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Can Increasing Inequality Be a Steady State?

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CAN INCREASING INEQUALITY BE A STEADY STATE?

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FOREWORD

Revised version of a paper presented at an OECD Seminar on 3 April 2014. This paper draws very heavily on the Keynote Address: "What's so bad about more inequality?" delivered by the author to the Academy of the Social Sciences in Australia – 2013 Annual Symposium "*Levelling the Spirit: Addressing the Social Impacts of Economic Inequality"*, held in Canberra, Australia, on 12 November 2013. It was extensively revised during the author's sabbatical in the Statistics Directorate, OECD, whose hospitality is greatly appreciated. The author thanks for their comments Bruce Bradbury, Peter Burton, Mel Cross, Martine Durand, Talan Iscan, Brian MacLean, Marco Mira d'Ercole, Shelley Phipps, Peter Saunders (UNSW), Andrew Sharpe, Paul Schreyer, Sy Spilerman, Ed Wolff and Armine Yalnyzian, as well as participants in seminars held at Columbia, Dalhousie, New South Wales, Queensland, Griffith and the National University of Ireland at Galway, as well as at the OECD. Errors remaining are entirely my own.

ABSTRACT

Historically, discussions of income inequality have emphasised cross-sectional comparisons of levels of inequality of income. These comparisons have been used to argue that countries with more inequality are less healthy, less democratic, more crime-infested, less happy, less mobile and less equal in economic opportunity, but such comparisons implicitly presume that current levels of inequality are steady state outcomes. However, the income distribution can only remain stable if the growth rate of income is equal at all percentiles of the distribution. This paper compares long-run levels of real income growth at the very top, and for the bottom 90% and bottom 99% in the United States, Canada and Australia to illustrate the uniqueness of the post-WWII period of balanced growth (and consequent stability in the income distribution). The 'new normal' of the United States, Canada and Australia is 'unbalanced' growth – specifically, over the last thirty years the incomes of the top 1% have grown significantly more rapidly than those of everyone else. The paper asks if auto-equilibrating market mechanisms will spontaneously equalise income growth rates and stabilise inequality. It concludes that the more likely scenario is continued unbalanced income growth. This, in turn, implies, on the economic side, consumption and savings flows which accumulate to changed stocks of indebtedness, financial fragility, and periodic macro-economic crises; and, on the social side, to increasing inequality of opportunity and political influence. Greater economic and socio-political instabilities are therefore the most likely consequence of increasing income inequality over time.

RESUME

Souvent, la question des inégalités de revenu est traitée essentiellement à travers des comparaisons transversales entre les niveaux d'inégalité de revenu, et on se fonde sur ces comparaisons pour conclure que dans les pays les plus concernés, les inégalités de revenu se traduisent par un moins-disant en matière de santé, de démocratie, de criminalité, de bonheur et d'opportunités économiques. Mais ces comparaisons posent implicitement que les niveaux actuels d'inégalité sont constants. Or, la distribution des revenus ne peut être constante que si les revenus croissent au même rythme à tous les centiles de la distribution. Dans le présent document, on compare les niveaux de croissance réelle des revenus à long terme tout au sommet de l'échelle ainsi que pour les 90 % et 99 % inférieurs aux États-Unis, au Canada et en Australie afin d'illustrer la particularité propre à la période post-1945, caractérisée par une croissance équilibrée (et donc par la stabilité dans la distribution des revenus). Aux États-Unis, au Canada et en Australie, la « nouvelle norme » est celle d'une croissance « déséquilibrée » - ces trente dernières années, les revenus des 1 % les plus riches ont augmenté bien plus rapidement que tous les autres. Ce document pose la question suivante : des mécanismes d'équilibrage du marché vont-ils spontanément égaliser les taux de croissance du revenu et stabiliser l'inégalité ? Il conclut que le scenario le plus probable est la persistance d'un déséquilibre de la croissance des revenus, qui aura des répercussions économiques (variation des stocks d'endettement due à l'évolution de la consommation et de l'épargne, fragilité financière et déclenchement périodique de crises macroéconomiques) et sociales (hausse des inégalités des chances et des inégalités de poids politique). Le creusement continu des inégalités de revenu se traduira donc selon toute vraisemblance par une instabilité économique et socio-politique accrue.

TABLE OF CONTENTS

FOREWORD 4
ABSTRACT 5
Introduction 7
1 Cross-sectional comparisons of inequality and its implications 8
2 Increasing inequality over time. 12
3 Will market processes restore balanced growth? 22
4 The instability implications of unbalanced income growth 26
Conclusion 34
REFERENCES 43

Tables

Table 1. The implications of income growing at historic rates for inequalities in the future, the United States 21

Figures

Figure 1. Level of income Inequality in OECD countries, 2010 9
Figure 2. Trends in the income shares of the top 1 percent in Australia, Canada, and United States 14
Figure 3. Average growth in real taxable income in Australia, Canada and the United States, 1982-201015
Figure 4. Levels of average real income of the top 1% of the distribution in Australia, Canada and the United States 16
Figure 5. Real income growth rates in the United States 17
Figure 6. Real income growth rates in Canada 18
Figure 7. Real income growth rates in Australia 19
Figure 8. Historical and project real income in the United States, 1984-2032 22

Boxes

Box 1. Intergenerational Bequest: The human capital model 11
Box 2. Income Inequality Measurement – Which Data Source is “Best”? 13

Introduction

1. When levels of inequality within countries are fairly stable, it makes sense to think of "more" or "less" economic inequality in terms of cross-sectional comparisons of societies. Such comparisons have been used to argue that countries with higher levels of inequality of income are less healthy, less democratic and less happy and have more crime, more conflict and less intergenerational social mobility and equality of economic opportunity. However, these comparisons are primarily useful if we can depend on inequality remaining stable and if we are interested in answering a question like: "what type of society would one like to live in?" Since this is an important question, and since there have been important periods in which levels of income inequality did not change much, most of the literature on income inequality has emphasized comparisons of the level of inequality.

2. Cross-sectional comparisons between countries presume that observed levels of inequality represent steady state outcomes, i.e. situations that could potentially persist into the indefinite future. However, a given level of inequality can only remain constant if income growth is balanced (i.e. equal rates of income growth at all percentiles of the income distribution). [1] When income growth is unbalanced, the level of inequality changes over time. However, increasing inequality within a given society, if such trends can be expected to continue, raises fundamentally different issues from a one-time change in the level of inequality. It is one thing to say: "Australia is more unequal now than it was in 1980", and quite another thing to say: "Australia is more unequal now than it was in 1980 and Australians can expect it to get ever more unequal each year into the indefinite future." This paper therefore asks what the implications of ever increasing inequality might be and whether this can possibly be a steady state.

3. Specifically, there is no natural upper bound to the real incomes of the top 1% and thus no natural upper bound to their income gap with median households. But can an ever-increasing income gap between the top 1% and everyone else possibly be a steady state? "More inequality" in the sense of increasing inequality over time raises the questions: "What sort of society are we becoming? What processes could equalise income growth rates across income classes and thereby stabilise the distribution of income? How likely are they to occur? What happens if income growth rates remain unequal?"

4. Section 1 of this paper briefly examines what can be learned about the long-run implications of higher inequality from comparisons of the existing cross-sectional data. Section 2 then compares long-run levels of real income growth over time at the very top end of the distribution, and for the bottom 90% and bottom 99% in the United States, Canada and Australia to illustrate how unique the post-war period of balanced growth (and consequent stability of the income distribution) actually was in these three countries. In recent decades, the rapidly rising share of the very top end of the distribution of market income has reflected a new normal – unbalanced growth.

5. Section 3 suggests that there is little reason to expect an equalisation of market income growth rates – i.e. balanced growth – any time soon, while Section 4 argues that unbalanced growth of incomes cannot be a long run steady state. Unequal income growth rates imply changes in savings flows which accumulate to changed stocks of indebtedness, financial fragility and periodic macro-economic crises. Ever increasing income gaps also imply increasing top end spending on political influence and child human capital and ever increasing incentives to advertise the luxury consumption goods that fuel envy. Greater macro-economic, political and social instability is therefore a key implication of more inequality over time. Section 5 concludes that if markets do not spontaneously auto-equilibrate, the political economy of increasing inequality will be crucial – but the outcomes of those processes are very unclear.

1 Cross-sectional comparisons of inequality and its implications

6. This paper understands economic inequality as "differences among people in their command over economic resources", but because every society has many different types of economic resources, used by many different people at different points in time, the measurement of inequality depends crucially on being specific about *what* is being distributed among *whom*, and *when*. Like most of the literature, this paper will focus on inequality in the distribution of annual income.[2] But to decide *which* annual income concept is most appropriate to discuss, we should first ask why we want to know.

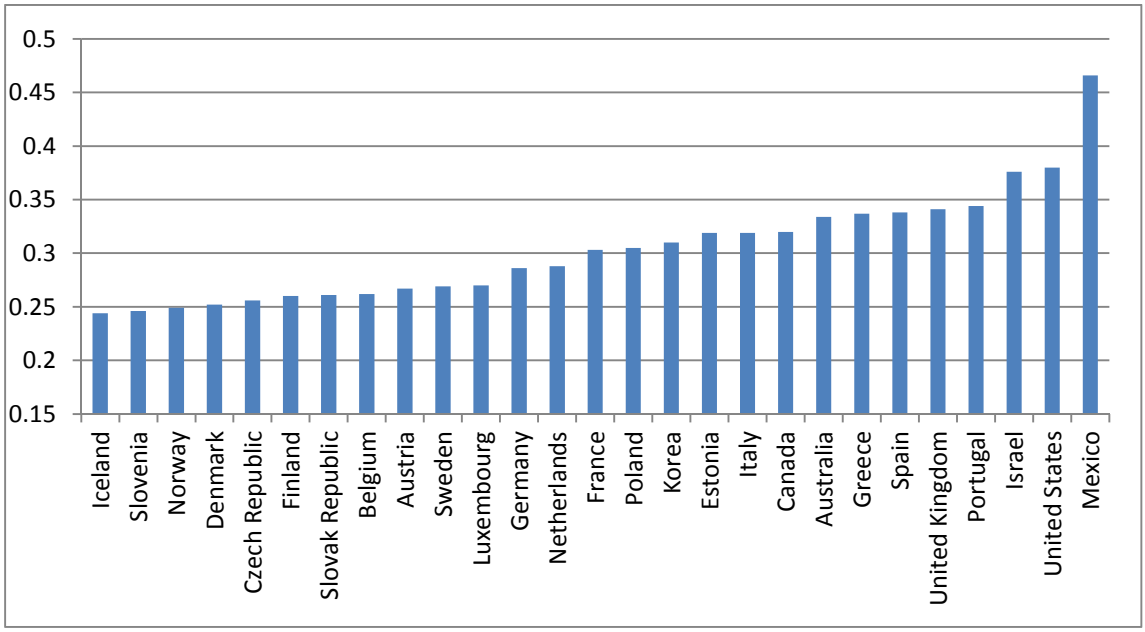
7. In a market society, income flows perform dual functions. "Market income" is, for example, simultaneously the payments of firms and the receipts of individuals. Firms pay individuals to motivate the supply of labour and capital to the production process, while individuals typically pool their receipts within households to enable personal utility from consumption. If we want to think about how changes in the size, structure and organisation of firms and markets are changing inequality, we will therefore prefer (as in Section 2) to start with the inequality among individuals in their receipt of factor payments (i.e. individual market income before tax).

8. However, much of the literature is motivated by concern about inequality in the distribution of well-being from consumption, because equity in well-being is important in a social justice sense.[3] If "Inequality" is to be understood in terms of potential consumption, the fact that most people live in households and share consumption with other family members implies that the appropriate annual income concept to focus on is the total disposable (i.e. after taxes and transfers) money income of households.[4] If well-being from the consumption of disposable income is to be measured accurately, some allowance should be made for the economies of scale in consumption which are available in larger households. In affluent countries, it has therefore become common practice to adjust household income for family size and to report the distribution of equivalent disposable income among all individuals[5].

9. Income inequality can thus be discussed either from a production perspective, in terms of the inequality of factor payments (i.e. individual market incomes), or from a consumption perspective, in terms of inequality in household receipts of purchasing power (household market incomes plus transfers minus taxes). Sections 2 to 5 of this paper will primarily emphasize the production perspective – trends in the inequality of individuals' shares of pre-tax market income. However, Figure 1, which adopts the consumption perspective, is included in order to set the context with an important fact, i.e. that there is no unique level of income inequality in advanced market economies. In Figure 1, OECD data referring to 2010 summarise the differences among affluent countries in the level of their Gini index of inequality of equivalent household disposable income.[6] Although all these countries compete in global marketplaces and are increasingly interconnected in trade and harmonised in market regulation, a broad range in levels of within-country inequality is observed. Evidently, a variety of levels of income inequality are consistent with the institutional framework of market capitalism and with effective participation in the modern global economy. Since it is hard to imagine that the level of income inequality could be unconnected to other aspects of society[7], an important question then is: what exactly are the implications of more or less income inequality?

Figure 1. Levels of income Inequality in OECD countries, 2010

Gini Index of equivalised Household Disposable Income



Note. Gini index of the distribution of household disposable income (i.e. after direct taxes and social security contributions paid by workers, and after public transfers received) among individuals. Household income data are adjusted for differences in needs based on the square root of household size.

Source: OECD Income Distribution Database, Data extracted from OECD.Stat, http://stats.oecd.org/Index.aspx?DataSetCode=IDD.

Implications of the level of income inequality

10. Over the last thirty years, the volume and sophistication of cross-country comparisons of economic inequality has exploded, and an ever-expanding group of scholars have used cross-country data to address this issue. Richard Wilkinson and Kate Pickett's 2006 book *The Spirit Level: Why Equality is Better for Everyone* has become particularly famous as a powerful prosecution of the case against inequality.[8] In it, cross-national differences in inequality of disposable household income are compared to cross-national differences in a host of social indicators – average levels of health status, trust, social mobility, infant mortality, educational performance, violence, obesity, mental illness, teen-age births, homicides and imprisonment. Cross-state comparisons within the United States are also used to replicate the cross-national estimates. The brief summary of their findings is that along all these dimensions, in places where there is more income inequality there are also more social problems.

11. However, whether or not more inequality is guilty of causing all these social problems, can more inequality be *proved* to be guilty? Wilkinson and Pickett use correlations and scatter plots which cannot rigorously establish causation, and they depend heavily on data from only 25 affluent countries, which exposes their work to the critique that this or that "outlier" may be dominating their results.[9] As well, "inequality" is a complex concept, with a number of plausible measures, and there are a large number of plausible alternative theories and many relevant variables that might influence each dependent variable.[10] It is hard to imagine that every possible combination of measures and methodologies would produce an unambiguously similar result. As Leigh, Jencks and Smeeding (2009: 399) put it, in discussing the relationship between inequality and health: "a fundamental problem is the fact that this is a field with too many theories for the number of available data points".

