Regional Income Inequality

United States, 1918 – 2003

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DRAFT ONLY

Abstract

Conceived of in many ways, the topic of income inequality has ignited passionate debates in the academic literature. In economics, the well-known Kuznets' hypothesis, based on neoclassical foundations, predicts the convergence of income levels as more and more industries reach higher productivity levels. This paper will consider both geographical and historical aspects of economic inequalities within the United States. As the U.S. Internal Revenue Service publishes state income data by income brackets since 1917, it is possible to compute statistical indicators of dispersion (like the upper decile of the distribution and its inner fractiles). After getting a data set that is homogeneous enough to rigorously compare the years 1918 and 2003, generating a series of ArcGIS animations accounting for the new time series will provide a visual illustration of the convergence (or divergence) pace of regional U.S. inequalities over the past century. I cannot wait to see this!

Introduction

As income inequality can be – and is – conceived of in many ways, the topic has ignited passionate debates in the academic literature, crossing the borders of economics, sociology, politics, law, history, and geography, just to name a few. Even though this study will not attempt to shed light on all disciplinary aspects of the income inequality issue, both geographical and historical facets of economic inequalities will lie at the core of the subject, pinpointing the more specific target of regional income inequalities and the homogeneity of the data sets that are available to highlight its patterns.

Empirical Literature on Income Inequalities in the United States

Kuznets (1955): Income Inequality and Economic Growth

Under the long-term perspective of development stages, Simon Kuznets (1955) uses the partitioning of employment (among the usual three sectors of agriculture, manufacturing, and services activities) in order to explain how the development process first widens and then narrows income inequalities over time. As the industrial revolution triggers labor to migrate from rural areas to more urbanized and industrialized ones, the first stages of economic development result in deepening the income inequality gap, as described by the upward-sloping portion of the Kuznets curve. At the later stages of development, the industrial gains concentrated in urban areas are necessarily shared among more people (decrease in inequality) as the flow of workers keeps deserting rural areas of low-productivity levels and swelling the industrialized metropolis, hence the downward sloping curve. (See *Figure 1. The Kuznets' Curve*.)

Kuznets (1958): The Industrial Distribution of Income by States, 1919-1955

Is it straightforward to infer from international comparisons identical conclusions for areas within a country, where legal and cultural barriers do not carry as much weigh? Would the distribution of income would be differently affected? In his 1958 publication, Kuznets parallels the distributions of personal income per capita and of the labor force within the US (for 1919-21, 1929, 1940 & 1955) with respect to the international comparisons of the Kuznets' curve. For each year, the 48 states are divided in 6 groups of 8, sorted by the descending order of per capita personal income as defined by the Department of Commerce[1]. The annual inequality indicator divides the state-group average over the national average. In general, Kuznets' conclusions on U.S. states are very similar to those drawn for international comparisons, although two differences may be noticed. The first stresses the fact that per capita income inequality is narrower in the U.S. than that among nations. The second pinpoints a bigger amplitude in the sectorial composition in the interstate comparisons than in the international comparisons.

When sub national regions of the U.S. economy are considered, one should expect them to lie on the decreasing portion of the Kuznets curve, so that the low-income states should be associated with greater income disparities than the more developed states. Perloff, Dunn, Lampard & Muth (1960, p. 522) illustrate this point with the 1955 example, when "the sixteen states with the lowest per capita income derived some 5.9% of their total manufacturing wages and salaries from 'machinery (including electrical)'; the sixteen states with middle level income, 16.3%; the sixteen states with the highest per capita incomes, 20.1%."

Tested many times on the U.S. economy, the inverse-U curve was supported by Williamson (1965) who used the county data of 1950 and 1960 (p. 19 and 20). "On the average, the eight lowest income states have a coefficient of inter-county inequality approximately two and one-half times that of the richest seven. The same pattern holds true for the 1960 data, where again severe interregional differentials are associated with relatively low levels of development."

