition to inequality Q, here defined as just a difference in average incomes across two different income groups, I also define **relative inequality** q as the ratio of Q to the average income of the bottom 50%. This measure of relative inequality is non-negative and unit-free, but, just as Q, still directly relatable to individual experience.

Average income in this paper is per adult national income, i.e., GDP less consumption of fixed capital plus net foreign income. As argued in Alvaredo et al. (2019) this is more appropriate for analysis of economic well-being than GDP per capita.

The modern literature reports and conceptualises inequality in a range of ways: inequality indices range from the well-known Gini coefficient, the mean-median ratio, the log standard-deviation, capital's share of national income, and so on through dozens of other indicators. Here, I seek only a measure that relates transparently to the personal circumstances of an individual agent living within that income distribution, and therefore comes in units directly meaningful to an assessment of individual well-being. For these reasons, indexes like Gini coefficients are less useful: a Gini coefficient of 0.75 (say) in a given society is not immediately comparable to any individual's personal circumstances. Similarly, a measure like the income share accruing to the top 1% (say), while politically evocative, does not translate directly to an individual's economic situation. Indeed, it is a matter of logic that what happens to the top 1% says nothing about the material circumstances of the poor. Moreover, again simply as a matter of arithmetic, an income share of, say, 50% means something very different in a rich first-world nation than it does in a poor emerging economy, or indeed in any given economy growing over time.

For these reasons, by inequality Q I mean in this paper the distance between the average income of the top 10% of adults in the economy and the average income of the bottom 50%. This measure of inequality is immediately understandable to any observer, as long as they have some idea of any individual's income. It is only a further small step from Q to my measure of relative inequality q, that normalises the separation Q by the bottom endpoint of the interval joining average incomes of the top 10% and the bottom 50%. As the name suggests relative inequality q provides a sense of the gulf between rich and poor, from the perspective of a representative agent among the poor.

Finally, for mobility, it is *upward* mobility that is most useful in the current study. The leading alternative notion of social mobility—switches in ranks, changes in percentiles or quintiles, and so on—that references churning among the individuals in the distribution is not useful in the current work.

Fig. 5 explains this paper's preference for income mobility, rather than

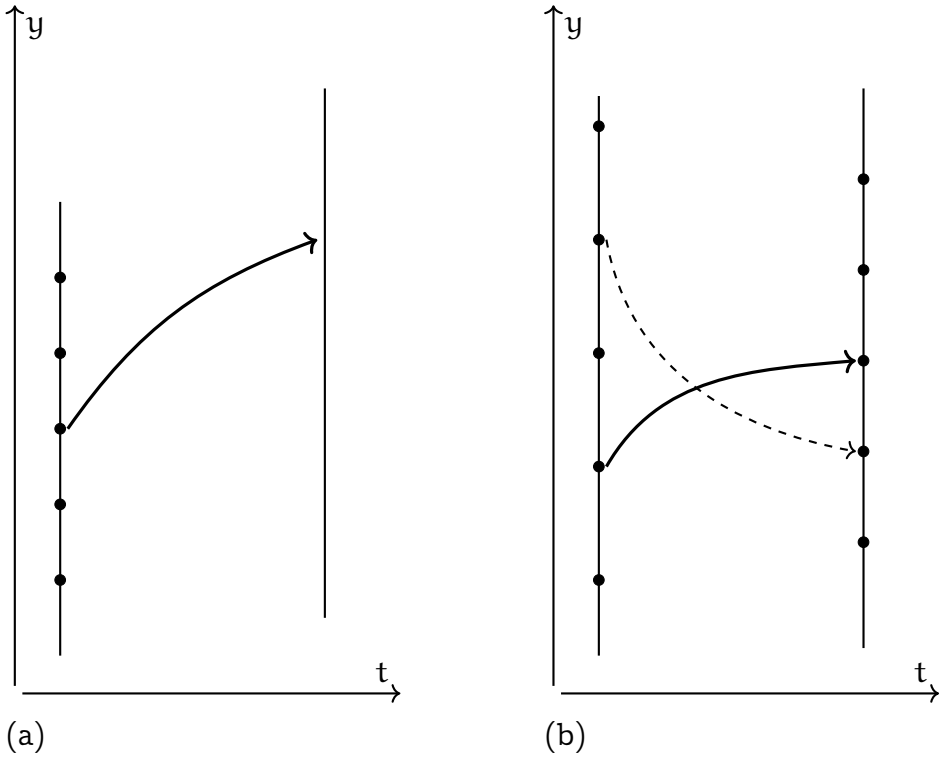

Figure 5: Income Mobility and Social Mobility. Each of the left and right panels—societies (a) and (b) respectively—shows a distribution of income y changing through time t. Each small circle represents 20% of the group whose income distribution is depicted. The left panel, society (a), sees an increase in average income but leaves unrestricted who goes where in the income distribution. When (a) is confined to the bottom 50% in society, this change in average income is what the text refers to as income mobility. The right panel, that for society (b), shows the group originally in the 21st–40th percentile, (i.e., the second 20%) experiencing upward social mobility in transitioning to the third 20%: they rise in society. For this to happen, however, some group originally in the top 60% must fall into the bottom 40%, thereby experiencing downward social mobility. Put directly, if previously you had 60% of the population richer than you but now only 40%, then one-fifth of the population, somewhere, must have fallen in the process. Upward social mobility is impossible without, at the same time, equal and opposite downward social mobility. Social mobility is a zero-sum proposition.