12. Using a very large micro-data set, Oishi, Kesebir and Diener (2011) did find that Americans were, on average, happier in years with lower income inequality – an effect that was concentrated on low-income respondents and mediated by perceived unfairness and lack of trust.[11] Many studies have also documented the fact that, when asked, the vast majority of respondents, in all countries, express a preference for less inequality. [12] As well, it is not surprising that there is more social conflict when there is more inequality to fight over – as Milanovic (2013) has found. But he argues that in very poor countries, there are many people who have an equally low level of income (at physical subsistence), and so he uses a Gini index adjusted to reflect its "maximum feasible level". Hence, his paper can also be seen as a case study in the complexities of the concept of income inequality itself – one of the many complexities of measurement and inference which ensure that the regression wars on the social implications of inequality will likely continue for years to come.

Inequality of Opportunity and Intergenerational Inheritance

13. Although cross-sectional evidence on the many social implications of higher levels of income inequality is often not conclusive, there is little uncertainty in the data about the causal connection between more inequality of outcome and more intergenerational inequality of opportunity. As Brunori, Ferreira and Peragine (2013:17) concluded, using cross-country regressions: "Countries with a higher degree of income inequality are also characterised by greater inequality of opportunity…. less unequal countries are also those that have a higher degree of intergenerational mobility." Corak (2004, 2013) and many others have made the same point.

14. The idea that economic inequality accumulates and deepens over generations is hardly new. Indeed, there are strong theoretical arguments to expect intergenerational inheritance of socio-economic status. In a market economy in which parents can control their personal expenditures on the human capital of their own children, it is inevitable that the inequality of income of adults will influence the inequality of opportunity of children. As Alfred Marshall (1913: 562) remarked: "the professional classes especially, while generally eager to save some capital *for* their children are even more on the alert for opportunities of investing it *in* them" while the children of the working classes "go to their graves with undeveloped abilities and faculties". Marshall insisted especially that "this evil is cumulative". Sociologists have long studied intergenerational transmission of socio-economic status, and in economics the best-known neo-classical formalisation is the Becker and Tomes (1979) parental altruism model of intergenerational bequest. In this model, the unequal distribution of income of each cohort of parents is partly due to their own unequal inheritances from the previous generation, and the unequal incomes of parents enable unequal bequests to their own children (Box 1).

Box 1. Intergenerational Bequest: The human capital model

Parents of generation *i* care about both their own life time consumption (C_i) and the utility (U_{i+1}) of their generation *i*+1 children. Their children's utility similarly depends on own consumption and the utility of the following generation. Hence, parents maximise: $U_i = u_i(C_i, U_{i+1}(C_{i+1}, U_{i+2}))$

In each generation *i,* lifetime income (Y_i) is spent on own lifetime consumption (C_i), on human capital investment (HK_i) in the next generation, and on any financial bequest (K_i) to the next generation – i.e. the budget constraint for the spending of generation *i* is: $Y_i = C_i + HK_i + K_i$.

Lifetime income is the sum of earnings from own raw labour (W_i) plus the return to the human capital bequest of the previous generation (HK_{i-1}), which gets a (diminishing) rate of return (r_{hi}), plus the market rate (r_k) of return on the financial capital bequest (K_{i-1}) of the previous generation– i.e. the lifetime income of generation I is:

$$Y_i = W_i + r_{hi} HK_{i-1} + r_k K_{i-1}.$$

In each generation, parents choose their bequest to their own children (Human Capital plus Financial Assets) subject to their own lifetime income constraint. Diminishing marginal returns to Human Capital investment imply that it is optimal to invest in child human capital up to the point where the marginal human capital return is equal to the (fixed) rate of return on financial bequests. The children of low lifetime income parents may therefore get only human capital. Children of high lifetime income parents get both more human capital and some financial inheritance.

Because the parent's income depends on the bequest of the grand-parents whose income depended in turn on the bequest of the great grand-parents, etc. a pure market economy without taxation and redistribution will be a dynastic society. Random variation in r_{hi} and r_k may imply long run mean reversion within family lines. However, this is no consolation to children from poor families in any given generation. Inequality of outcome in one generation begets inequality of opportunity for the next.

As well, the total bequest of generation i is inefficiently allocated, since the children of poor parents earn a marginal return on human capital which is greater than the marginal return on their inheritances received by children of rich parents. Inequality of opportunity is thus socially inefficient.

Source: Becker, G and N. Tomes, (1979), *An Equilibrium Theory of the distribution of income and intergenerational mobility*, Journal of Political Economy, December 1979, pp. 1155-1189.

15. In the human capital model, more inequality in parental incomes has an "income effect" on inequality of opportunity because more parental income enables more disparity in the "enrichment expenditures" (Corak 2013: 91), which increase the skills of advantaged children. A wider gap in annual incomes also has a "price effect" in that the widening of the income differential between "success" and "failure" of the children implies greater incentives for parents to invest private resources in their children's human capital. In general, the whole notion of equality or inequality of intergenerational opportunity makes no sense at all in a one generation model of human behaviour. However, as soon as the human capital model is extended to consider two or more generations, inequality of outcome in one generation inevitably generates inequality of opportunity in the next generation, and a strict distinction between the two becomes untenable.

16. The widespread availability[13] of data such as those used in Figure 1 has had the important result of establishing that social choices can be made about the level of income inequality. If the level of income inequality could be assumed to be stable, one could use such cross-country evidence to help answer questions like: "what sort of society would one like to live in?" But the level of inequality can only remain constant if incomes at all parts of the income distribution are growing at the same rate. In many countries – e.g. Australia, Canada and the United States – this has not been true since the 1980s. So a logically prior question, addressed in the next sections, is whether inequality will stabilise, and what are the implications if it does not.

2 Increasing inequality over time.

17. This paper will use Canada, Australia and the United States as case studies. For many years, the United States has had considerably more income inequality than the OECD average, while Australia and Canada have been somewhat closer to, but still above, the mean level of income inequality in advanced market economies (Figure 1). In these three countries, the Gini index of inequality in equivalent annual net income among all people has, albeit with pauses corresponding to periods of declines in the unemployment rate, also been trending up in recent years.[14] This paper does not rely on OECD data on the distribution of equivalised disposable income, but rather on data from the World Top Incomes Data Base, which provides information on trends in taxable income shares among tax units. It will focus on the changing real incomes of the top 1%, compared to those of the bottom 99% and 90% for three main reasons:

1. Although summary indices of inequality (e.g. the Gini index) have increased in the United States, Canada and Australia, a summary index of inequality does not indicate *which parts* of the income distribution have changed. In the United States and Canada, the bottom 80% of the income distribution, as measured through the OECD data, has seen remarkably little change in real incomes over the last thirty years.[15]

2. The absolute size of recent changes in the income share of the top 1% dwarfs the magnitude of shifts historically observed and those occurring elsewhere in the income distribution. Prior to 1980, studying income distribution was sometimes described as being "about as interesting as watching grass grow" [16], because changes in income share were small – between 1951 and 1981, for example, the income share of the middle 20% of Canada's income distribution fluctuated by 0.6%.[17] Since 1981, the income share gain of Canada's top 1% has been more than ten times larger than this. In the United States, the increase in top 1% share has been even larger – from 10.8% in 1982 to 22.5% in 2012.[18]

3. The differential in trend growth rates of real income between the top 1% and everyone else has been consistently large for over 25 years, and there is no obvious reason to expect income growth rates to equalise any time soon. As higher rates of income growth at the top end of the distribution compound on ever-higher base incomes, citizens and governments in Australia, Canada and the United States will face the question: "How and when will the income distribution stabilise? Where is rising inequality taking us?"

18. As Alvaredo, Atkinson, Piketty and Saez (2013: 13) put it, for "Anglo" countries: "most of the action has been at the very top". Gordon (2009) and Burkhauser *et al.* (2009) also found that, as Morelli, Smeeding and Thompson (2014: 79) put it, "the rise in the top end has driven much of the distribution in the United States". Murphy et al (2007, 2008), Yalnizyan (2010) and Osberg (2008) had earlier come to a similar conclusion for Canada. Osberg (2013) and Veall (2012) reinforce that finding, which is driven by three decades of essentially flat real household income for the lower percentiles of the income distribution, in both Canada and the United States. This section will therefore concentrate on differences in income shares, and in income growth rates, between the top 1% of the income distribution and the remaining 99%. Because long run trends in top end income are poorly captured by sample surveys (see Box 2), it will rely on administrative data from income tax records made available by the World Top Incomes Data Base.

Box 2. Income Inequality Measurement – Which Data Source is "Best"?

Early measurements of income inequality (e.g. Pareto, 1896 or Kuznets, 1953) used income tax return data, which has been available, in many countries, since the early 1900s (and sometimes before). The long span of such data enables discussion of long run trends in inequality. However, because income tax was initially only paid by the relatively affluent, trends in inequality of incomes among the middle class are harder to track. As well, income tax records typically contain little information on personal characteristics, such as education, which greatly limits analysis.

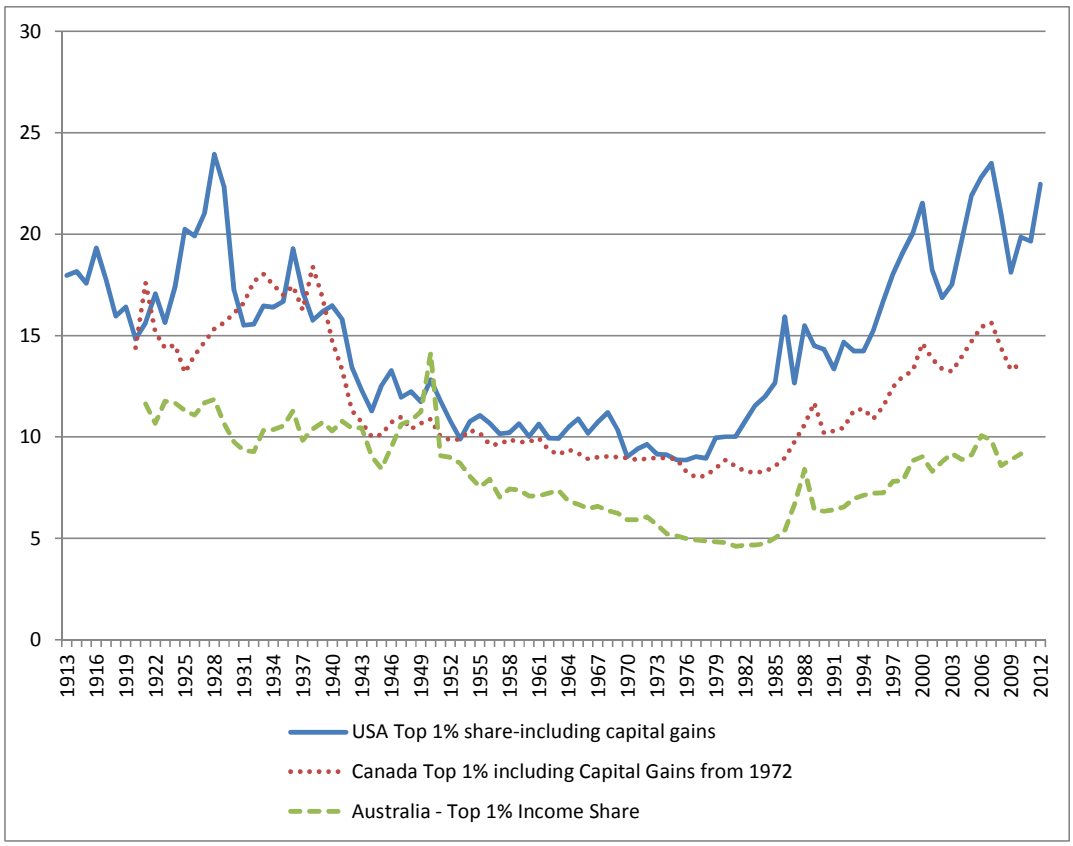
Because household survey data on income distribution only became available in the 1960s, it cannot be used to assess very long run trends. Such data can paint a detailed picture of the "middle 90%" of the population, but both the very top and the very bottom tails of the income distribution are poorly counted. At the bottom, the homeless, the mobile and the isolated are hard to survey reliably. At the top, although we know both millionaires and billionaires exist, they may not appear in a random sample of the population and if sampled they are often reluctant to reveal their incomes. Because there are very big dollar differences at the top end, sampling variability can mean that summary measures of inequality (like the Gini index) are quite sensitive to the inclusion or exclusion of individual 'outlier' respondents, as Wolfson (1979) showed. It therefore has become common practice for statistical agencies to obscure by "top coding" the reported incomes of very affluent respondents in sample survey data and for researchers (e.g. Blau and Kahn, 2009) to use measures of inequality (such as the 90/10 ratio) which are insensitive to income trends at the very top and the very bottom of the income distribution.

Because census data provide nearly complete coverage of the population, it can be used to examine the tails of the income distribution and compared to survey evidence. Frenette, Green and Milligan (2007) found, using Census data, that the tails are where inequality has been changing most in Canada – something not evident in survey data. However, census data are infrequently available and, unlike tax or sample survey data, cannot follow individuals over time to assess the dynamics of inequality.

The best type of data for the measurement of income inequality therefore depends heavily on which aspect of inequality is being examined. Income tax data provides the most reliable estimates of top end income shares and long run trends but survey data can enable a richer analysis of income differences and trajectories among the middle 90%. At the very bottom, census data provide the most accurate descriptive snapshots, but cannot assess individual income dynamics.

19. Figure 2 updates a similar figure by Alvaredo et al (2013:6). It shows the evolution of top end income *shares* in Australia, Canada and the United States. Overall, the evolution of the top1% share has been similar in the three countries although – unlike Canada and the United States, where the median real wage and the average incomes of the bottom 90% have stagnated – middle class incomes in Australia have also risen appreciably since 1988. Greenville et al (2013) argue that the longest resource boom in Australian economic history has produced significant increases in employment, hours of work and the hourly real wage for the middle quintiles of the income distribution. Relying on survey data from the Household Expenditure Survey, they note that "rising inequality in Australia is also driven by the 99 per cent, not just the (top) 1 per cent" (2013:9).

Figure 2. Trends in the income shares of the top 1 percent in Australia, Canada, and United States



Note. Data refer to the income share of the top 1% of people. Income data are based on tax records, and refer to the concept of taxable income. They include capital gains for the United States and Canada (since 1972), while they exclude these capital gains in the case of Australia.

Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 1 April, 2014

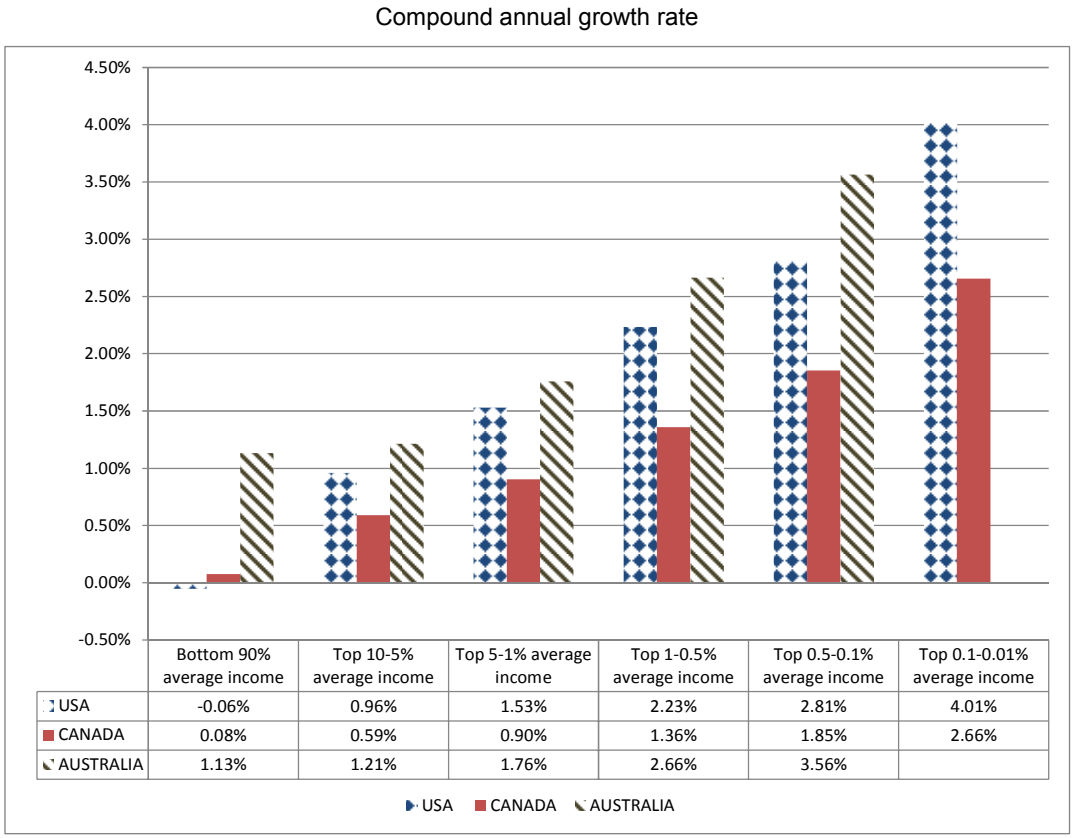
Long term differentials in income growth rates

20. In all three countries, the farther up the income pyramid one goes, the faster the rate of increase of incomes. Figure 3 uses income tax data (from the World Top Incomes Data Base) to compare the long term compound annual growth rate of real taxable income for different segments of the income distribution in Australia, Canada and the United States.[19] Australia does stand out for the positive (+1.13%) growth rate of average real taxable annual income among the bottom 90% of tax units. However, all three countries share the pattern of unequal growth, with an accelerating rate of increase in real incomes at the top. Since the gulf between income groups will continue to widen as long as incomes at the top end grow faster than the incomes of everyone else, all three countries face the problem of unbalanced growth – income inequality will continue to increase until either bottom end incomes grow much faster or top end incomes grow much slower.

21. Figure 2 presented the income share of the top 1% in different "Anglo" countries. However, the income share of the top 1% is really a ratio – i.e. the ratio of the total income of the top 1% to the total income of all persons (the bottom 99% plus the top 1%). Since ratios can change over time either because of changes in the numerator or because of changes in the denominator (or both), it is important to examine which of the two has been driving changes in income share of the top 1%. Figure 3[20] reminds us that although Australia, Canada and the United States have all experienced a similar substantial increase in the

income share of the top 1% in recent years, the underlying income dynamics have differed in an important sense. In Australia, the bottom 90% have experienced rising absolute real incomes, while Canada and the United States have seen stagnant average real incomes for the bottom 90%. The *differential* in income growth rates across income groups is similar (as it has to be, if the rise in income share is to be similar). However, the bottom 90% of Australians did get *some* increase in average real income: 1.13% growth per year compounds, over 28 years, to a 32% real increase, which is much preferable to the cumulative real changes of the bottom 90% of Canadian (+ 2.1%) and American taxpayers (- 1.5%).

Figure 3. Average growth in real taxable income in Australia, Canada and the United States, 1982-2010



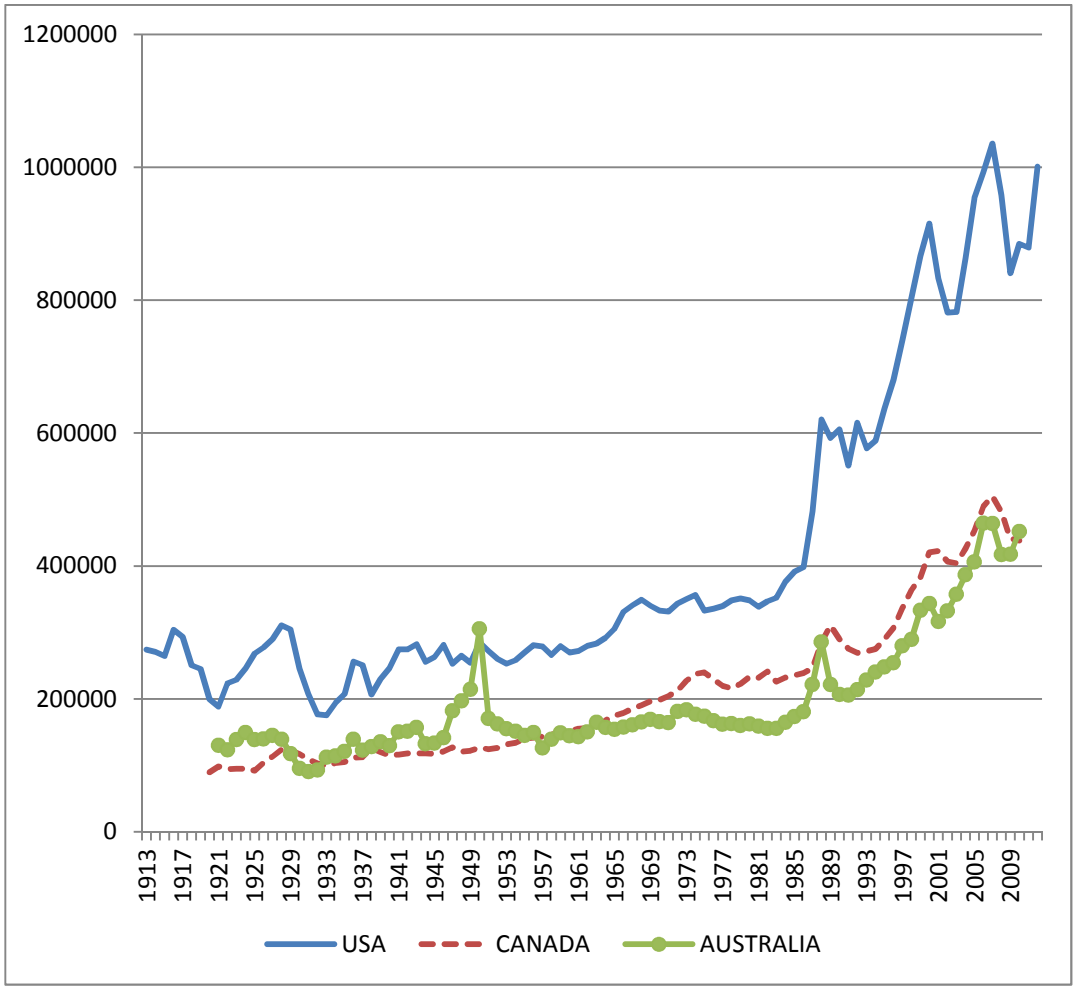
	Bottom 90% average income	Top 10-5% average income	Top 5-1% average income	Top 1-0.5% average income	Top 0.5-0.1% average income	Top 0.1-0.01% average income
USA	-0.06%	0.96%	1.53%	2.23%	2.81%	4.01%
CANADA	0.08%	0.59%	0.90%	1.36%	1.85%	2.66%
AUSTRALIA	1.13%	1.21%	1.76%	2.66%	3.56%	

Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 22 August, 2013.

22. Figure 2, which portrayed the decline and rise of the income *share* of the top 1%, can perhaps leave the impression that the income share of the top 1% in Australia, the United States and Canada may now just be returning to its 1920s levels – which might be seen as a sort of stabilisation. However, looking at it this way ignores the fact that the fall in income *share* of the top 1% from the late 1930s to the mid-1970s was not due to declines in the real incomes of the top 1%. Rather, the decline in their income *share* was driven by the more rapid growth of real incomes of the other 99% of the income distribution. Figure 4 plots the income *levels* of the top 1% in real, local dollar terms. It illustrates that there was no long term real decline in top incomes prior to 1980, and it also shows how much top 1% incomes have grown over the past thirty years – an upward trend to which there is no obvious upper bound. As Figure 3 illustrated, income growth rates have been even larger, the further up the income distribution one cares to look. But the key point is that higher *shares* of taxable income held by the top 1% of the distribution since the early 1980s have been driven by inequality in relative growth rates across the income distribution.

Figure 4. Average real income of the top 1% of the distribution in Australia, Canada and the United States,

2011 US dollars



Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 1 April 2014.

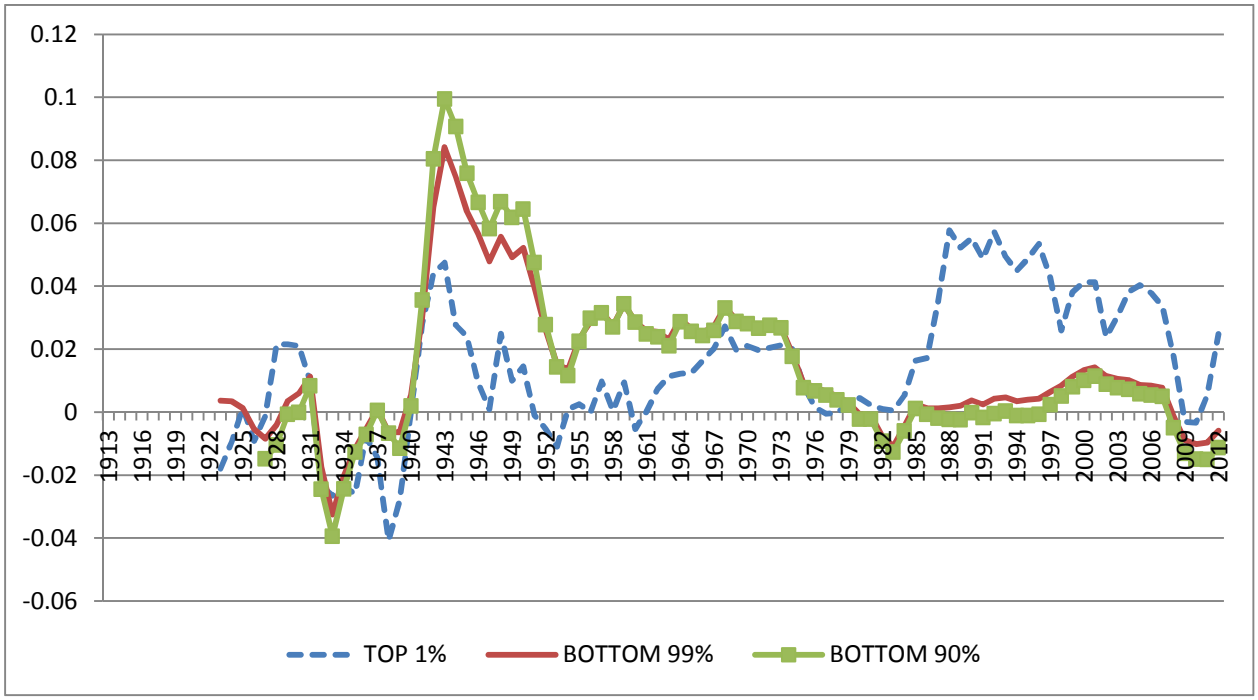
Balanced and Unbalanced Income Growth in the United States, Canada and Australia

23. To show the changes over time in relative income growth rates underlying the changes in income shares presented in Figure 2, Figure 5 plots the ten year compound rate of real growth in average incomes of the top 1%, bottom 99% and bottom 90% in the United States, while Figures 6 and 7 do the same for Canada and Australia. In the United States, there was a roughly 30 year period in which income growth rates were quite similar – nearly identical from 1967 to 1982 and quite close from 1952 to 1967[21]. During this long period of approximately balanced growth and consequent stability in the income distribution, it became plausible for macro-economic theorists to start to ignore inequality, and during this period the "representative agent" paradigm in macro-economics replaced earlier concerns with factor income shares and the implications of income distribution for systemic stability.

24. However, Figure 5 also shows dramatic differences in United States income growth rates in the 1940s, and since 1980. Evidently, there can be quite long periods of unbalanced growth. In the 1940s, bottom end incomes grew much more strongly than those at the top end and American income inequality lessened dramatically – but the last thirty years have been dominated by the opposite dynamic.

Figure 5. Real income growth rates in the United States

Top 1%, bottom 99% and 90%, 10-year compound annual rate

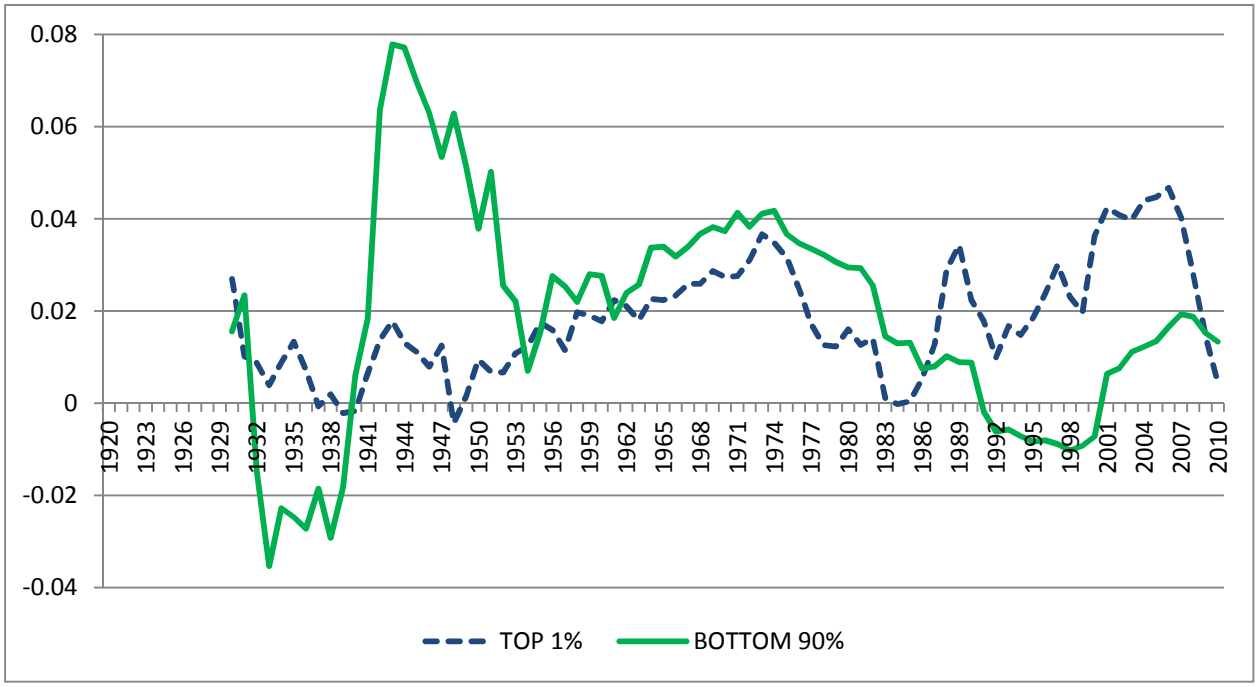


Note: Average income per tax unit. Real income is expressed at 2011 US Dollars. Tax units are families (see source for details).

Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 21 May 2013 and 1 April 2014

Figure 6. Real income growth rates in Canada

Top 1% and bottom 90%, 10-year compound annual rate



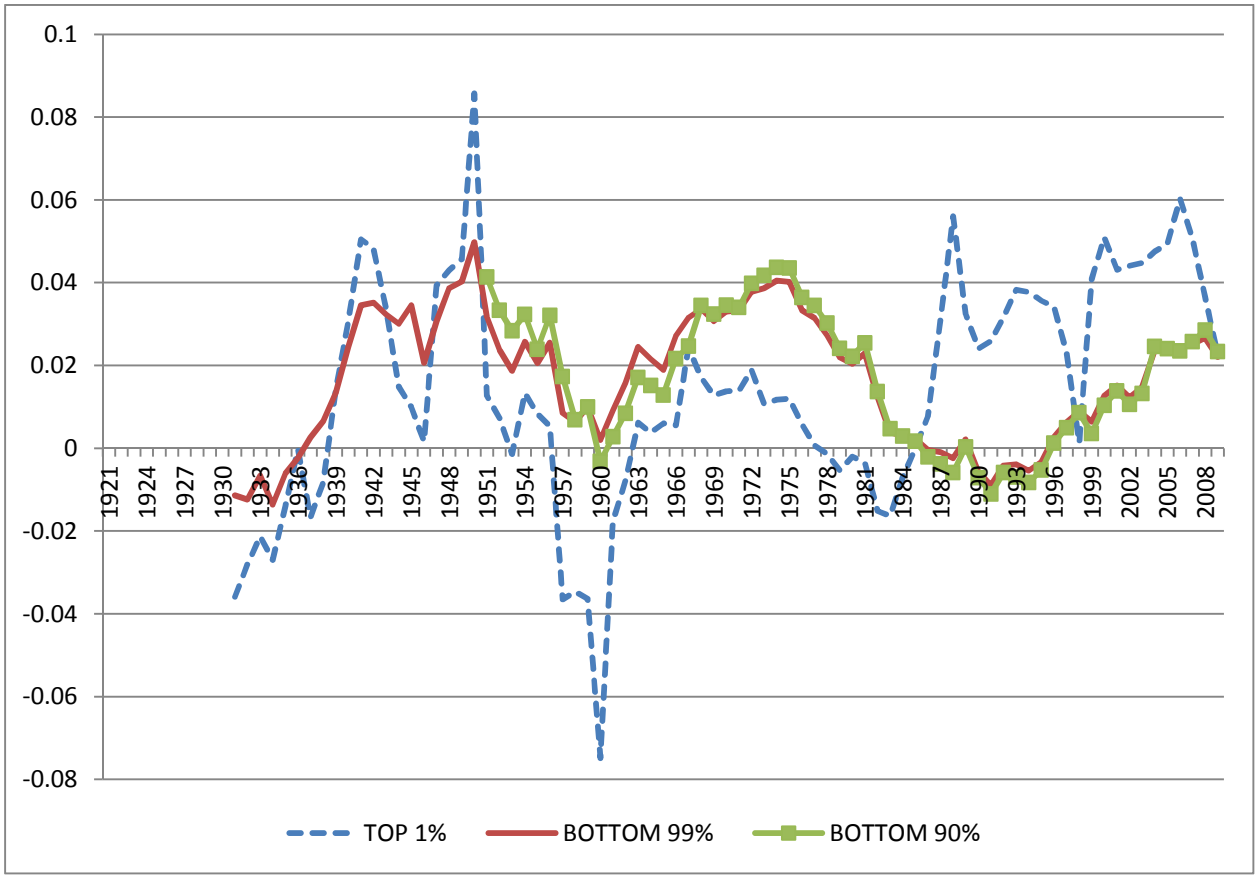
Note: Average income per tax unit. Real income is expressed at 2011 Canadian Dollars. Tax units are individuals (see source for details).

Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 21 May 2013

25. In Australia, the ten year growth rate in average income data for the bottom 90% coincides almost entirely with that of the bottom 99% for the years (post 1951) in which both are available (Figure 7). Although the growth rate of top 1% incomes appears to be more volatile until the 1950s, there is no sharp war-time surge in relative income growth to reduce inequality – the bottom 99% and the top 1% share both the negative growth of the 1930s and the positive growth of the 1940s at comparable rates. The thirty years after the Korean War was a period of declining inequality in Australia – part of what Leigh (2013) has called the Great Compression – when top incomes stagnated even as those of the bottom 99% grew strongly. Figure 6 shows that it is after the mid-1980s – i.e. as in Canada, a bit later than in the United States – that Australia sees the acceleration of top end income growth. Also as in the case of Canada, a resource boom boosted income growth at the bottom of the distribution after the mid-1990s.

Figure 7. Real income growth rates in Australia

Top 1%, bottom 99% and 90%, 10-year compound annual rate



Note: Average income per tax unit. Real income is expressed at 2011 Australian Dollars. Tax units are individuals (see source for details).

Source: The World Top Incomes Database, http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 24 May 2013.

Why did bottom 99% incomes grow rapidly in Canada and the United States 1940-1970?

26. The rapid growth of real market incomes of the bottom 99% in Canada and the United States after 1940 started from a situation in which:

- the mass unemployment of the 1930s was being rapidly absorbed into wartime production;
- price and wage controls during World War II compressed wage differentials and profit margins;
- the relatively high share of workers employed in agriculture meant that rural out-migration could have a significant impact in boosting average wages and productivity;
- low secondary and post-secondary enrolment meant that human capital investment had substantial room for increase and high marginal returns;
- capital deepening in sectors catching up to the technological frontier could produce substantial increases in productivity in those sectors[22];

- rising unionisation rates produced, for nearly thirty years, a labour movement with significant influence both in workplace bargaining and in social policy determination;

27. The impacts of these trends in individual market incomes on the distribution of household disposable income were reinforced by the initial relatively low share of women in the paid labour force, which implied that rising female employment had a big impact on household money income. As well, in the political economy of social policy, the 'hard left' political option had a "threat effect" on political elites – who agreed to progressive taxation and expanded transfer programs that recycled top end incomes.

28. Wartime mobilisation and controls were "once only" events. The structural changes of economic development – urbanisation, female labour force participation, widespread secondary and post-secondary education – had large impacts on family incomes but were spread over a number of years, and showed up as an increase in the growth rate of average incomes. Part of the reason why the bottom quintiles of the income distribution in Canada and the United States have experienced smaller increases in the last thirty years, compared to earlier decades, is that these structural changes were completed well before 1980.[23]

29. Overall, however, balanced growth is not the norm. The thirty year period 1952-1982 appears to be a happy accident of history during which income growth rates at the top and the bottom were roughly equal. Balanced growth then made it plausible to ignore changes in the income distribution and to emphasise the steady state properties of economic systems inhabited by 'representative agents' – but this period was a historical anomaly. Unbalanced growth has not been quite as common in Australia as in the United States or Canada, and prior to 1980 each country's pattern of relative income growth rates had its own unique features. However, in all three countries the last thirty years (i.e. from the 1980s to the 2010s) have seen the emergence of distinctly higher income growth rates for the top 1% compared to everyone else – unbalanced growth has become the 'new normal'.

What will happen if income growth rates continue to differ?

30. A differential in annual income growth rates of 2.5 to 3.5 percentage points does not sound like much. Indeed, if the differential is short-lived it does not amount to much. But this reality has been with us for almost three decades. What will the future look like if such trends continue? As Table 1 shows, if the differential in the income growth rate between the top and the rest of the distribution were to continue, ever-larger absolute differences in income and an ever-increasing income ratio are the result.

31. In the United States in 1984, the median household income was USD 47 181, which grew by 0.279% annually to USD 51 017 in 2012.[24] The top 1% average income (excluding capital gains) was USD 384 000 in 1984, which grew to USD 1 022 000 in 2011 – a compound annual rate of 3.496% per year.[25] Over this 28 year period, the income gap thus increased from about USD 337 000 in 1984 to USD 971 000 in 2011, i.e. the dollar gap roughly tripled in size. If their 1984-2012 compound annual growth rate of 3.5% were to continue for another 20 years, the average income of the top 1% would rise to USD 2 032 000 in 2032. If the median income growth rate observed in the past were to continue at the same rate (0.28%), median household income would be USD 54 000 in 2032, for an income gap of USD 1 978 000. The continuation of these growth rates would imply that in 2032 the average annual income *increase* of the top 1% (USD 71 108) will very significantly exceed the income level of the median household (and be about 200 times larger than the annual income increase of the median household – i.e. USD 151). As Table 1 shows, the ratio of top 1% average income to median income more than doubled (8:1 to 20:1) from 1984 to 2012; a continuation of the same growth rates implies that it will almost double again (to 38:1) by 2032.[26]

Table 1. Implications of income growth at historic rates – United States

Real income in US dollars at 2012 prices

	Median Household Income	Top 1% average Income	Absolute Gap	Top 1% annual income gain	Ratio of top 1% to median income
1984	47 181	383 919	336 739	13 421	8.1
2012	51 017	1 021 761	970 744	35 720	20.0
2032	*53 943*	*2 031 476*	*1 977 533*	*71 108*	*37.7*
Average annual growth Rate 1984-2012	0.28%	3.5%			

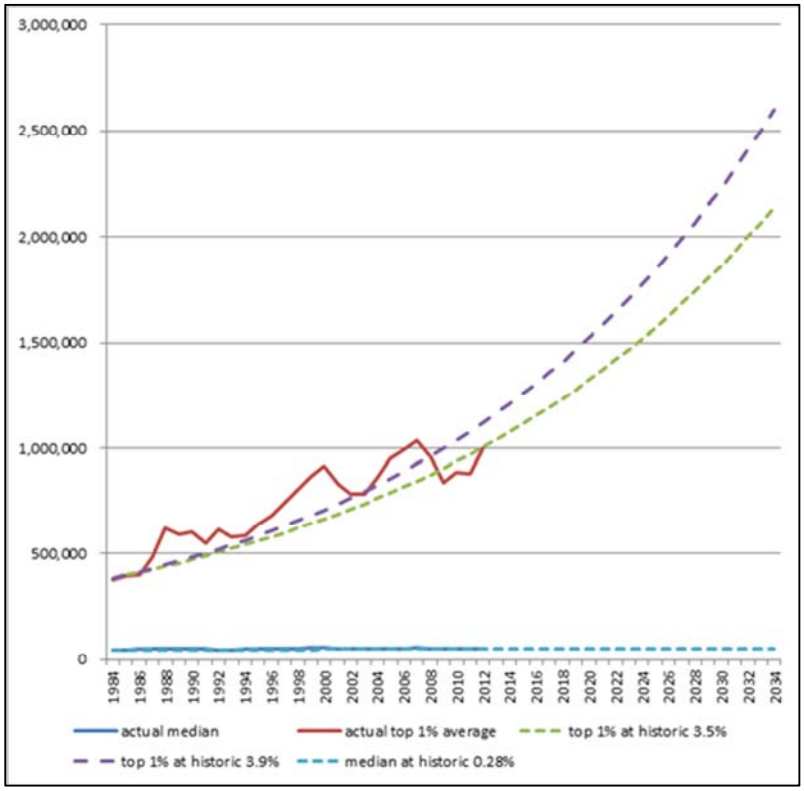
Note. Real incomes of the top 1% of taxpayers and of the median household in 2012 are assumed to growth over the period 2012 to 2032 at the same compound rates observed over the period 1984-2012, i.e. 3.5% for people in the top 1% of the distribution and 0.28% for the median household.

Sources: The World Top Incomes Database http://topincomes.g-mond.parisschoolofeconomics.eu/, accessed 1 April 2014; Census Bureau Table H-8. Median Household Income by State: 1984 to 2012.

32. Figure 8 plots the gap between the average real income of the top 1% (excluding capital gains) and real median household income. In addition to the actual ratio observed in 1984-2012, two projections are presented. The first assumes that the compound income growth rate of the top 1% (3.5%) and the growth rate of median household income (0.28%) continues in the future at the rate experienced in 1984-2012. The second projection uses 1984 to 2008 as base period, during which time top 1% incomes grew at the higher rate of 3.9%.

Figure 8. Historical and projected real income in United States, 1984-2032

Median Household and average income of the Top 1%, real income in US dollars at 2012 prices



Source: The World Top Incomes Database http://topincomes.g-mond.parisschoolofeconomics.eu/.

33. The size of these emerging income gaps may prompt the reaction: "Impossible – these gaps are too large to believe!" Section 3 therefore asks: what plausible market mechanism could change the underlying income growth rates which produce these gaps?

3 Will market processes restore balanced growth?

34. "Increasing inequality over time" and "more rapid income growth at the top" are two different ways of describing the same reality. Stabilising the income distribution in the United States, Canada and Australia requires income growth rates to be the same – either an acceleration of the income growth rate of the bottom 99% or a decline in the income growth rate of the top 1% could accomplish this result. Is enough of either likely to happen as a result of spontaneous "equilibrating" market forces?

35. If the issue was the division of national income between labour and capital there might be grounds for optimism. For many years in economics this was seen as the 'primary problem' of income distribution[27]. However, neo-classical economists argued that, since the accumulation of capital by firms means a rising capital/labour ratio, the consequent diminishing marginal productivity of capital and rising marginal product of labour would produce rising wages and a decline in the rental rate of capital – which implies a tendency to the restoration of stability in factor income shares. Indeed, generations of economists have been brought up on the hypothesis that the Cobb-Douglas production function (which was devised precisely to explain the constancy of factor shares in the distribution of income despite an increasing capital /labour ratio) was a reasonable approximation to the actual technical relations of production.

36. But stability in capital/labour shares is not the main issue in the current context, because much of the recent increase in top end incomes has taken the form of higher salaries and other labour income.[28] Hence, if the increasing inequality of the last 30 years has been the inescapable implication of a difference between the long term rate of income growth of the top 1% and everyone else, then the question to ask is whether there is an automatic mechanism of self-adjustment within labour markets that will restore balanced growth in earnings and thereby stabilise market income inequality.

37. Could it be, for example, that top end earnings will soon stop growing so rapidly because the top 1% will be unable to further increase their work effort? After all, individual "effort" – both hours of work and work intensity per hour – cannot increase without limit. Hours of work hit a physiological maximum somewhat before 6 000 per year (16*365 = 5,840)[29]. Work intensity per hour is less easy to measure, but it is implausible to think it can increase without limit. If the more rapid increase in top end incomes of the last 30 years was due to ever increasing work effort by the top 1%, at some point this process must end.