Kuznets' expectations of natural *regional convergence* comply with the neoclassical steady state of *conditional convergence*[2] across regions, assuming the absence of factors hindering the flows of capital and labor from one place to the other.[3]

Barro and Sala-i-Martin (1990): Conditional Convergence across Regions

Acknowledged as a key reference in empirical literature, the contribution of Barro and Sala-i-Martin strongly supports what the Solow model with exogenous technological progress in a closed economy predicts in terms of convergence. Barro and Sala-i-Martin used both gross state product and per capita personal income, exclusive of all transfers, for 47 U.S. states or territories from 1880 to 1988, and found a convergence rate of about 2 percent. According to the authors, factors of production indeed flowed from low- to high-income states, leading the economies further below the steady-state position to grow faster. The evidence of convergence within the United States tends to support more the neoclassical model of growth than the evidence of convergence over large samples of many countries. The main reason is that one country's features usually contrast more with another country's than regions within the same country.

However, the later trends of increasing income inequalities observed recently in the U.S. question the neoclassical theory in that respect. The issue is controversial also in regard to the decade income inequality started to widen: the mid-1970s versus the mid-1980s.

The Renewal of the Empirical Literature based on Fiscal Data Sources

Piketty (2001): Income Inequality in France, 1901-1998 [4]

In a volume of not less than 800 pages, Piketty uses individual income tax returns (1915–98), wage tax returns (1919–98) and inheritance tax returns (1902–94) to create a homogeneous data set of income inequality, wage inequality and wealth inequality. His findings question arguments supporting the belief of a natural fading away of income inequality over time. "Mostly accidental": this is how Piketty qualifies the decline in income inequality that took place during the first half of the twentieth century in France, overall being related to the historical hazards of capital income and progressive taxation on very large fortunes.

Atkinson (August 2003) on Measuring Top Incomes: Methodological Issues

The following comments by Anthony Atkinson clearly set the tone: "There has recently been a revival of interest among economists in the distribution of top incomes. The pioneering study by Piketty (2001) produced estimates of the long-run distribution of top incomes for France. Following his lead, Atkinson (2002) made estimates for the United Kingdom, and Piketty and Saez (2003) made estimates for the United States. Estimates are now also available for Germany (Dell, 2002), Canada (Saez and Veall, 2003), Netherlands (Atkinson and Salverda, 2003), India (Banerjee and Piketty, 2001), and Australia and New Zealand (Atkinson and Leigh, 2003). (…) The findings of the recent papers are however of added interest, since the data provide estimates covering nearly all of the twentieth century – a length of time series unusual in economics. Moreover, the techniques are considerably more developed."

Atkinson (2002): "Top Incomes in the United Kingdom over the 20th Century."

Atkinson provides a full description of the Pareto interpolation technique he relies on for estimating each income fractile. According to Atkinson, no steady trend can be diagnosed over the past century. Even though "there is no longer the extent of inequality to be found before the First World war, with the Upper Ten Thousand receiving nearly a tenth of total income", the UK upper-income households has increased enough since 1979 to recover the same level of inequality as fifty years earlier.

Piketty and Saez (2003): Income Inequality in the US, 1913-1998

Thomas Piketty and Emmanuel Saez (2003) shed light on the empirical aspects of income inequality in the United States, using the Internal Revenue Service's (IRS) annual publications on Statistics of Income to create a homogeneous time-series data set on the upper shares of income and wages from 1913 to 1998. The methodology used by Piketty and Saez follows very closely that used by Kuznets (1953) on Upper income Groups in Income and Savings. There are several differences, though. The first difference lies on the definition of the upper income shares, based on individuals for Kuznets, and tax units for Piketty and Saez. Because "Kuznets did not correct for the reranking", he "misclassified in the top shares large families with high total income but moderate income per capita."[5] Relative to Saez and Piketty's, Kuznets' shares are underestimated in levels, but such a divergence does not impact the income pattern over years, which is similar in both studies.

The second difference deals with the treatment of capital gains and numerous other data adjustments. They received much less attention in Kuznets' work of 1953 than in Piketty and Saez (2003). One should be aware, however, that the IRS micro-files released from 1960 to

1995, and improving the statistics of the initial IRS tables, significantly helped Saez and Piketty in the corrections of their estimates, were not at the disposal of Kuznets at his time.