social mobility. When there is upward mobility (panel (a) in the Figure), incomes rise on average, but no group's position is guaranteed. However, when there is social mobility (panel (b)), some group is guaranteed to have risen in ranking. But, as a matter of logic, this can happen only because some other group falls: social mobility, in this sense, is a zero-sum proposition.[5]

[5]Footnote 10 in Chetty, Hendren, Kline, and Saez (2014a, p. 1562) recognises this, for intergenerational mobility, as how "if one child moves up in the income distribution in terms of ranks, another must come down". The property appears in Hout (2015, p. 27) as *symmetry*, i.e., in the absence of other changes, "mobility is intrinsically symmetrical;

Respecting the Pareto principle, income mobility, as defined in m, potentially raises social well-being. In contrast, social mobility worsens someone's position for certain at the same time it seeks to elevate others. Indeed, social mobility might be high simply because the rich suffer worse outcomes, not because anyone in society is actually materially better off.

There is a closely-related reason for focusing on income mobility as defined by m. Programme (2019, p. 1) describes the key challenge:

> In every country many people have little prospect for a better future. Lacking hope, purpose, or dignity, they watch from society's sidelines as they see others pull ahead to ever greater prosperity. Worldwide many have escaped extreme poverty but even more have neither the opportunities nor the resources to control their lives.

This quote is followed, in the original, by a statement that income inequality should be reduced. Logically, however, lowering inequality is neither necessary nor sufficient to solve the key problems described in the quote. Inequality could be zero and society perfectly egalitarian, and still people could "have little prospect for a better future", and "have neither the opportunities nor the resources to control their lives": all of society might be dirt-poor and itself going nowhere. In contrast, inequality could be high, but if all of society were sufficiently rich and economic growth continued to be strong, then everyone would have good future prospects and would be in control of their lives. What matters to deliver the poor out of the predicament described in the quote is that they have sufficient income, not whether there are others in society richer than them. Thus, it has to be through upward income mobility, i.e., $m > 0$, that, by definition, these problems identified can be assuredly solved.

The Technical Appendix Section7 discusses further other potentially useful mobility concepts. Hereafter, I focus on mobility m as measured by the signed rate of change in average income of the poorer half of adults in an economy. Positive m indicates the poor in the future are better off than the poor in the past, whereas negative m indicates immiserisation of that group. The greater the absolute value of m the faster either of these is happening.

each upward move is offset by a downward move".

The primary data source I use is Alvaredo et al. (2019). I now describe how I construct (m, Q, q) from there. Take from Alvaredo et al. (2019) per adult national income in inflation-adjusted, Purchasing Power Parity 2018 € Euros; the Top 10% share; and the Bottom 50% share.[6] Call these respectively y, σ_{T10}, and σ_{B50}. Denote average incomes in the top 10% and bottom 50% by y_{T10} and y_{B50}. Calculate them by noting that, if total population is written N, then by definition:

$$\sigma_{T10} = \frac{10\% \times N \times y_{T10}}{N \times y} \qquad \text{and} \qquad \sigma_{B50} = \frac{50\% \times N \times y_{B50}}{N \times y},$$

so that rearranging gives

$$y_{T10} = \frac{y \times \sigma_{T10}}{0.1} \qquad \text{and} \qquad y_{B50} = \frac{y \times \sigma_{B50}}{0.5}. \tag{1}$$

Total population N, while central in the conceptualisation, is never needed in equation (1).

Hereafter use an upper bar $\overline{x}$ to denote timeseries average, superscript x^g to denote proportional growth rate, and superscript x^* to denote location or level. A timeseries graph can be partially described by these three operators. The timeseries average and population growth rate are obvious but for location or level of the graph, I use the median rather than arithmetic mean, or initial or final values. The idea here is not to fixate overly on, say, starting or terminal levels, but instead just to indicate the height of the timeseries graph.

Construct for each economy the timeseries:

$$m = y^g_{B50} \stackrel{\text{def}}{=} \frac{d(y_{B50})/dt}{y_{B50}}\,; \qquad Q \stackrel{\text{def}}{=} y_{T10} - y_{B50}\,; \qquad q \stackrel{\text{def}}{=} Q/y_{B50} \tag{2}$$

of mobility, inequality, and relative inequality. In the sequel, it will be convenient to report

[6] Alvaredo, Chancel, Piketty, Saez, and Zucman (2019) documents that "only few institutions provide inequality estimates and those who do so (e.g., the OECD or the World Bank data portals) rely for the most part on household surveys. One key problem with surveys, however, is that they are based upon self-reporting and are well known to underestimate top incomes and top wealth shares. In addition, surveys only cover a limited time span and make it impossible to offer a long-term perspective on inequality trends. In contrast, WID.world combines national accounts and survey data with fiscal data sources. This allows us to release inequality estimates that are more reliable—from the bottom to the top of the distribution of income and wealth—and also that span over much longer periods."