38. The labour supply explanation for rapid top end income growth appeals to the possibility that greater "incentives" might have motivated an increase in the level of effort exerted by corporate executives and other highly paid individuals – top marginal tax rates have been cut significantly since the 1980s in all three countries.[30] This perspective, however, has been much criticized, not least because it fails to explain the timing of income increases (see, for example, Veall, 2012). Also, the labour supply explanation would need to explain the fact that there were much greater proportionate increases in income the farther one goes up the distribution of income. As Figure 3 showed, incomes in the bottom half of the top 1% grew much less rapidly than those in the next four tenths of the top 1%, or those in the top tenth of the top 1%. As a result, in the United States by 2012, the top 1% had increased their average income (excluding capital gains) to 288% of the 1982 level, while the top 0.5% had increased their average income to 331% of the 1982 level, and the top 0.1% to 451% of that same level. If these increases were all due to increased effort, this would imply that the top 1% were working only about a third (34.6%) as hard in 1982 as in 2012, while the top 0.5% of 1982 were working just 30% as hard, and the top 0.1% were even slacker thirty years ago, working only about a fifth (22.2%) as hard as the comparable group in 2012. Is it plausible that the elite of 1982 were really that much lazier than the elite of 2012 – and increasingly so at the very top?

Segmented labour markets: growing 'globals' and lagging 'locals'

39. It is much more plausible to think that the people at the top of occupational and organisational hierarchies have always worked hard to succeed, that such social positions are rationed, and that the top-end of the labour market is effectively segmented from the general labour market.[31] A more realistic model of the labour market is that pay at the top of the corporate heap depends on firm's size and, for monopolistically competitive firms, size depends on the scale of the market (Gabaix and Laudier, 2006, 2008). Since 1980, many firms in Canada, the United States and Australia which previously operated on a national scale have expanded into global markets as trade barriers and transportation costs have fallen, and managerial innovations, telecommunications and information systems have made effective management of large, dispersed organisations more feasible. As the scale of global operations and the size of potential profits grows, the top management team takes a share – and the rents to their hierarchical positions increase with their rank in the hierarchy and with market size (which is growing on average at the global growth rate).[32]

40. In entertainment and sports, audience size has similarly grown, at least for those at the top who can now reach global audiences. The outsize returns obtained at the top end of financial services also rely on the scale of financial markets and on individuals' placement in the hierarchy of market differentiation – again rents to top hierarchical positions (which Rosen (1971) called 'superstar' status) increase with scale of market supplied. Individual markets and firms grow at different rates (which implies different income

growth rates for the top corporate teams in those firms). However, to a first approximation, the average rate of growth of market size, and therefore the average rate of income growth of 'global' players, will be driven by the rate of growth of global markets, which has been significantly faster than domestic growth in Australia, Canada or the United States.[33] Since one can expect continued rapid growth in China, India and many other nations (including sub-Saharan Africa), there is every likelihood that the growth rate of global markets will continue to be considerably greater than that of domestic demand for many decades to come.

41. As global markets grow, and as the firms servicing those markets expand, top corporate pay packages grow, but there is little real evidence that their rate of income growth is driven by a similar rate of growth of their executive skills - administrative hierarchies are a type of team production where accurate measurement of an individual's true marginal product is rarely feasible. A more plausible model of top corporate pay determination is Lydall's (1959, 1968) model of pay in hierarchies, which has long predicted that the steepness of the upper tail of the distribution of earnings[34] will depend on hierarchical rank, span of control at each level of hierarchy and wage norms. Norms of pay growth set at the very top of enterprises servicing global markets attenuate somewhat within those hierarchies as they trickle down to less senior members of top corporate management.[35] However, norms are central to pay determination for top management because (1) they always matter hugely[36] and (2) at the top end of corporate and public sector hierarchies in rich countries, most needs for creature comforts have long since been satisfied. At this pay level, relative income is the remaining motivator of effort. Money income is the marker that indicates who is "winning" or "losing" in the race for success, but "winning" – or at the very least "keeping up" – is the main event.

42. The rate of growth of compensation at the top of global corporations therefore sets the benchmark for the national private sector, which in time determines what their peers at the top of public sector hierarchies – e.g. university presidents and senior civil servants – come to expect as the "fair" rate of increase of normal remuneration for people in their sort of position. Hence, for "the globals and their peers", who sit at or near the top of organisational and professional hierarchies, the rate of growth of globalised markets seems likely to assure continued increase in corporate scale and continued growth of top pay. As the pleasures of the globalised brands of consumer society are discovered by hundreds of millions of newly middle class households around the world, the rents available to monopolistically competitive firms grow and with them the salaries of their top management teams, with trickle down benefits for their peers.

43. For present purposes, the bottom 99% of workers can be thought of as "locals", who are not linked to top-end internal labour markets, and whose pay growth and employment prospects depend on the aggregate supply and demand for labour within their own national and local labour markets.[37] Because global firms can usually site their production in many possible places around the world, international competition for new investment sets the growth of local labour productivity as an approximate upper bound to their rate of average income growth (although slack local labour markets can mean, as in Canada 1980-2000, that average real wage growth falls short of that). The resource sector is a significant exception (particularly relevant for Australia and for western Canada), since the immobility of resource extraction activity can enable some local workers to extract part of the resource rent, to an extent that depends on the speed of resource development and the level of unionisation.

44. In this perspective, the long run constraint on the income growth rate of 'locals' is the local rate of labour productivity growth, while the long run income growth rate of 'the globals and their peers' depends on the rate of growth of global markets, which is significantly higher. While a full discussion of this perspective would require much more space, it is outlined here to indicate that at least one coherent view of the world is consistent with a continuation of the long-run differential between the growth rate of market income for the top 1% and the growth rate for everyone else in society. [38]

45. What is the alternative hypothesis? Why exactly might the growth rate of the average income of the bottom 99% accelerate substantially enough to match the recent income growth rate of the top 1%? Why exactly might the growth rate of the average income of the top 1% slow enough to match the income growth rate of the bottom 99%?

Can more education plausibly produce convergence of income growth rates?

46. Can one expect that improving education will significantly raise the long term growth rate of the average income of the bottom 99% – i.e. can education be "the great equaliser" (Leigh 2013: 77-81)? There are many 'non-economic' reasons to be in favour of improved education – not least of which is the impact of education on dimensions of life such as social capital and social cohesion.[39] However, as Fortin et al. (2012: 138) note, "caution is required in thinking about education as an inequality reducing policy" since under some circumstances it may not improve equality of pay.[40] As well, even if improving educational attainment reduced inequality of opportunity between the disadvantaged and the middle class and reduced wage differentials within the middle class[41] (e.g. the university/high school average wage ratio), this does not directly imply an acceleration of the rate of average income growth of the bottom 99%.

47. As well, increased education has inherent upper bounds if educational quality is to retain its meaning, and the gains from any increases in enrolment will be the gains of those who are now at the margin. Diminishing marginal returns have to be expected. In Canada, for example, the fact that 56% of the 25-34 age cohort already have a tertiary education implies that further expansion will be exploring the lower tail of the IQ distribution.

48. Educational initiatives, moreover, inherently operate with long time lags. Even an all-powerful leader with a magic wand which could in 2015 totally revolutionise primary and secondary education would have to wait 12 years, i.e. until 2027, to see the full impact of this policy on high school graduates. To improve education over current levels, presumably some tertiary education would be needed, pushing graduation back to 2031 or later – by which time the income gaps depicted in Figure 8 would already have fully emerged. Even then, aggregate impacts would be small. Because the flow of new graduates entering the workforce each year is only about 1/40th of the workforce, it would be roughly another twenty years before they were the majority of workers (i.e. about 2051 or roughly 36 years after the policy change).

49. Furthermore, the Canadian experience already offers a guide to whether an expansion of education can be expected to shrink the income growth rate differential between the top 1% and everyone else. For the age group 25-64, Canada's tertiary education attainment level (51% in 2010) substantially exceeds that of the United States (42 %) or Australia (38%).[42] Canada's investment in education has been a "good thing" for many reasons, but it has not produced a long term acceleration of the rate of income growth of the bottom 99%. Hence, it has not equalised income growth rates and has not prevented income inequality from rising. Conversely, despite Australia's bottom ranking in tertiary education among these three countries, it is the only one among them that has seen appreciable real income growth for the bottom 90% in recent decades.

Will Lower Unemployment or Moral Suasion eliminate Unbalanced Growth?

50. When there is slack in labour markets, lowering the unemployment rate would increase bottom end incomes, both by increasing the hours of work of unemployed and under-employed workers and by putting upward pressure on the real hourly wage. Macro-economic policy can thereby influence the level of income inequality, when labour is under-employed. However, although macro-economic policies which reduce excess unemployment would reduce the level of inequality, there is a lower bound to feasible unemployment. Raising the long term growth rate of the real income of the 99% through macro-economic would require continuous reductions in unemployment, which are not feasible.[43] Hence, although macro-

economic stimulus can change the level of inequality when labour markets are slack, such policies cannot be expected to change long term income growth rates.

51. If "keeping up" with the escalating norms of CEO compensation is an important part of the reason for the more rapid growth of top 1% incomes, can one realistically expect those norms to change endogenously? If unions could have effectively mobilised collective action they might have restrained the escalation of corporate norms of top pay (Western and Rosenfeld, 2011) and bargained for a share of increasing global corporate rents – but private sector union membership has declined significantly in Australia, Canada and the United States over the last thirty years, and there is as yet no sign of reversal of this trend. The growth of top 1% incomes has produced some new countervailing responses, such as the Wagemark Foundation[44], which advocates "establishing a new moral standard for companies and organizations that want to see a better world and are prepared to put their money where their mouth is". By publicizing the identity of organizations with at most an 8:1 ratio between their highest and lowest earners, its mission is to provide a competitive advantage to such organizations, on the premise that consumers will prefer to buy from a firm that has a more equal internal pay policy. Like several other 'corporate social responsibility' initiatives, it is clearly too new (founded in 2013) to have produced evidence of its impacts, but the author of this paper is deeply skeptical.

52. In short, in the United States, Canada and Australia, one has to ask: which plausible model predicts that, anytime soon, the market mechanism will, on its own, either slow the growth rate of average income for the top 1%, or increase the income growth rate of the bottom 99% to the extent that they are equalised? Unbalanced income growth seems more likely to continue, and Section 4 examines some its implications.

4 The instability implications of unbalanced income growth

53. When the income share of the top 1% is small, changes in that share have small impacts on aggregate economic variables and can safely be ignored in general equilibrium analysis. But unbalanced income growth means that the income share of the top 1% grows over time and eventually reaches a magnitude at which general equilibrium effects and socio-political impacts are no longer small enough to be ignored – and these impacts increase even further over time, as the size of income gaps continues to increase. Since marginal tax rates on top incomes have fallen in all three countries over the last thirty years, the increases in pre-tax market incomes described in Section 2 have produced even larger increases in disposable post-tax income, which must be either consumed or saved. Section 4a therefore analyses the instability implications of the increasing savings of the top 1%, while Section 4b discusses the impacts of their increasing consumption.

54. While this paper has been using the examples of Australia, Canada and the United States, an important caveat is that "size matters". Since the United States is so much larger than Canada or Australia, and global capital markets are linked, the savings of the top 1% of the United States are far more important to the stability of financial markets than the savings of the Canadian or Australian top 1%. As well, as Figure 4 showed, the real incomes of the top 1% are already much higher in the United States than in Canada or Australia (both absolutely and relative to median income). This implies that income gaps are compounding on a higher base differential in the United States than elsewhere – and so becoming much bigger, much faster. Both influences imply that at any point in time, the instability stresses implied by unbalanced growth will be greater in the United States than elsewhere. In all three countries, however, if tax rates on top incomes are unchanged, the inevitable consequence of a continuation of growth rate differentials in market income is that the absolute size of gaps in disposable income, savings and consumption will grow over time.

4a Instability implications of the increasing savings of the top 1%

55. The top 1% may choose to hold some of their savings directly, as real assets, but unless all of their savings always take this form, rising incomes at the top of the distribution imply an increasing flow of their savings[45] into financial markets. But financial instruments are inherently both an asset to the holder, and a liability to the issuer. In order for the increasingly affluent to acquire ever more financial assets, somebody else has to acquire ever more financial liabilities. Indeed, macro-economic balance requires it. If aggregate expenditure is to equal aggregate income, whenever the increasingly affluent abstain from spending some of their increase in income, some other agent has to spend more than their income. By borrowing and spending, debtors – both households and governments[46] – balance the real flows of the economy, simultaneously increasing their stock of debt.

56. Kumhof and Rancière (2010, 2012, 2013) have noted that both the Great Depression of 1929 and the Great Recession of 2007-2008 were preceded by a sharp increase in income and wealth inequality and by a similarly sharp increase in debt-to-income ratios among lower- and middle-income households. They argue that when those debt-to-income ratios began to be perceived as unsustainable a financial crisis became inevitable – only needing a trigger. Using a dynamic stochastic general equilibrium model, they show (2010: 22) that the key mechanism, reflected in a rapid growth in the size of the financial sector, is the recycling of part of the additional income gained by high income households back to the rest of the population by way of loans, thereby allowing the latter to temporarily sustain consumption levels and thereby maintain macro-economic balance.[47]

57. As Section 4b will discuss further, the willingness to borrow of low and middle income households has been encouraged by shifting norms of middle class consumption, by the powers of modern advertising and, possibly more important, by efforts to sustain their living standards in a context where their household income was, at best, stagnating. The growing incomes of the top 1% of households, on the other hand, have meant that they have increasing amounts of savings available to lend. In the actual historical context of the U.S. prior to 2007, the matching of willing borrowers and willing lenders was greatly facilitated by higher housing prices (which allowed households to support consumption through refinancing of their mortgages on favourable terms), financial innovation (which allowed banks to repackage these loans and sell them as financial assets) and a facilitative regulatory environment. This combination of institutional context, willing borrowers and willing lenders successfully maintained high aggregate demand and relatively low unemployment in the U.S. prior to 2007. This process occurred despite the fact that continued stagnation in the incomes of poor and middle income households meant that loans and leverage kept rising, implying a growing probability of a major crisis with severe implications for the real economy.[48]

58. The (unobserved) alternative to the actual scenario of greater leverage and financial fragility for low and middle income households might perhaps have been that stricter regulation of financial institutions could have prevented the observed increase in lending and borrowing, in which case macro-economic instability may be avoided. However, there would have been a cost. If borrowing and spending are insufficient, at a given real rate of interest, to maintain high levels of economic activity, one must expect downward pressure on aggregate output and real interest rates. As King and Low (2014) have documented, the world real interest rate did, in any event, decline appreciably in the post 2000 period. Had the aggregate demand created by the debt-fuelled U.S. consumer and housing boom of the early 2000s not been present, one can reasonably conjecture that the decline in interest rates would have been even greater and the rate of GDP growth slower – in other terms, higher instability and financial crisis could have been avoided, but at the costs of lower growth and less employment. It is in this context that Summers (2013, 2014) has recently argued, in the aftermath of the crisis, that both the United States and European economies may well confront a structural tendency to secular stagnation.