The evidence for rising inequalities in the US since the 1970s lead the authors to a re-interpret the Kuznets curve as a sinusoid. “A new industrial revolution has taken place, thereby leading to increasing inequality, and inequality will decline again at some point, as more and more workers benefit from the new innovations.” This argument matters even more once applied to the state-level analysis as the technological revolution occurred first on both coasts.

My personal research is intended to extend to the state level the data work done by Thomas Piketty and Emmanuel Saez (2003) for the US as a whole.

Geographical and Historical Aspects of Income Inequality across the United States

Objectives

This chapter is limited to the empirics of the regional inequality within the United States. I am not testing empirically the neoclassical model of growth: it has already been done by Barro and Sala-i-Martin (1990), using the BEA estimates of per capita personal income for 47 states from 1880 to 1988. Unlike the BEA state income estimates, the IRS data, available from 1913 to 2003, provide a number of income brackets accounting for income differences within each state. That the IRS figures are displayed by size of adjusted gross income allows the estimation of deciles and percentiles, dispersion statistics that should be preferred to the mean statistics when it comes to assessing income inequality.[6] This advantage of using data sorted by income ranges starts the very first page of Shares of Upper Income groups in Income and Savings by Kuznets (1953). "A distribution of income among population groups classified by the size of the income each receives inevitably emphasizes income *differences.*"

Using IRS data back to the first World War implies that only the shares of upper income groups will be considered rather than the complete size distribution of income. The only reason lies on the lack of data availability: back in the 1920s, only 10 percent of the households, high-income families, were to fill a tax return, and only 1 percent during the 1913-1916 time period. One may think at first that studying such a reduced portion of the distribution is worthless because of the remaining 90 percent left in the shadow of ignorance. However, it is worth tackling the task for at least two reasons. The first one concerns the conclusions for the lower income classes that can be drawn from the upper income shares, to a certain extent at least. The calculation of the fractiles from the upper deciles down to the median (which is possible to estimate back to the WWII) should provide more insight on the lower-income classes. The second reason deals with the significant weigh that very high incomes carry in the aggregation of individual savings.

Methodology

The methodology used here is adopted from Piketty (2001). In the very detailed annexes of Les hauts revenus en France au XXème siècle, the author describes step by step a methodology that can be summarized in the next six points: a brief description of raw data and the fractile concept in point (1), the estimation of three tables of 17 fractiles each in (2), (3), (4), the transformation from nominal to real income in (5), and the derivation of income shares that I turn into a 'top-to-average' income ratio as a possible measure of income inequality (6).

(1) Typically, the state income tables annually released by the IRS display, for each state and for a series of income brackets, the number of tax returns, the dollar amount of adjusted gross income, and its composition. Arraying these classes from the lowest income to the highest, it is possible to derive cumulative totals of households population and income, then draw partition lines splitting the distribution evenly in a series of fractiles. Fractiles divide a given set of observations into equal portions, e.g. into two halves with the median, into four quarters with quartiles (0-25 percent, 25-50 percent, 50-75 percent, and 75-100 percent), into ten equal shares with deciles (0-10 percent, 10-20 percent, etc.), one hundred shares with percentiles, etc. Even though the number of tax returns may approximate the number of households nowadays, it is not the case for earlier years. In the 1920s for instance, barely 10 percent of the American households actually filed a tax return. This means that any data set designed under the constraint of time consistency issues has to restrict the extent of its scope to the "top decile" of the income

distribution. What is called “top decile” refers to the income group that represents the richest 10 percent of the population. Fractiles can be determined graphically, e.g. the median interval simply corresponds to that bracket of income that contains 50% of the statistical population. However, to get a numerical estimation rather than a broad interval, income statisticians use the fact that typically, income cumulative curves fit the Pareto distribution fairly well. Therefore, the income dispersion literature frequently approximates fractiles applying the Pareto interpolation technique (where the curved portion of the cumulative curve is approximated to a straight segment).