2000-2016	$\overline{m}$	Q^*	Q^g	q^*	q^g
1. China	7.2	29.4	9.7	12.9	2.6
2. Moldova	5.6	8.8	2.0	5.2	-3.6
3. Thailand	5.5	62.0	2.3	21.0	-3.1
[...]					
47. Saudi Arabia	-0.3	369.4	-0.3	39.1	0.0
48. Qatar	-0.5	758.4	0.3	34.1	0.8
49. USA	-0.5	209.7	1.2	15.5	1.7
50. Netherlands	-0.5	89.4	1.6	4.0	2.1
[...]					
58. UAE	-4.2	434.8	-3.7	35.4	0.5
59. Yemen	-4.8	32.2	-4.8	17.0	0.0
60. Oman	-5.0	280.6	-2.6	32.6	2.4

Table 2: 2000-2016 Champions of mobility, and others. Economies are sorted in descending order of long-run mobility $\overline{m}$. Units for the different variables are $\overline{m}$ Mobility (% p.a.); Q^* Inequality (10^3€); Q^g and q^g long-run rates of change (% p.a.); while q^* relative inequality is a unit-free ratio. As described in the text the locations Q^* and q^* are medians in the timeseries values for each economy, and are not necessarily either start or end points: they are intended only to give a sense of the (stochastic) height of each timeseries graph. By definition, $q^g = Q^g - \overline{m}$. Insufficient data were available to complete the calculations in 19 economies: those included, among others, Canada, Indonesia, Japan, and Singapore.

- $\overline{m}$ time-averaged mobility, or long-run mobility;
- Q^g, q^g, the long-run growth rates of inequality and relative inequality, respectively;
- Q^*, q^*, the location of inequality, i.e., the median value of the time-series observations on Q and q, respectively.

Growth rates Q^g, q^g will give a sense of longer-run trends in inequality. Recall that unlike, say, Gini coefficients or income shares, the inequality measures Q and q are not bounded from above: it makes sense, therefore, to consider longer-run dynamics in them.

Since the focus in this paper is not extreme long-run dynamics but what transpired in the last several decades, I look at the inequality and mobility experience since 2000.

Table 2 shows long-run mobility and the dynamics of inequality and relative inequality. It gives economies in decreasing order of long-run mobility. In the sample the best performer, China, has seen its bottom 50%

increase average incomes at over 7% per annum. This, the highest long-run mobility seen in the data, means that the poor in China have average incomes doubling every decade. At the same time, China's inequality is comparatively high with sample median 29.4 thousand €, and is growing at nearly 10% a year. Thus, China has high and rising inequality at the same time that upward mobility is appreciable.

Moldova and Thailand have the next two highest long-run mobility, but lower than China's by more than 1.5 percentage points per annum. Relative inequality in both Moldova and Thailand are falling, but compared to China's, Thailand's relative inequality is higher and Moldova's lower. For these top three upwardly mobile societies, inequality and its dynamics show no obvious systematic pattern relative to mobility.

In contrast, societies such as Saudi Arabia, Qatar, the US, and the Netherlands have seen long-run immiserisation of their poor, with the UAE, Yemen, and Oman the worst performers in long-run mobility in the sample. At current trends, Yemen has its poor halving their average incomes every fourteen years. Again, however, no obvious pattern is manifest in inequality and its dynamics: relative inequality in the Netherlands is low but in Saudi Arabia, Qatar, the UAE, and Oman, relative inequality is high. Inequality is falling in Saudi Arabia, the UAE, Yemen, and Oman, but rising in Qatar, the US, and the Netherlands. Relative inequality is increasing in Oman, the Netherlands, and the US, but unchanging in Saudi Arabia and Yemen. For downwardly mobile societies as well then, inequality and its dynamics show no obvious systematic pattern relative to mobility.

An important and powerful message emerges from Table 2 despite there being no strong relation between mobility and inequality. In the sample the varied upward mobilities lead to *large* differences in the well-being of the poor in societies across the world. The gap between long-run mobility of -0.5% (USA) and 7% (China) is responsible for the stark difference between the bottom 50%'s economic outcomes in the US and China, i.e., Figures 2–3 of the earlier Section 2.

The entire cross-section of societies, to which we now turn, will confirm the lack of systematic relation between mobility on the one hand and inequality and its dynamics on the other. Only at extreme levels of inequality or its trends will there appear to be a more pronounced relation with mobility. However, observations are also sparse at extremes. In the middle range where most of the data cluster, there is considerable variation and

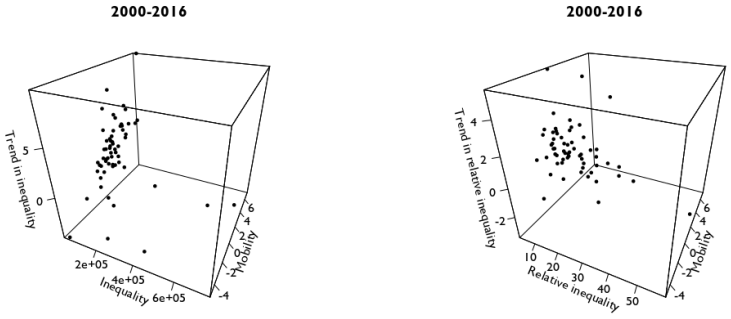

Figure 6: Mobility with (left panel) Inequality Dynamics and (right panel) Relative Inequality Dynamics. Societies with very high inequality are few in the sample, but are so extreme they can distort regression and other averaging analyses. Most of the world, instead, clusters towards the wall defined by Trends in Inequality or in Relative Inequality: this is particularly evident in the left (Inequality) panel but also in the right (Relative Inequality).

thus significant ambiguity in the relation between mobility and inequality and its dynamics.

Figure 6 displays the complete sample of underlying statistics, parts of which were explicitly given in Table 2. The three dimensions in each of the panels in the Figure corresponds to the variables long-run mobility $\overline{m}$, inequality Q^*, q^*, and long-run change in inequality Q^g, q^g.