59. This core idea – that ever growing incomes at the top produce an ever increasing flow of loanable funds, with either rising probability of a crisis in financial markets and a recession in the real economy or increasing tendencies to secular stagnation – has a long history. In the 19th century, Marx argued strongly that cyclical instability was inherent to capitalism and "under-consumptionists" like Hobson[49] ascribed the growth of British imperialism and overseas investment in the late 1800s to inadequate domestic absorption of the potential output of capitalism. Milanovic (2009) and others have also argued that the root cause of the 2008 financial meltdown is higher income inequality.[50]

60. Well before the 2008 recession, Leamer (2007: 1) argued that "housing starts and the change in housing starts together form the best forward-looking indicator of the cycle". Periodic housing booms are fed by the cost and availability of credit, and by self-reinforcing expectations of future increases in house prices. In Canada, the United States and Australia, owner-occupied housing is the main asset type held by middle income households. Highly leveraged by mortgage debt, middle class net worth is very sensitive to house price changes.[51] The financial sector makes it easy to monetise existing home equity, so house price bubbles can be used both to trade up in the housing market and to increase non-housing consumption. Fuelled by the paper wealth of rising house prices, consumption booms borrow real output from future periods. However, although a middle class consumption race can be fed by the escalating norms of top end ostentation and illusions of wealth, eventually the housing bubble has to burst. Overhangs of past excess housing construction then take time to be absorbed by market demand – and the United States have seen the long down side of housing price volatility and financial leverage after 2007. Fundamentally, home mortgages enable financial leveraging to be a normal middle class phenomenon, but the price of the main middle class asset (housing) depends heavily on house price expectations and interest rates, both of which are quite variable.[52] As households become more indebted, their probability of debt default increases and the corresponding financial assets become increasingly fragile.

Debt instability – public and private

61. Over time, financial flows accumulate to changed stocks of financial assets and liabilities. The 'debt stability' equation has been most often used in the context of public sector finances but its logic is equally applicable to households and the private sector. It starts from the accounting identity that the face value of the stock of an agent's debt at a point in time is equal to the previous period's debt plus interest accruing minus any surplus of income over current spending which is used to pay back the debt (termed the "Primary Balance").[53]

(1) $D_t = (1 + r_t) * D_{t-1} - PB_t$

D_t = Debt in period t
r_t = average rate of interest in period t
PB_t = Primary Balance in period t

62. The burden of debt depends on its size relative to income. For public finances, the Debt to GDP ratio is the crucial economic statistic, while each household confronts their personal Household Debt/Household Income ratio. When income grows faster than debt, the Debt/Income ratio declines while, if debt and income grow at the same rate, their ratio is constant. In either event, debt is on a sustainable path. However if the Debt/Income ratio is increasing over time, an ever larger fraction of expenditure must go to servicing the debt rather than financing current spending, a process which is eventually unsustainable.[54] Equation (2) derives directly from (1):

(2) $\Delta (D/Y)_t = (r_t - g_t) * (D_{t-1}/Y_t) - (PB_t / Y_t)$

Y_t = Income
g_t = growth rate of income
$\Delta (D/Y)_t$ = change in Debt/Income ratio

63. In equation (2) the first term makes clear how much debt stability depends on the interaction between the overhang of debt from the past (D_{t-1}/Y_t) and the interest rate / growth rate differential (r_t - g_t). Whenever the interest rate exceeds the income growth rate (i.e. when r_t - $g_t > 0$), past debt is compounding faster than income is growing – and when the stock of past debt starts to feed on itself in this way, expenditure surpluses must be continual and increasing just to stabilise the Debt/Income ratio. The dilemma for Canada's and Australia's household sector is that their Debt/Income ratio is at historic highs[55]. Although current low interest rates mean default rates are now not unusually high, debt stability of the household sector is hostage to changes in interest rates and the household income growth rate – which remains low, for the bottom 99%.[56]

64. The dilemma for the public sector is that the Great Recession of 2008 forced governments to stimulate aggregate demand by cutting taxes and increasing spending. Counter-cyclical spending in response to the collapse in real output and employment occasioned by the financial crisis added to the stock of government debt outstanding, which accumulates or decreases over time according to the accounting identity (1). In media discussions, most attention is focussed on the public sector Fiscal Balance (i.e. Taxes, less primary expenditures, less interest paid) and little distinction is made between the cost of interest payments on past debt and the cost of current program expenditures. But equation 2 implies that when growth rate is less than the interest rate and the Debt/GDP ratio is large, big increases in revenues and/or cuts to expenditures are necessary to offset the compounding of past debt. The macro-economic implication of any such additional fiscal drag is reduced GDP growth, thereby worsening the Debt/GDP ratio. Because international bond traders are highly aware of the mathematics of debt stability, their changing anxieties can produce sudden surges in the interest cost of refinancing the maturing debt from past periods.

65. In the United States, the Federal Debt/GDP ratio increased from 34.6 % in 2001 to 86.5% in 2012 and continues to rise.[57] As long as interest rates on new debt are kept near zero, the cost of refinancing is minimised. However, equation (2) implies that any eventual increase in interest rates will have huge implications for budget balance. Under "Quantitative Easing", a significant fraction of the public debt of the United States has been purchased by the Federal Reserve – i.e. partly monetised. However, the question is: how long can ultra-low interest rates and monetisation of the public debt (i.e. printing money) go on?[58]

66. The ripples of instability thus lead to unpleasant choices. Fiscal austerity may stabilise the public budget balance, at the cost of depressed growth, rising unemployment and social unrest. Deficit financing can be monetised but with risks of inflation. A low interest rate monetary policy can maintain consumer demand and prop up the housing sector, but the longer it continues the greater is the indebtedness of households and the vulnerability of housing prices and household finances to interest rate increases. If and when inflationary pressures are combatted, monetary authorities will have to use the policy lever of an increase in interest rates (r_t) to reduce the rate of growth of aggregate demand and household incomes (g_t) – thus widening the differential (r_t - g_t) at both ends. Equation (2) tells us that when the Debt/Income ratio is large (as it now is – for both governments and households) a differential between the interest rate and the income growth rate (r_t - g_t) implies that expenditure cuts will also have to be large in order to create continuing current surpluses[59] big enough to prevent the debt/income ratio from compounding unsustainably.

67. In the public sector, large expenditure cuts to 'entitlement' programmes could help balance the annual budget. However, cuts to the 'social wage' will accentuate the long term relative impoverishment of

middle and lower quintiles of the income distribution, reduce further the slow growth of their real incomes and, as equation 2 shows, make household 'deleveraging' much more difficult. If all sectors attempt to deleverage simultaneously, a recession must be expected, in which case even slower real income growth at the bottom will accentuate rising household income inequality and reinforce the imbalances of saving and consumption which initially helped create financial instability.

68. To summarise, from a macro-economic perspective, an ever increasing income share of the top 1% cannot be a steady state. When income growth rates are unbalanced, one instability leads to another – and pressures intensify over time as the increasing income share of the top 1% implies their savings flows are an increasing fraction of GDP. Because financial and real flows are interdependent, and because flows accumulate to become ever larger stocks, an imbalance in income growth rates compounds into rising stocks of financial wealth at the top and greater stocks of indebtedness elsewhere. Financial fragility then increases the odds of financial crises, with potentially big impacts on real economic activity. When governments respond with deficit spending, this accumulates as public debt, which itself becomes increasingly fragile whenever interest rates exceed the growth rate. But if interest rates are kept low to stimulate consumer demand, households acquire levels of private debt that they will be unable to finance if/when interest rates return to historic levels.

4b The social instability implications of the increasing spending of the top 1%

69. While the increasing savings of the top 1% may be largely invisible to the other 99%, their increasing consumption cannot be completely hidden – indeed, as Veblen (1912) noted over a century ago, conspicuous consumption is a large part of why some people want great wealth in the first place. But others often resent "if you've got it, flaunt it" lifestyles. So the socio-political question is whether increasing income gaps of the magnitude identified in Table 1 and portrayed in Figure 8, combined with the expectation that such gaps will widen ever further as time goes on, can be consistent with long run social stability.[60]

70. A high but stable level of inequality (as observed in, for example, medieval Europe or Mughal India) can enable the elite to develop strong norms of gracious living. If income differentials remain roughly constant, a seeming permanence of income gaps can, over time, habituate the masses to traditional differentials and their own places in life (a process which historically was reinforced strongly by organized religion).[61] Films and television dramas (e.g. "Downton Abbey"), which now celebrate both the ostentatious consumption of the nobility and the faithful deference of their loyal retainers portray the sociological reality that highly unequal ways of life can become part of definitions of self-identity. Viewed from a macro-economic perspective, the extravagant consumption of the gentry serves to recycle income – and the fact that it was done in much the same way year after year meant that, for both servants and served, a given level of great inequality could become viewed as the "natural order of things".[62]

71. However, the British servile tradition was built up over centuries, and current reality in Australia, Canada and the United States is quite unlike such earlier periods of high but stable inequality. Unbalanced growth and rapidly increasing real income differentials now create the problem (at the top) of finding, every year, new ways in which to consume – i.e. the elite must be *increasingly* extravagant over time if their increasing incomes are to be recycled in consumption. At the very top, the sums are already sometimes significantly large – the World Top Incomes Data Base reports that in the US, the top tenth of 1% had an average incomes *increase* of USD 505 000 in 2005 and USD 541 000 in 2006. Finding, year after year, new ways in which to consume an additional USD 500 000 or so is not a trivial task.[63] Continuation of the growth rate of recent decades into the future implies that the absolute size of annual increments to income at the top will continue to swell – indeed a 3.5% income growth rate implies that in 20 years they will be over twice as large as they are presently. Hence, ever growing ostentation has to be expected.

72. To some extent, the top 1% of households already consume their income within a separate world of gated resorts and exclusive neighbourhoods that most of the other 99% never experience. As the absolute size of income differences increases it becomes increasingly difficult for the top 1% to socialise across income classes, so the social contacts of the top 1% increasingly converge on their peers.[64] As well, over time the increasing magnitude of top 1% consumer expenditures builds an ever growing infrastructure of inequality (e.g. high end shops, 5-star resorts, luxury car dealerships) within which the economic elite can circulate without any interruption from the masses. As top end disposable income swells over future years, one can expect ever more entrepreneurial energy to be devoted to the design, production and marketing of such separate spheres of exclusivity. Hence, as their incomes diverge increasingly from the median, the top 1% will become increasingly more disconnected from any real contact with the lived reality of the 99%. What is the cost of all this to the 99%? Should they just try to think of the separate world of the elite as equivalent to the top 1% self-exiling themselves to reservations where they can be ignored (and perhaps taxed)? What are the externalities to the 99% of the continuing growth of top 1% income and consumption?

Externality 1: The expenditure cascade of escalating consumption norms

73. The process of increasing indebtedness of the middle class described in section 4a above is more rapid if consumption norms are relative. Robert Frank (2005: 139) has argued that greater inequality increases consumption by the middle class by shifting up their consumption aspirations. When, for example, the top 1% build larger houses, they shift the frame of reference that defines what others slightly below them on the income scale consider an acceptable or desirable house, which in turn shifts the frame of reference for those just below them, and so on, all the way down.[65] As consumption norms shift up, individuals experience a loss in utility from the consumption of goods that only recently were "good enough". The social visibility and positional nature of housing make it a good example of comparative consumption, and (as already noted) it is also a key sector for business cycle dynamics. If norms of consumption are relative, there is therefore both a direct utility impact for the 99% and an increase in business-cycle risks.

Externality 2: Ever-increasing luxury goods advertising

74. Medieval Europe and Mughal India may have had extreme inequality, which lasted for centuries, but neither had an advertising industry. In the 21st century, one can expect that advertising will increasingly market envy and stoke discontent. When incomes at the top grow more rapidly than other incomes, the share of the top 1% in GDP increases, implying that luxury goods grow as a fraction of total consumer spending. In the United States, the income share (including capital gains) of the top 1% was 10.8% in 1982, had risen to 22.5% by 2012 and, if historic income growth rates continue, will rise to over 30 % by 2025. The large and increasing relative size of the top end market is a powerful incentive for an ever increasing volume of aspirational advertising.

75. Because the necessities of life must be purchased even if they are not advertised at all, the advertising of necessities is heavily focussed on conveying price information. But luxury goods are inherently discretionary expenditures. Because the target market (i.e. the top 1%) already have all imaginable normal creature comforts, they have to be convinced somehow to purchase such goods. Luxury goods are thus necessarily advertising-intensive items which have to appeal to ideas of exclusivity and status to motivate sales. As Francois-Henri Pinault, CEO of PPR Group (whose luxury brands include Gucci, Bottega Veneta, Yves St Laurent, Balenciaga, Stella McCartney and Alexander McQueen) has put it: "You don't buy luxury to enter a community but to set yourself apart from others".[66] And it is not in an advertiser's interest to restrict their messaging just to those who could actually afford to buy.

76. Status goods (like expensive watches costing thousands of dollars) can only command a premium price if they are widely known to be status goods – there is no point to paying thousands more for a fancy watch if nobody else is going to recognise it as "special". Hence, advertisers have to market luxury goods, like expensive watches, both to those who cannot afford to buy as well as to those who can, in order for those who do buy them to know that everyone else knows that they are very expensive, very exclusive items. And although some status goods can acquire their cachet by tradition and word of mouth, the expanding pool of disposable income among the affluent creates ever greater incentives to create new status goods using advertising. In such marketing campaigns, desire is created by the message that "everybody wants this, but only special people have it" – i.e. by inspiring envy among those who do not possess the good, so that those who do buy it can have status and deference. Because the market value of luxury brands will depreciate without continued advertising to reinforce their message of exclusivity, privilege and wealth, mass media become increasingly saturated with their messaging.

77. Continually increasing income gaps at the top end are therefore likely to imply a continuing shift in production towards advertising-intensive luxury goods and continually increasing incentives to (a) more advertising and (b) more advertising messaging which tells the 99% what only the 1% have and tells the 99.9% what only the top 0.1% can afford. As income differentials grow, the benchmarks of luxury will move ever further from the consumption norms of the median household – and the volume of luxury goods advertising are likely to increase – thereby ensuring that the less affluent are told increasingly more often about the pleasures of goods they cannot remotely afford. One consequence of increasing inequality in a market economy is, therefore, increasing incentives for advertising expenditures which increase envy.

78. For the 99%, a second likely externality of rising top 1% incomes therefore is the increasing volume and changing messaging of their daily bombardment of advertising. The aim of aspirational advertising is to create discontent in the target audience which can only be ameliorated by purchase of the advertised commodity. If such advertising expenditures increase, and are increasingly tilted toward emphasising the importance and desirability of goods which most people cannot possibly afford, greater discontent and less human happiness among the 99% are likely to result.

Externality 3: increasing inequality of political influence

79. Part of the problem raised by increasing inequality is that the top 1% do not want to be ignored, either politically or socially. Increasing inequality means they have ever more resources to intervene in the political process and to ensure that their opinions matter to others. In the United States there is clear evidence that[67]:

- the political and social preferences of the very affluent are quite different from those of the general population;
- the top 1% are much more active politically than the 99%;
- election campaigns depend heavily on major financial donors, who are overwhelmingly affluent individuals; and
- legislative action is heavily influenced by the policy priorities of the very affluent.

80. As Stiglitz (2012) and many others have emphasised, the increasingly separate world of the top 1%, and their growing influence over the political process, therefore diminishes the relative influence of the rest of society, to a degree which increases over time if election spending is unconstrained (as in the United States and Australia).

Externality 4: decreased intergenerational mobility

81. One can expect top 1% parents to try to pass on their advantages to their children – which means purchasing as much influence over the social mobility process as they can. Part of this can be explained as an "income effect" in the Human Capital model. As top incomes increase, affluent parents can be expected to spend part of those increases on their children, by purchasing greater enrichment expenditures and thereby further expanding and differentiating the private schooling system.