Figure 6 shows that societies with very high inequality are few in the sample, but are so extreme they can distort regression and other averaging analyses. Most of the world, instead, clusters towards the wall defined by Trends in Inequality or in Relative Inequality: this is particularly evident in the left (Inequality) panel but also in the right (Relative Inequality). Figure 7 focuses on this effect by projecting the 3-dimensional Figure 6 vertically downwards onto the floor.

Figure 7 shows that when societies experience high inequality they invariably also show immiserisation: the poor become poorer, or at best remain stagnant in their average incomes. These extreme observations distort the best-fitting linear relation across the sample to be negatively sloped. In contrast, the clusters of low and even moderately high inequality—the left sides of either the left or right panels—show instead a wide range of mobility behaviours. For instance, in the right panel, societies with relative inequality between 10 and 20 range in mobility from over 7% to nearly -5%, with no systematic slope in the relation between mobility and rela-

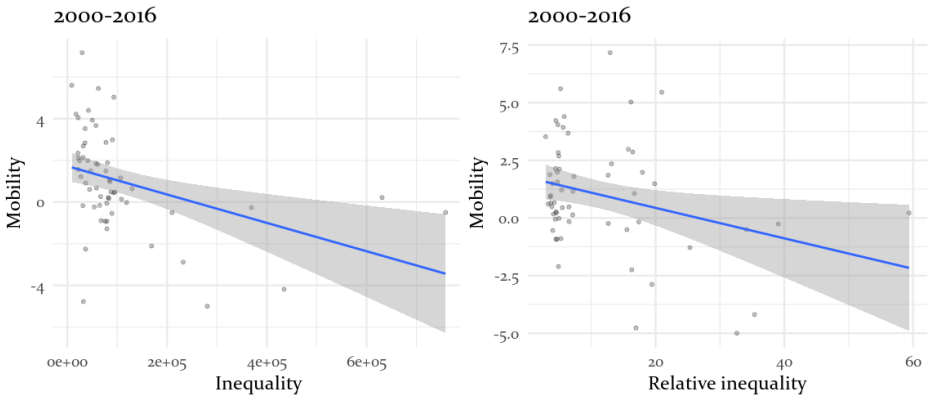

Figure 7: Mobility with (left panel) Inequality and (right panel) Relative Inequality. When societies experience high inequality they also show immiserisation: the poor become poorer, or at best remain stagnant in their average incomes. These extreme observations distort the best-fitting linear relation across the sample to be negatively sloped. In contrast, the clusters of low and even moderately high inequalty—the left sides of either the left or right panels—show instead a wide range of mobility behaviours. For instance, in the right panel, societies with relative inequality between 10 and 20 range in mobility from over 7% to nearly -5%, with no systematic slope in the relation between mobility and relative inequality. Across the range of low and moderately high inequality, marginally more societies show upward mobility than downward mobility.

tive inequality. Across the range of low and moderately high inequality, marginally more societies show upward mobility than downward mobility. Still, however, of the six cases where mobility $\overline{m}$ fell below -2.0% p.a., four had relative inequality q less than 20, with one of those experiencing relative inequality at only 4.9.

To complete the discussion of Figure 6 consider the Figure's projection, from the right, onto the wall defined by inequality trends.[7] Figure 8 in its left panel shows the most pronounced correlation yet: high mobility comes with increasing inequality. The right panel shows that this high mobility obtains when, at the same time, relative inequality is falling. Even though, as in Table 2, $q^g = Q^g - \overline{m}$, that equality imposes no restrictions across left and right panels here.

Table 3 fleshes out further insight on Figure 8. Of the 47 economies that have experienced a rise in inequality since 2000, 38 (i.e., 81%) have seen upward mobility. Nine economies have experienced both downward

[7]In this text I don't analyse the final projection, that from the front of Figure 6, integrating out the mobility $\overline{m}$ axis. Although the location variable is the median rather than an initial value, there is still a Galton's Fallacy kind of effect here (Quah, 1993). For completeness the Technical Appendix displays this final projection as Figure 10, and indeed the characteristic Galton's Fallacy negative regression line does manifest.

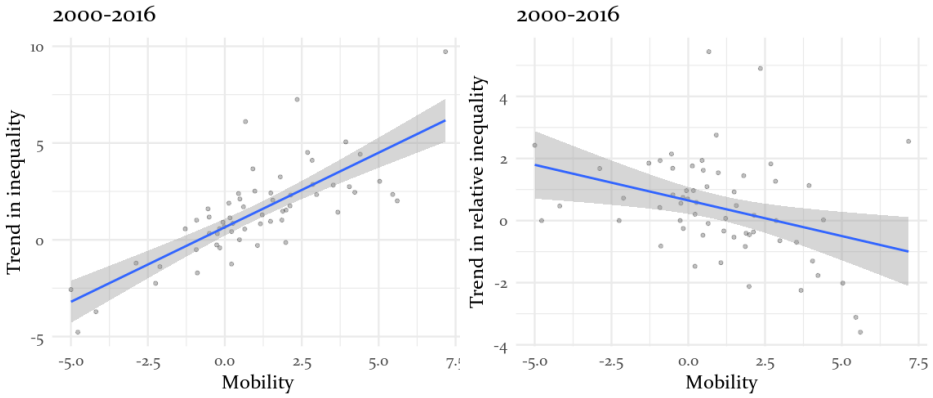

Figure 8: Mobility with (left panel) Inequality Trend and (right panel) Relative Inequality Trend. The left panel shows the most pronounced correlation yet: high mobility comes with increasing inequality. The right panel shows that this high mobility obtains when, at the same time, relative inequality is falling. Even though, as in Table 2, we have $q^g = Q^g - \overline{m}$, that equality imposes no restrictions across left and right panels here.

		$\overline{m}$	
		$-$	$+$
Q^g	$-$	10	3
	$+$	9	38

1. $(+,-)$ USA 1.2%, -0.5%; Netherlands 1.6%, -0.5%; Cyprus; Finland; Jordan; Lebanon; Palestine; Qatar; Switzerland.

2. $(+,+)$ China 9.7%, 7.2%; France 0.0%, 0.5% (noting Mouvement des Gilets Jaunes); UK 0.8%, 1.2%; Albania; Austria; Belgium; Bosnia-Herzegovina; Brazil; Croatia; Czech Republic; Denmark; Egypt; Estonia; Germany; Hungary; Iceland; India; Iraq; Ireland; Kosovo; Latvia; Lithuania; Macedonia; Malta; Moldova; Montenegro; Norway; Poland; Romania; Russia; Serbia; Slovakia; Slovenia; Spain; Sweden; Thailand; Turkey.

3. $(-,-)$ Bahrain; Greece; Italy; Luxembourg -1.4%, -2.1%; Oman; Portugal; Saudi Arabia; Syrian Arab Republic; United Arab Emirates; Yemen.

4. $(-,+)$ Cote d'Ivoire; Iran; Kuwait.

Table 3: Inequality and Mobility

	$\overline{m}$	Q^*	Q^g
$\overline{m}$		-0.39	0.77
Q^*			-0.38
Q^g			

	$\overline{m}$	q^*	q^g
$\overline{m}$		-0.30	-0.34
q^*			-0.12
q^g			

Table 4: Correlation matrix: (left) Mobility and Inequality; (right) Mobility and Relative Inequality.

mobility and a rise in inequality: notable among them are the US and the Netherlands. France has experienced insignificant change in inequality and at the same time upward mobility. Yet, France is also a society where political upheaval has been notable. Section 5 will return to this.

Table 3 shows 19 societies experienced downward mobility. Among them the US is the largest and most populous.[8] Quah (2019) explores further this American exceptionalism, and compares it with mobility and growth experiences elsewhere in the world.

Finally, Table 4 shows the correlation across mobility and inequality. The discussion of Figures 6–8 has highlighted how summary measures in correlations, averages, or regression lines will hide some of the most important features of the data. Indeed, the negative correlation between mobility and inequality, both between $\overline{m}$ and Q^* and between $\overline{m}$ and q^* that appears in the Table has been revealed to be the result of only the extreme inequality observations. Nonetheless, the correlation in the Table between mobility and inequality's trends, both between $\overline{m}$ and Q^g and $\overline{m}$ and q^g, appropriately points to the last conclusion from Figure 8: upward mobility is high when inequality is also rising but relative inequality is falling.

To conclude, is inequality the defining challenge of our modern social compact? The empirical evidence shows remarkably little relation between mobility, on the one hand, and inequality and its dynamics, on the other. You can have highly unequal societies where there is appreciable upward mobility. And you can have relatively egalitarian societies with significant downward mobility, where the poor continue to be immiserised, becoming even poorer over time.

Anything can happen.

[8]The others are Cyprus, Finland, Jordan, Lebanon, the Netherlands, Palestine, Qatar, Switzerland (all with rising inequality); and Bahrain, Greece, Italy, Luxembourg, Oman, Portugal, Saudi Arabia, Syria, the UAE, and Yemen (falling inequality).

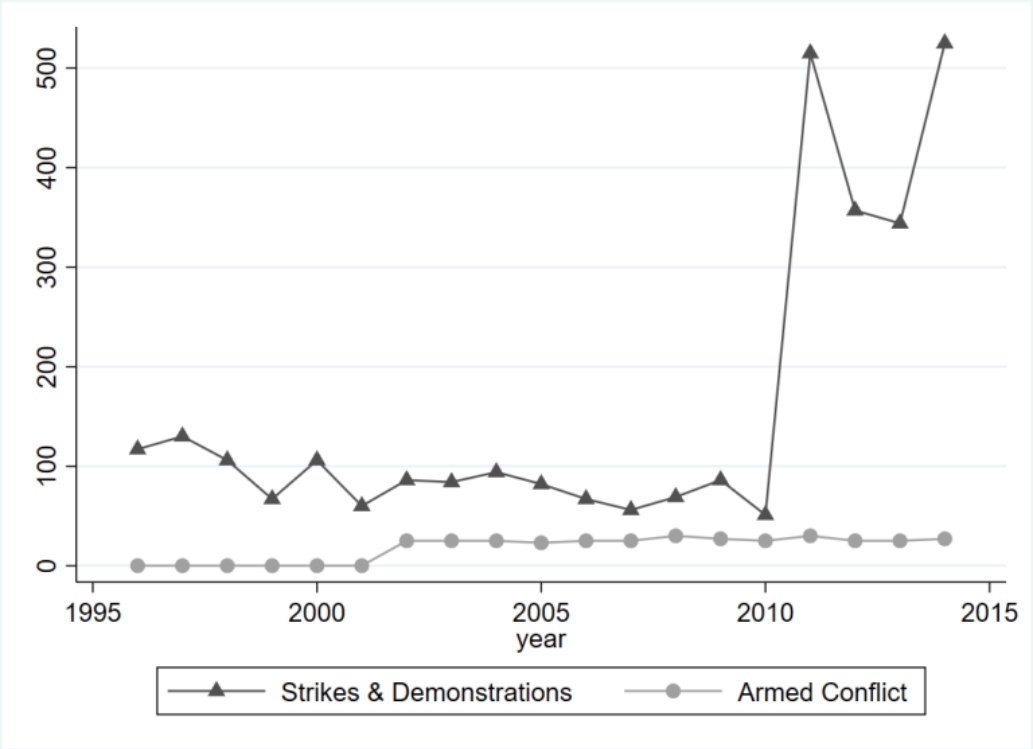

Figure 9: Source: Witte, Burger, and Ianchovichina (2020). Strikes and demonstrations, and armed conflicts, 1995–2015