82. However, in the Human Capital model outlined earlier in Box 1, positional externalities are assumed to be zero and all decisions are made by the household (e.g. parents have to decide whether to pay Harvard tuition fees but Harvard admits everyone whose parents are willing to pay enough). In this model, there is nothing *competitive* about life, since an improvement in the life chances of one family's children has zero impact on the life chances of any other family's children. If this were true, increased spending by the elite on their own children would not hurt anyone else. But if top positions are inherently scarce because they depend on relative rank – e.g. only one person in any given company can be CEO and only one university can be "best" – then access to them becomes competitive. When elite schools and universities deny admission to some applicants and when corporations do not promote everybody, then an improved probability of success for others necessarily implies a poorer chance of success for oneself. Because it omits any recognition of the scarcity and rationing of top positions, the human capital model of intergenerational mobility thus understates the consequences of increasing income inequality.

83. When top slots are scarce, labour economists have long recognised that competition implies an aggregate over-investment in individual efforts to get ahead, because no individual recognises the externalities to others (in diminishing other people's probability of promotion) of their own increased striving.[68] As the gap between payoffs to positions widens, the incentives driving such over-investment by individuals also increase.[69]

84. As well, those who are already at the top of the distribution can only lose from future mobility – for the elite, the only mobility is downwards. Hence, the darker side of increasing inequality of current incomes comes from the fact that larger prizes in a competitive race increase the costs to affluent parents of better life chances for any potential competitors of their own children. Increasing inequality means an increase in the potential costs, to affluent parents, of downward intergenerational economic mobility. The greater is the gap between the incomes of affluent families and those of most other people, the larger is the "drop from the top". The higher the risk for the children of affluent parents to fall in the next generation, the more important it becomes for rich parents to give their own children every possible advantage. Increasing inequality thus accentuates the reluctance of the elite to pay the taxes that can partially equalise opportunity by funding public expenditure on the human capital of all children – because their own children have the most to lose from such spending.

85. Wanting to see one's own child win, in a fair race, is a normal (if conflicted) parental aspiration. The rhetoric of fair equality of opportunity enjoys near universal approval among the economic elite (partly because it legitimises their own current positions). However, actually fulfilling the reality of equal opportunity is quite another thing. When the drop from the top is not so severe, and the conflict between rhetoric and reality is not so large, one can find the same parents simultaneously voicing support for some compensatory public expenditure for the disadvantaged to offset the inequality of private expenditures on childhood human capital *and* investing heavily in their own child's advantages. But when the costs of mobility to affluent families increase (because upward social mobility of disadvantaged children necessarily implies a corresponding downward reshuffling in rank of the children of the affluent) elite support for compensatory public spending shrinks.

86. Over time, as the top end of the income distribution pulls further and further away from the median, the stakes involved in preventing downward mobility of their children are ever-increasing for the elite. As memories of a somewhat shared common childhood background (e.g. in the public school system) recede into stories about the grandparents, it becomes ever harder to maintain the myth of equality of opportunity. And the greater is the success of the top 1% in ensuring continued high socio-economic rank status for their own children, the greater is the corresponding blockage of the life chances for upward mobility of children from poorer households. Hence, increasing inequality of opportunity is another externality of the increasing top 1% income gap.

87. When income ratios are roughly constant, the associated levels of political spending, enrichment expenditures for elite children, and advertising of luxury goods do not change much over time – and habituation may well dull any tendency to discontent with inequality. But unbalanced income growth implies increasingly large absolute income differences between income classes, increasingly large expenditures by the elite to influence the political process and to secure the advantages of their children, and ever increasing advertising reminding everyone of the desirability and exclusivity of the luxury goods which most people cannot remotely afford. Is it likely that all such increases can continue indefinitely?

Conclusion

88. Section 1 of this paper argued that cross-country comparisons indicate (unsurprisingly) that more inequality of income is a good predictor of more inequality of opportunity and less intergenerational social mobility. Whether or not more inequality of net income causes more ill-health or more crime, or less trust and social capital is less clear – opinions depend partly on the rigour of proof demanded, the specific concept measured, and the data set used. Nevertheless, it is clear from the diversity of inequality levels within OECD countries that different societies have made different social choices, which have produced different levels of income inequality, and which in turn implies that choices can be made about future inequality levels.

89. However, stability in the level of income inequality requires equal rates of income growth, at all percentiles of the income distribution. If income growth is unbalanced – specifically, if the rate of growth of real incomes for the top 1% is significantly higher than the real income growth rate of everyone else – then more inequality over time is inescapable. Section 2 noted that in Australia, Canada and the United States such unbalanced growth has been the new normal for the past thirty years. If historic differentials in income growth rates continue, they will compound to a successively larger gaps between the top 1% and everyone else.

90. Equalising the growth rates of market income requires either slowing of the growth rates of income at the top or substantial acceleration of income growth rates at the bottom (or some combination of both). Section 3 looked for a good reason to expect market forces to produce enough of either trend anytime soon, and could not find a plausible mechanism of market auto-correction. Since a continuation of unequal growth rates implies ever growing market income differentials, Section 4 examined the implications of the ever growing savings and spending of the top 1% for systemic stability. It concluded that unbalanced growth produces increasingly large tendencies to financial and real economic instability and increasingly large pressures on social stability – which will clearly interact in their implications.

91. Even if the growth rates of pre-tax market income are unbalanced, the tax and transfer system could in principle balance the rates of growth of household income after taxes and transfers. More progressive income and wealth taxes, combined with redistributive transfers and public spending, could in principle be adjusted so as to balance aggregate income and expenditure, equalise growth rates of income and stabilise the distribution of household disposable income. Since savings and spending decisions are made with respect to post-tax, post-transfer income, the instability issues discussed in Section 4 would then

be moot. Once the distribution of disposable income was stabilised, Australia, Canada and the United States would then face the problem of choosing *which* steady state level of inequality would maximise social welfare.

92. The United States has been first and largest in the shift to unbalanced growth, and initially the imitation of that shift was largely restricted, with a lag, to other "Anglo" nations. However, while initial results showed a distinct divergence between trends within continental European and Anglo nations, more recent analysis indicates some convergence of the general trend to increasing shares of growth being received by the top 1%.[70] Hence, unbalanced income growth may be becoming more common, worldwide, and before any country gets to choose which stable level of inequality is preferable, they have to choose to stop having increasing inequality, year after year.

93. This paper has argued that decentralised market forces cannot be expected to spontaneously equalise market income growth rates and stabilise income inequality. When markets fail, as Samuelson (1958:480) argued, "it is the task of political economy to point out where common rules in the sense of self-imposed fiats can attain higher positions of the social welfare function". Although a full assessment of the probability that political economy will produce a desirable outcome is beyond the scope of the present paper, there are some historic precedents from the 1930s. In the United States, Roosevelt's New Deal had interlocking parts: counter-cyclical stimulus plus regulatory reforms in financial and labour markets, plus more progressive taxation plus social security. By restraining top end income growth and assisting low end growth, recycling fiscal flows and regulating financial markets, these reforms stabilised United States inequality dynamics for nearly 50 years – at a time when the overwhelming dominance and relative insulation from trade of the United States made "Stabilisation in One Country" feasible. In Europe the emergence of highly stable social democratic welfare states in Nordic countries also dates from the 1930s.

94. In the multi-polar globalised economy of 2014, can one expect individual nation states to evolve similar "common rules" that could stabilise income inequality within each nation? Whether rightly or not, policy makers in smaller countries (like Canada or Australia) fear the mobility of capital and highly paid labour should they attempt to impose higher marginal tax rates on top end incomes.[71] Off-shore banking and sophisticated tax avoidance strategies also limit the effective abilities of smaller states to stabilise income inequality. If new co-ordination devices for the market economy are to be constructed, they may need to be international in scope, with international organisations such as the OECD having their role to play (Box 3). However, international co-operation is difficult to arrange at the best of times.

95. What happens if such policy co-ordination does not occur and income growth rates continue to diverge? The social and economic instability of the 1920s and 1930s produced some positive examples of social choices but it also produced Fascism in Italy and Spain and Nazism in Germany. This paper concludes that increasing inequality over time is an unsustainable long run trend, but it is not at all clear what economic and social instability produces. The dark scenario is that increasing inequality causes increased economic instability and social stress, producing multiple social movements, some of which are extremist. If these are perceived as threats to social order. and if they provoke an authoritarian response, an expansion of the surveillance state and a reduction of civil liberties, that could well be part of "what's so bad about increasing inequality?".

96. In a less pessimistic scenario, democratic political economy rises to the challenge of first stabilising the after tax income distribution (i.e. equalising the growth rates of disposable income) and then moving to the socially preferred stable level of long-run inequality. However, before any country gets to choose which stable level of inequality it wants, the prior decision is whether to stop having more inequality, year after year.

NOTES

1. One must distinguish between the frequency distribution of incomes [f(y)] and any particular summary index of inequality (such as the Gini) which is calculated on that distribution [i.e. G = G(f(y))]. Any particular summary index can be held constant by offsetting shifts at different points in the income distribution [i.e. f'(y) exists such that G(f'(y)) = G(f(y))]. The phrasing here refers to f(y).

   In economics, the neo-classical model of 'steady state' growth has argued that, with unchanging behaviour and structural characteristics, some ratios of an economy (e.g. per capita income or the capital/labour ratio) can in principle grow steadily for an indefinitely long time. The question asked in this paper is whether or not the top 1% income share is a ratio that can similarly grow steadily indefinitely.

2. See Davies (2009) and Davies et al (2008) for discussion of the distribution of wealth. Since income is a flow, it is crucial to specify the period of measurement. Although lifetime income may be the desirable concept to measure for some purposes, actual lifetime incomes can only be observed with unacceptably long delays. Simulated lifetime incomes (as in Bowlus and Robin, forthcoming) are only as plausible as the assumptions underlying the simulation methodology. Hence, the most common compromise is to discuss annual incomes.

3. OECD (2011) also discusses inequality in adjusted disposable household income (market income plus public cash transfers minus taxes paid plus the value of public services received in kind by households) showing that in practice, social transfers in kind can have a non-trivial effect on consumption inequality.

4. See United Nations Economic Commission for Europe (2011), *Canberra Group Handbook on Household Income Statistics.*

5. Inequality in household incomes can change without changes in economic processes. An increased correlation of spousal earnings (e.g. more "power couples" at the top and jobless families at the bottom) could widen the disparity of household earnings, even without any trend to greater inequality in individual factor incomes (see Hou and Myles, 2007). However, the aggregate impact on income shares is typically small (see Lu, Morissette and Schirle: 2011), especially compared to the changes in top end income share discussed in Section 2. Burtless (2009) concluded that, in affluent countries, demographically induced changes in inequality are small – hence this paper will neglect them henceforth.

6. Within the class of axiomatically-defensible inequality indices, the Gini index is more mid-range sensitive than the Theil (low-end sensitive) or the coefficient of variation (high-end sensitive) (see Osberg, Chapter 1, 1981 or 1984).

7. Comparing the United States and Europe in 1831, Alexis de Tocqueville famously remarked on "the prodigious influence that this primary fact (a general equality of conditions) exercises on the whole course of society; it gives a peculiar direction to public opinion and a peculiar tenor to the laws; it imparts new maxims to the governing authorities and peculiar habits to the governed; it creates opinions, gives birth to new sentiments, founds novel customs and modifies whatever it does not produce" (1956: 3).

8. Wilkinson and Pickett's many articles (e.g. 2006) have also had a major impact on the scholarly and public debate.

9. See Saunders (2010) or Leigh (2013:100) – and Wilkinson and Pickett (2006: 284). Sampling variability is an argument for excluding outliers in survey data but this context uses all data points. And it is never obvious that excluding extreme observations – which have more information content – is optimal.

10. See Osberg (2010) for a more complete argument.

11. Ball and Chernova (2008) use the World Values Survey and conclude that relative income matters much more than absolute income for individual happiness, although both are important. Stevenson and Wolfers (2008, 2013) disagree. In any event, other determinants, such as unemployment or relationships, are much bigger than either.

12. See Osberg and Smeeding (2006) for detailed discussion of the evidence from the International Social Survey Program or the World Values Survey.

13. Atkinson (1970) and Sawyer (1976) were among the very few authors who made international comparisons of the level of income inequality before the 1980s.

14. In Canada, the change in Gini index (of equivalent household disposable income) since 2000 has been much smaller than in the 1990s – which masks trends to greater polarization. As Figure 2 shows, the top 1% share (of pre-tax individual income) continued to increase, but over the same period the relative advantages of the middle class declined (the ratio of the average income of the second, third and fourth quintiles to that of the first quintile fell – see CANSIM Table 202-0701). Beach (2014:3) has documented the "marked decline of workers receiving middle-class earnings" in Canada. Since the Gini index is the normalized sum of the absolute value of relative mean deviations across all possible pairs of individuals, lessened inequality among the bottom 80% - i.e. the "declining middle class"- has offset rising inequality in the top quintile. As well, annual estimates of the Gini in Canada come from survey data, in which top end incomes are top-coded.

15 See Osberg (2013), especially Figures 2, 3 and 6. Constant real incomes of the lower quintiles is consistent with (and has been accompanied by) considerable 'churning' of relative position for different groups – see Lu, Morissette and Schirle (2011).

16. This gibe has been ascribed to Aaron (1978) by, among others, Salverda, Nolan and Smeeding (2009:4). Economic models of steady-state growth first became popular during this post-war period of nearly constant income shares – earlier economic writers tended were concerned about the instabilities of a capitalist system.

17 See Statistics Canada, (1998), and J.R. Podoluk, (1968).

18. http://topincomes.g-mond.parisschoolofeconomics.eu/ Income including Capital Gains. When capital gains are excluded, the increase was from 8.4% to 19.3%. The size of the top 1% income share *increase* thus approximates the *total* 2012 income share of the bottom 40% of U.S. households (8.3% + 3.2% = 11.5%). www.statista.com/statistics/203247/shares-of-household-income-of-quintiles-in-the-us/

19. In the World Top Incomes Data Base, nominal incomes are adjusted to a common year's price level using the Consumer Price Index for the country in question. Any single index of consumer price changes will always be an imperfect indicator of the price changes most relevant at each point in the income distribution. Because the CPI is an expenditure-weighted index, as the top 1% share of consumer expenditures increases over time, trends in the CPI will increasingly reflect the price changes most relevant for affluent consumers.

To maintain consistency with Alvaredo et al (2013), Figure 2 uses data on income including capital gains for the U.S. and Canada. In order to, if anything, understate this paper's results, Figures 3 to 8 report data on income excluding capital gains. All calculations have also been done using income including capital gains, with similar but stronger results. In Figures 2 and 4, top end incomes in Canada appear to be somewhat lower than in the U.S. However, Veall (2012) cautions that in Canada, the retained earnings of Canadian-Controlled Private Corporations (CCPCs) are not attributed back to individual income tax filers, while in U.S. data, the net revenues of comparable private personal corporations flow through directly and immediately to the personal tax return of the owner or owners. Hence, the apparent Canada/US difference in top income shares and levels is at least partially due to the greater ability of high income Canadians to shelter income from income tax, through the use of CCPCs.