5 Political Upheaval

To draw out the policy implications of the previous Section, the most direct approach is calculate a regression of political upheaval on two sets of potential causes: first, inequality overall; second, individual well-being of the poorer segments of the population, focusing on its level and trajectory, and ignoring what happens to other income classes such as the top 1%.

Sections 2 and 4 show that for the US (and a small number of other nations) these two causal factors are positively collinear—they move together to raise social dissatisfaction—while for the majority of nations, the opposite is the case.

Mass protests worlwide rose dramatically the year of the Arab Spring, and stayed high through at least the decade after (Fig. 9). Following what Nolan (2019) refers to as the emerging grand narrative surrounding the discussion of Section 3, many observers are led to the hypothesis that this is, indeed, evidence on inequality's pernicious impacts.

Published empirical evidence on inequality and populism is considerable. This Section will argue that that evidence, in summary, shows little correlation much less causality between the two variables. The empirical findings of Section 4 corroborate this in how inequality alone provides little information on what happens to mobility and low incomes, those measures that should matter to people.

The term *populism* in its modern form carries two distinctive features (Nolan and Valenzuela, 2019; Rodrik, 2018): First, generally, populism speaks for ordinary people against elites. Second, in the current world environment, populism opposes globalisation and liberal economic practice, because it identifies those environments to benefit those already well off. Populism opposes the established system because it assumes that system—whatever its granular details—must advantage those already privileged. Populism comes with decline in the perceived legitimacy of the system, and, in democracies, with voters flocking to extremist parties.

Associated with populism, therefore, is the idea that trust is eroded in established social and political institutions. Trust has indeed sharply declined in the US (Gould and Hijzen, 2016). However, trust displays no clear trend in Europe (Gould and Hijzen, 2016; Sarracino and Mikucka, 2016). Critically, while the US fall in trust can be explained by the inequality across the bottom 50% of earnings, neither overall inequality nor inequality at the top of the distribution carries consistent explanatory power (Gould and Hijzen, 2016).

Outside of developed nations, unfortunately, little systematic evidence is available on trust.

In democracies, the evidence for inequality driving populism turns out to be weak. Inglehart and Norris (2016) find that to explain voters moving towards extremist parties, variables measuring cultural attitudes matter more than do economic variables. In Austria and France, inequality has been stable; in Poland income growth has been strong. Yet in these three nations, populist support has risen for extremist political parties, equally as it has in countries where instead inequality has risen and median incomes have stagnated.

Witte, Burger, and Ianchovichina (2020) find that mass protests and strikes around the world are explained by aggregate recessions and growth slowdowns, worsening living conditions, and deteriorating expectations of "a purposeful and meaningful life". In that sample, therefore, for under-

standing political upheaval, it is not inequality that matters, but instead the economic situation of the individual.

Section 4 has shown that the majority of national experiences have individual and inequality indicators shifting in a way opposite to that suggested in the standard "grand narrative". Put together with the Witte et al. (2020) finding and the others described in this Section, this paper therefore suggests that excessive policy focus on repairing just inequality can be socially unproductive.

The GDELT Project Leetaru (2019) provides "a realtime open data global graph over human society as seen through the eyes of the world's news media". Using its

[. . .]

6 Conclusion

This paper has described two key empirical regularities. First, inequality is, in the majority of cases, a misleading indicator for the income paths of those at the bottom of the income distribution. Second, political upheaval responds more to individual circumstances (individual well-being, expectations of mobility) than to whole-group indicators (inequality).

Neither high levels of nor increases in inequality equate to immiserisation of the poor and lower middle class (Table 2 and Figs. 6–8). Indeed, on average upward mobility is highest when inequality is rising (and relative inequality falling; Fig. 8). Empirical evidence shows otherwise remarkably little relation between upward or downward mobility, on the one hand, and inequality and its dynamics, on the other. You can have highly unequal societies where there is appreciable upward mobility. And you can have highly unequal societies with significant downward mobility, where the poor continue to be immiserised and become even poorer.

The correlation is strongly negative with mobility only when inequality is particularly high: the situation is then aggravated over time with the already-poor in society experiencing continued immiserisation. Because of their extreme nature, however, these exceptional cases can be over-weighted in the analysis of cross-national experiences.

By providing an explicit account of what happens at the bottom 50% of income distributions this paper has expanded analysis beyond just in-

equality. For people to lead enabled, meaningful, and satisfying lives, what matters is what income they have, not how that income compares to those of others around them. For those who seek to improve their prospects for the future, the opportunities and resources they can use to control their lives derive from how much income they have—not whether they are ranked top 25% or bottom 15% in the income distribution, nor how much disparity there is between them and the top 1% of the income distribution.

The majority of nations that have seen a rise in inequality since 2000 have the poorer half of their population nonetheless raise incomes over time. While such an outcome is the majority experience, the outcome is not universal: the US is a significant instance where indeed the poor have indeed gotten poorer.