20. In Figure 2 and Figures 4 to 6, the short-term impact of the "Great Recession" of 2008-2010 on top-end incomes is clearly apparent. Although one Canadian journalist has jumped on this decline to declare an end to rising inequality (Coyne, 2013 – but exhaustively debunked by Corak, 2012), Saez (2013) documents the rapid recovery of top incomes in the U.S. after 2010. US data up to 2012 is available and has been used in Figures 2, 4, 5 and 8. Unfortunately, data for 2011 and later years are not yet available for either Canada or Australia. However, the essential message of Figure 3 – the large long-term difference between income groups in average real income growth rates over the last few decades – is robust to alternative time intervals (see Figure 6 in Osberg, 2013, for 1987-2007; Figure 4 in and Osberg, 2014, for 1984-2010). The differential in income growth rates is larger if only the pre-recession period is considered, so in that sense Figure 3 understates the size of growth rate gaps.

21. In the U.S., rough equality of growth rates and income share stability is also observed in 1925-1940.

22. By 1946, in Canada and the US, the Depression and years of wartime diversion of production had left a substantially depleted capital stock, embodying aged technologies and implying large gains to new investment. Hobsbawn (1994) is representative of the historians who argue that many of these structural trends were similarly operative, albeit with differences in timing and intensity, in other OECD nations.

23. Although the decline of unions and the demise of the threat effect of the hard left are in principle not irreversible structural changes, both have been, in these three countries, unambiguous.

24. Census Bureau Table H-8, Median Household Income by State: 1984 to 2012. All figures expressed in 2012 U.S. dollars.

25. The best year so far for the top 1% was 2007, when their average income was USD 1 056 905 (excluding capital gains, 2012 dollars, taken from World Top Incomes Database). Calculated from 1984 to 2007, the compound annual growth rate of average top 1% income was 4.4%.

26. Income growth rates are quite unequal within the top 1% (see Figure 3), implying increasing inequality within the top 1%.

27. Indeed, of political economy, see Ricardo (1831).

28. See Veall (2012), Leigh (2013) or Alvaredo et al (2013). Osberg (2008) pointed out that "Capital's share" of aggregate output has been rising in recent years, and it is also true that savings and inheritances from past labour earnings produce capital income – but these trends are as yet smaller than the annual increase in top end labour incomes. However, if "Capital's Share" in National Income were counted to include income that derives from *control over* capital, as well as formal *ownership of* capital, most of CEO compensation would be counted as part of capital's share and the factor origins of the incomes of the top 1% would look different. Gabaix and Landier (2006, 2008) find that differences in labour characteristics (individual effort or talent or incentives or qualifications) play a minor role in explaining CEO compensation. They argue that the six-fold increase in CEO compensation in the US between 1980 and 2003 is "an equilibrium consequence of the substantial increase in firm size".

29. The 24 hour day and the physiological necessity for some sleep set an upper bound for maximum physically possible labour supply, but consuming income also takes time. Hence, in the standard neo-classical labour/leisure choice model of labour supply, utility-maximising agents who face a continuing series of increases in their net hourly after tax wage will maximize their annual labour hours at less than the physiological maximum, before moving to the backward-bending segment of their annual labour supply curve. Once the people in the top 1% are on the backward-bending segment of their labour supply function, increases in their marginal income tax rate will unambiguously increase tax revenue. However, both the upper bound on effort supply and the possibility of backward-bending labour supply are now ignored by the literature on the elasticity of taxable top end income with respect to the net of tax salary rate [see Fortin et al (2012), Piketty, Saez and Stantcheva (2011) and Veall (2012)].

30. The standard neo-classical labour/leisure choice model of labour supply incentives is a story about the *level* of effort induced by a given marginal after-tax wage. From one year to the next, it can explain how greater incentives for the top 1% can perhaps produce greater hours of work and intensity of work– i.e. an upward shift in their effective labour supply which shifts up their income level and their income share. But if top end incomes are to increase year after year, for many years, a long series of such increases in incentives and labour supply are required.

31. The initial focus of the labour market segmentation hypothesis was the poverty population – see Gordon et al (1982), Osberg et al (1986). Segmentation requires: (1) that the determinants of labour market rewards and the mechanisms of labour allocation differ across subsets of jobs and labour market participants; and (2) that there be barriers to inter-segment mobility. The CEO labour market satisfies both requirements.

32. 'Rent' in this context means the excess of pay over the supply price of labour. The analysis here differs from Stiglitz (2012) who emphasises 'rent-seeking'- which he defines as "grabbing a larger share of the wealth that would otherwise have been produced". It consequently does not support his optimism that more perfectly competitive markets would change the income growth rate differential by much. Mankiw (2013) and Kaplan and Rauh (2013) argue that observed U.S. income trends reflect the normal functioning of actual markets, a conclusion shared by this paper. However, this paper does not share their belief in marginal productivity explanations, or the presumption that individuals ethically 'deserve' to be paid their marginal product (if it could be observed). Baker (2006) also notes that the "normal functioning" of markets includes a disproportionately large role for affluent individuals in setting market rules, often to their own advantage.

33. For the 25 year period 1987-2012, the simple average of annual growth rates of world GDP was 4.9%, compared to Australia (3.3%), Canada (2.5%) and the U.S. (2.6%), see GDP growth (annual %) in World Bank Data Indicators.

34. Pareto's "Law" can be expressed by the equation: $\text{Log } N = \log K - \alpha \log x$ where x is any particular level of income, N is the number of people with incomes equal to or greater than x and K and *a* are parameters. Lydall (1959) showed how α depends on the span of control in wage hierarchies and norms of relative wages. The Pareto distribution has long been found to provide a good fit to the upper tail of the income distribution and, as Atkinson et al (2011:13) noted, it implies that the average income of people with income greater than x is always equal to a constant multiple of x, which is the inverse of α [more exactly = $\alpha/(\alpha-1)$]. Hence, the inverse of the coefficient α in a Pareto distribution is a measure of the steepness of the income pyramid, and World Top Incomes Data Base data indicate that it increased by about half between 1984 and 2012 in the U.S. (from 2.012 to 2.934). Pareto (1896) himself believed α to be an immutable constant – a conclusion that Creedy (1977) shows to be unwarranted, even with Pareto's own data.

35. In the global economic system, a few cities (e.g. New York, London) offer a range of corporate and financial services that second tier centres (e.g. Sydney, Toronto) cannot match, while third and fourth tier centres (e.g. Halifax) can at most aspire to hosting niche players. Hence, top 1% incomes are on average much lower at lower levels of the urban hierarchy, but similarly growing as global scale grows.

36. A classic statement is provided by Doeringer and Piore (1971).

37. See Agell (1999) and Agell and Lommerud (1993)

38. More precisely, for any individual, $Y = w*H + r*K$ where Y is annual market income, w is the average annual hourly wage, H is total paid work hours per year, r is the average rate of return on wealth and K is the net assets of individuals. The key variable for long term income growth rates is w – more specifically, $\partial w/\partial t$. Countries with large agricultural sectors or low female labour force participation may be able to expect increases in average paid annual work hours ($\partial H/\partial t > 0$) for a significant period of time. However, those days are gone for Australia, Canada and the United States. Section 4 will discuss net saving at the top and bottom ($\partial K/\partial t$). For now we can note that the rate of increase of the capital income of the top 1% will

be a lagged function of their past rate of income and savings growth. (For the 99%, returns to any personal savings often come implicitly, via owner-occupied housing, rather than in market income.)

39. See, for example, Wolfe and Haveman (2001) or Osberg (2003)

40. Within a neo-classical perspective, Beaudry and Green (2003, 2005) argue that when skilled labour is more plentiful, one of the implications of endogenous technology choice by firms may be a decline in the labour demand facing low-skill workers. As well, the institutional perspective has long argued that education serves mainly as a credential, whose relative level rations access to a given set of desirable jobs (Bowles and Gintis, 1976).

41. Because the earnings and personal characteristics of the middle 90% of the population are reliably captured by sample surveys, they have been the focus of much analysis by labour economists – but shifts in the inequality observed within that group have little to say about the relative long-run income growth rate of the top 1% and that of everyone else.

42. For the 25-34 age cohort, Canada had 56%, the U.S. had 42% and Australia had 44% with tertiary education. See Table A1.3a. Population that has attained tertiary education (2010), OECD 2012a.

43. Peach, Rich and Cororaton (2011), using US data, estimate a Threshold Philips Curve Model and demonstrate its superior fit to US inflation dynamics. Moving to the bottom end of the unemployment range accelerates real earnings growth temporarily, but long run real income growth rates are constrained by productivity growth.

44 https://www.wagemark.org/about/wagemark-foundation/

45. Dynan et al (2004) conclude that the marginal propensity to save increases with income – but the argument here only requires that the marginal propensity to save of the top 1% is positive and that some of that increase in saving is in financial assets. Increased savings by the affluent is quite consistent with greater consumption, and net dissaving, by the poorer 99%, implying a declining average *national* savings rate. Cynamon and Fazzari (2014) document the accumulation of liabilities by the bottom 95% that preceded the Financial Crisis of 2007.

46. The Kumhof and Ranciere (2010) model has no explicit government or corporate sector, but Kumhof has noted that government can be seen as an intermediary in debt, as the people in the top 1% buy government bonds which finance public sector deficits and thus sustain current public consumption – while society as a whole incurs corresponding future tax liabilities. (private communication- September 2012). Similarly, the corporate sector is an intermediary between shareholders and real economic activity – the affluent could, for example, save either by personally building a steel mill or by buying shares in a company that builds a steel mill. For financial fragility, the important issue is whether the top 1% also lend, directly or via intermediaries, to the other 99%.

47. In the global economy, financial and real flows must balance internationally. Kumhof et al. (2012) argue that poorly developed internal financial markets in developing nations (a.k.a. China) imply that the elite there have bought U.S. financial assets, thereby financing US current account deficits.

48. The key issue for debt fragility is not stagnancy in lower end incomes but the fact that there is a differential in growth rates and some inter-sectoral lending. Suppose top 1% incomes grow at r_1 and bottom 99% incomes grow at r_{99} and $r_1 > r_{99}$. If net financial claims of the top 1% on the rest of society [A_1] are a non-decreasing fraction of income, $\partial A_1/\partial t \geq r_1$. But financial assets are the liabilities of their issuers – either other households [D_{99}] or governments [D_G] – so $A_1=[D_{99} + D_G]$. Because the total liabilities of other agents grow at r_1 and $r_1 > r_{99}$, the growth of liabilities is faster than the private income growth rate of the 99% or the total tax base (which is an income share weighted average of r_1 and r_{99}), hence debt/income ratios rise over time.

49. See Marx (1894) Vol. 3, Chapter XV; Hobson (1900, 1905). Amdekar (2012) provides a modern re-interpretation.

50. Bordo and Meissner (2012) provide a negative answer to the general question: "Are business cycle downturns always preceded by increases in inequality?" – but this is not the same question as whether increasing inequality caused the 1929 and 2008 recessions.

51. Wolff (2011: 39, 125) finds that in 2007, the principal residence was 65.1% of the wealth of the middle three income quintiles. The 2001-2007 boom in housing prices swelled their paper values of these assets but left them highly exposed to the ensuing bust. As a result, between 2007 and 2009, median wealth (net worth) fell by 35.1%.

52. The ultra-low level of current interest rates increases sensitivity of household budgets to small interest rate changes (e.g. an increase from 3.0% to 3.5% in mortgage interest means monthly mortgage payments go up by about a sixth).

53. For the public sector, PB = (Taxes_t – Program Expenditures_t); for households PB_t=(Income_t – Consumption_t)

54. More exactly, debt finance charges (r_t D_t) increase if $\partial D_t/\partial t > - \partial r_t/\partial t$ (remembering that $r_t \geq 0$, so interest rates cannot decline forever). When interest rates on issued debt are zero or near-zero, or when the central bank creates the money necessary to purchase debt issue (which amounts to the same thing), the public sector deficit can be insulated from a rising Debt / GDP ratio – but neither condition is long-term sustainable.

55. In Q4 2013, the household debt to income ratio was at a near-record high in Canada, (1.64), and higher in Australia (1.77) (see Reuters, 14 March, 2014 and Financial Review 04 Apr 2014. The aggregate ratio is, of course, only important as an indicator of trends in the upper tail of that distribution – i.e. the percentage of households with debt/income ratios much greater than average. Although average household Net Worth has also increased, this statistic is not comforting since (1) household real estate assets may have "bubble" prices; and (2) it is the mismatch of assets and liabilities across households that produces financial crises – specifically, the 1%/99% mismatch.

56 If rising incomes for the top 1% somehow caused substantially faster future income growth for the 99%, this would ameliorate their future debt fragility. However, this has not happened for the past 30 years. Gordon (2012) forecasts that growth in consumption per capita for the bottom 99 percent of the U.S. income distribution could fall below 0.5 percent per year for an extended period of decades.

57. See Annex Table 33, General government net financial liabilities, OECD 2012b.

58. Influential economists (e.g. Mankiw, Rogoff, Krugman) have advocated higher inflation in the U.S., arguing that it assists deleveraging – see Miller (2009).

59. If, for example, the real interest rate on debt returns to 4% and real growth is 2%, a debt/GDP ratio of 80% implies that stabilising the debt/GDP ratio means taxes must exceed program spending by at least 1.6% of GDP (about USD 240 billion in the United States). Hence, a crucial issue for the stability of public finances in the United States is whether, and by how much, interest rates will return to a level greater than the growth rate (i.e. $r_t > g_t$).

60. Social surveys such as the World Values Survey and International Social Survey Program have asked respondents for their evaluation of the level of inequality – Osberg and Smeeding (2006) are among the many authors who have noted the general preference for income equality. However, these surveys do not directly address *increasing* inequality. The size of income differentials in the U.S., Canada and Australia is an uncharted territory, and increasing – hence surveys reporting past attitudes to past levels of inequality can only be somewhat informative.

61. Milanovic, Lindert and Williamson (2010) document the extreme levels of inequality historically observed.

62. In England, acceptance of the social status quo was also assisted by the fact that landed gentry had the right to nominate the local Church of England pastor and often served as the local Justice of the Peace. A social deviant who rejected the established order could expect both the sanctions of the penal code in this life and eternal damnation in the hereafter. These reinforcements to deferential behaviour are no longer available.

63. Although top end incomes fell in the Great Recession, they have bounced back since 2010.

64. In large part this happens because much social interaction is premised on reciprocity – as in "they had us over for dinner a month ago, so it's our turn to have them for dinner". Reciprocity is less feasible when income differentials widen.

65. Frank was writing when the US housing price bubble was still inflating, and does not discuss the role that illusions of real estate wealth play in financing excess consumption.

66 Financial Times (2012:3).

67. See, for example, Page, Bartels, and Seawright (2013).

68. See Devaro (2006) and references therein.

69. One of the costs of increasing income inequality is a greater "loss of childhood." A higher level of inequality raises the stakes in childhood educational achievement. As parents increasingly pressurize children, the children lose in leisure time, in the additional stress associated with school success (or failure) and in the increased costs of dysfunctional rebellion against greater pressures.

70 See Atkinson and Piketty (2007) and OECD (2014)

71. Within the U.S., state and local taxes diverge substantially – in 2013, for example, California's top marginal income tax rate of 13.3% and New York City's 12.9% both contrasted with 0% in Texas – but Silicon Valley and Wall Street continue to thrive. See Tax Foundation, 2014.

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