Because the US is so central in the international system, there is the risk that its domestic political challenges end up determining the global policy agenda. Public policy challenges that are appropriately addressed at the level of the individual nation can, if thought to be universal, inappropriately displace important global challenges that genuinely deserve the attention of the international community.

This paper has argued that while there is an emerging grand narrative that draws insight from the US experience to suggest a significant weight on inequality as signal for the well-being of society, that generalisation is inappropriate. This is so for two reasons: First, in the historical reality, outside of the US, inequality is typically uninformative for the well-being of citizens and for subjective assessment of the life chances ahead for the young. Second, recent research suggests that in the cross-section of nations [either outside the US altogether or otherwise in global cross-sections for which the US is but a single entry], either cultural factors or individual circumstances are the causes of populism and protest.

Public policy, therefore, needs to take into account the possibility of disinformation or perhaps just inequality illiteracy overwhelming rigorous empirical evidence. This is especially important in such policy domains where political and populist rhetoric can inappropriately dominate national conversation.

7 Technical Appendix

This Section presents a number of technical ideas relevant but not central to the discussion in the text. It also provides additional related findings, again not central to the text, but useful to have as confirmatory checks.

7.1 Inequality Measurement

The paper settles on $Q = y_{T10} - y_{B50}$, the income distance between rich and poor, as the measure of inequality to analyse. Any selection is, to a degree, arbitrary but in an empirical study *some* choice is needed and here, as the text explains, a straightforward reason justifies this choice.

The measure Q is immediately understood by anyone in that income distribution. It is simply how much richer, in currency units, the rich are than the poor. If someone understands their own income in that currency unit, they have to understand immediately Q. In other words, Q is *translatable* within the system itself. So too, $q = Q/y_{B50}$, the second inequality measure the paper uses, that simply rescales inequality to be measured in units not of currency but of multiples of the average income of the poor.

In contrast, other measures of income inequality, even when axiomatically justified by yet other properties, don't always bear this translatability characteristic. The Gini coefficient, for instance, is scale-invariant but arguably has no direct meaning to any representative agent living in that income distribution. That agent will certainly know that the Gini coefficient takes the value 1 when all income is equally divided and the value 0 when instead one agent has all the income, but is more likely concerned about what income exactly she gets under Gini equals 1, and is more likely worried that she has no income under Gini equals 0 than she would be about the fact that the Gini coefficient is zero. The inter-quartile range, the standard deviation of the logarithm of income or of income levels, the median-mean ratio, and yet others are even more difficult to translate to a meaning for the representative agent in the income distribution.

7.2 Concepts of Mobility

The paper discusses mobility only through its empirical findings for income mobility, defined in Section 4 as the change in y_{B50}. Social mobility or

intra-distribution mobility appears as a concept in Fig. 5, but then only to suggest that this research should focus on income mobility instead.

Informal analysis and gut instinct might suggest to readers yet other ways to conceptualise and measure *some* notion of mobility. This section analyses how the paper's reliance on y_{B50}'s dynamics is informative, and how, conversely, it might not be. I introduce here some labels because they make the analysis more compact. These labels arise in informal discussions I have had with many other social scientists or policy-makers, but are not always technical terms that have been used elsewhere in academic writings.

Section 4 defines **income mobility** as the change over time in y_{B50}, the average income of the bottom 50%. This concept of mobility does not seek to track individual incomes. Indeed, the people in the bottom 50% at the end of the sample are likely not the same individuals as those in the bottom 50% at the beginning of the sample. Thus, this definition is not concerned with specific individuals and makes no claim to individual income dynamics. However, what it does do is transparently and directly address the question, What is the state of the poor? Have the economic circumstances of the poor improved or worsened? Additional insight might come from re-doing the calculations for not the bottom 50% but instead the bottom 40% or 30% or even 10%. My limited experimentation shows no dramatic change in conclusion in those cases where this further refinement is possible. In the bulk of the Alvaredo et al. (2019) data, however, such narrowing is not possible.

In Fig. 5 the paper describes **social mobility** or **intra-distribution mobility**. The picture can be rewritten as follows: Rank-order at time t everyone in society from the richest (no. 1) on down to the poorest (no. N). There is social mobility when there is some person n at time t such that at a later time $t' > t$ that person is now at a rank n' that is better, i.e., $n' < n$. Person n has overtaken others and risen to a position higher in society. The requirement can even be made stricter, i.e., it's not that there is just one such n, but perhaps 10% of the population for which this is true. What Fig. 5 shows, however, is that for any such n^+ that has moved higher in society, there is necessarily always an n^- that shows the opposite change, i.e., who has moved lower in society. Social mobility is seen to be beneficial in the eyes of those who have moved to a better place in the rankings, but is simultaneously seen to be disadvantageous by yet others. What Fig. 5 shows is that those for whom social mobility is beneficial are exactly equal

in number to those for whom it is disadvantageous.

Closely related to **social mobility** is a concept that relaxes the requirement of overtaking. This gives rise to a concept of **relative mobility** where individual n increases her income relative to others in society, even without her necessarily having overtaken anyone. However, the same switched-perspective objection can be raised as well to this. If n is better off because her income relative to others in society is now higher, then others in society must be worse off because their income relative to n is now lower. Policy that subscribes to either social mobility or relative mobility is policy that validates worsening the well-being of some in society, at the same time that it seeks to improve the well-being of yet others.

However, in the previous example we could say n is better off simply because her income is now higher—regardless of her income relative to others. This has led some observers to say that what matters for mobility is this, i.e., **absolute mobility**, in contrast to the earlier relative mobility. But then absolute mobility is nothing more or less than just growth in income. The word mobility is unnecessary in such a description because what matters is just growth of that individual's income.

The comprehensive taxonomy on "social mobility" given in Forum (2020, p. 9) combines elements of the categories above. The process of moving between socio-economic classes or up and down the socio-economic ladder appears in a couple of the categories ("intragenerational mobility", "intergenerational mobility"). But the others—"absolute income mobility", absolute educational mobility", "relative income mobility", "relative educational mobility"—speak only of earnings going higher or lower, either over time or in comparison with one's parents: no recognition is made of comparing oneself to others in society. In the categories of intragenerational mobility and intergenerational mobility, the idea is that it is possible for everyone to move up in socio-economic class. But if so then that is, again, just economic growth, called by another name. In the last four categories, comparing whether one does better than one's parents is a matter only of growth in income, over time or generation. There is nothing related specifically to mobility in these categories named. What Forum (2020) refers to as different variants of mobility comes logically with just economic growth, and nothing more.

The important studies on intergenerational mobility by Raj Chetty and a range of co-authors (Chetty et al., 2014a,b, 2017) introduced a profoundly

new datasource for understanding income dynamics across generations. Additionally, parts of that work sought to place intergenerational income dynamics in the context of geography, education, and a range of other potential causal covariates. Thus that work goes well beyond the more macroeconomic analysis in the current paper.

On the underlying conceptual structure, however, my description above can be applied directly to intergenerational analyses provided one relabels observation units from individuals or groups to families (or dynasties), and switches time from calendar years to generational sequence (first generation, second generation, and so on). However, past the second generation, identification of a predecessor—grandparents, great grandparents, and so on—becomes trickier, as multiple sets of predecessors get involved, that in turn might be interlinked across different offspring observations. Ignoring those complications, however, the important additional concepts of intergenerational mobility can be related to that used here.

Intergenerational income mobility (Chetty et al., 2014b, p. 141) is an offspring's probability of transitioning in the income distribution relative to the parents' position. This is measured in three different ways: the correlation between successive generations' ranks; correlation between attending university and parents' income rank; and the transition probability of reaching the top quintile of the income distribution when the parents are located in the bottom quntile. The first and third of these involve ranks, and so are subject to the zero-sum property of what this paper calls social mobility. The study finds that mobility, using these three measures, has not changed comparing labour market entrants in the 2010s to those in the 1970s.

Absolute upward mobility (Chetty et al., 2014a, p. 1556) is the mean income rank of those whose parents were located in the bottom half of the income distribution. The focus on the bottom half of the income distribution is a feature in common with the measure $\mathfrak{m}$ used in the current paper. However, focusing on the mean income rank of the offspring means the concept shares the zero-sum property of social mobility as defined in this paper. (So too the measures of **relative mobility** and **absolute mobility** considered in that work.)

Finally, **absolute income mobility** (Chetty et al., 2017, p. 398) is the percentage who earn more than their parents. That work shows "absolute mobility has fallen from 90% for offspring born in 1940 compared to 50%

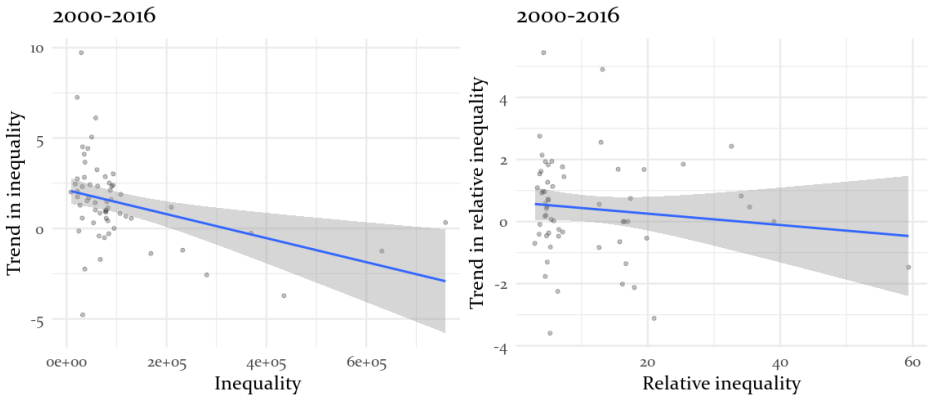

Figure 10: (left panel) Inequality and its Trend and (right panel) Relative Inequality and its Trend. Although the location variable is the median rather than an initial value, there is still a Galton's Fallacy kind of effect here, and indeed the characteristic Galton's Fallacy negative regression line does manifest.

for children born in the 1980s". This is a striking finding. However, as a concept more generally, absolute income mobility relies on a binary feature in its definition that generates a peculiar ordering for assessing social improvement. Suppose there are 100 people in society and consider two different situations. In the first the increase in the economie pie compared to the parents' generation is 750 and three quarters of the offsprings equally earns that increment, so 75 people have received an improvement of 10 over their parents, while the remaining 25 receive zero improvement. Absolute income mobility here is 75%. Now consider a second situation where the total increase is only 100, but here every offspring gets an increment of 1. Absolute income mobility is now 100%. What is the sense that there has been an improvement in social well-being when absolute income mobility increases from 75% to 100% across the two situations?

7.3 Auxiliary Empirical Findings

Finally, for completeness, this section presents the projection of footnote 4.

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