(2) To start with, I computed for the year 1998 the 17 fractiles as described in Piketty and Saez (2003), so as to retrieve in my calculations their national aggregates. Piketty and Saez focus on the top decile of the income distribution because just a small fraction of the population filed a tax return in the 1920s. However, if one considers 1945 as the starting year of the second part of the sample, one should be able to compute lower fractiles, down to the median. Using Visual Basic for (Excel) Application, I calculated 6 thresholds, P90, P95, P99, P99.5, P99.9, and P99.99, for each state. Upper income shares typically contain outliers, i.e. very few observations of extremely high values, and therefore display a sharp heterogeneity; hence the multiple divisions within the top percentile. (See Appendix, *Table 1: Fractile Thresholds in Income Levels, 1998 dollars*.) For instance, in Wyoming, one has to earn more than $81,186 in 1998 to belong to the wealthiest decile of the household population. Meanwhile, $9,779,456 corresponds to the thresholds above which one enters the richest 0.01 percent of the Wyoming households. Highlighted in green are the minimum values, in plum color the maximum values of each column. In other words, an income of $175,000 would make you be part of the wealthiest 1 percent in West Virginia, or the wealthiest 10 percent in Connecticut. However, those data are to be interpreted with care, inasmuch as they do not yet take into account the cost of living differentials from one state to another.

(3) Labeled P90-100, P95-100, P99-100, P99.5-100, P99.9-100, and P99.99-100, the income levels within each fractile correspond to the income level that say, the upper 10 percent earned, on average, in 1998. Likewise for the five other fractiles. See appendix, *Table 2: Average Income within Each Fractile, in 1998 dollars*. The richest 10 percent of the Delaware households earned in 1998 about $206,435 on average. In Wyoming, $220,522 was the average income of the 10 percent wealthiest households. Again, West Virginia displays the lowest average income levels, while Connecticut keeps recording the highest ones, except for the last 0.01 percent located in Nevada.

(4) For each year and for each state, the inter-fractile values are computed, namely, P90-95, P95-99, P99-99.5, P99.5-P99.9, and P99.9-99.99, indicating the average income level of each *inter*-fractile. (See the case of 1998 in the appendices, *Table 3: Average Income within Intermediate Fractiles, in 1998 dollars*).

(5) To turn nominal income levels into real income levels, an issue that matters in any time-based analysis, the Handbook of Labor Statistics, released by the U.S. Department of Labor, Bureau of Labor Statistics, provides the annual inflation rates from 1800 to 2004. All income levels are converted into 2003 dollars.

(6) The next step is to derive a measurement indicator of income inequality. One possible way to assess inequality is to divide the real income levels previously computed by the state income average per household unit. Indeed, the top-to-average income ratio captures the departures of the upper income categories from the state mean. The state income average calculation requires the use of BEA Personal Income data by state for the numerator, and the

Census 2000 Special Reports of the BOC for the denominator. Note that in earlier years the number of tax returns filed for the fiscal administration accounts for a fraction, but not the totality, of the household population. For this reason, state aggregates (of income and households) cannot be extracted from the IRS individual tax return publications. BEA and BOC sources (for income and households respectively) had to be used instead. The top-to-average ratio was computed for the inter-fractile table only, so that for each year and for each of the 50 states (plus D.C.), there are six inequality indicators, labeled A, B, C, D, E, and F on the GIS maps:
A = P90-95 / state average
B = P95-99 / state average
C = P99-99.5 / state average
D = P99.5-P99.9 / state average
E = P99.9-99.99 / state average
F = P99.99-100 / state average

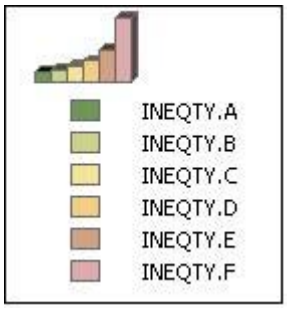
Regional Polarization: Preliminary Results for 1980-2002

Duplicating the computer programs from 1998 to all other years leads to more than the successive mimicking of one year juxtaposed to the next. Over the century, what matters is the income inequality *trend* that such this study will hopefully reveal, and the conclusions that may be drawn in terms of regional convergence versus regional polarization. The two terms 'convergence' and 'polarization' (or the self-enforcing concentration of economic activity in one location) are to be taken in their broad definition, being measured in this paper by the annual ratio of the upper class incomes in one state over the mean income of that state.

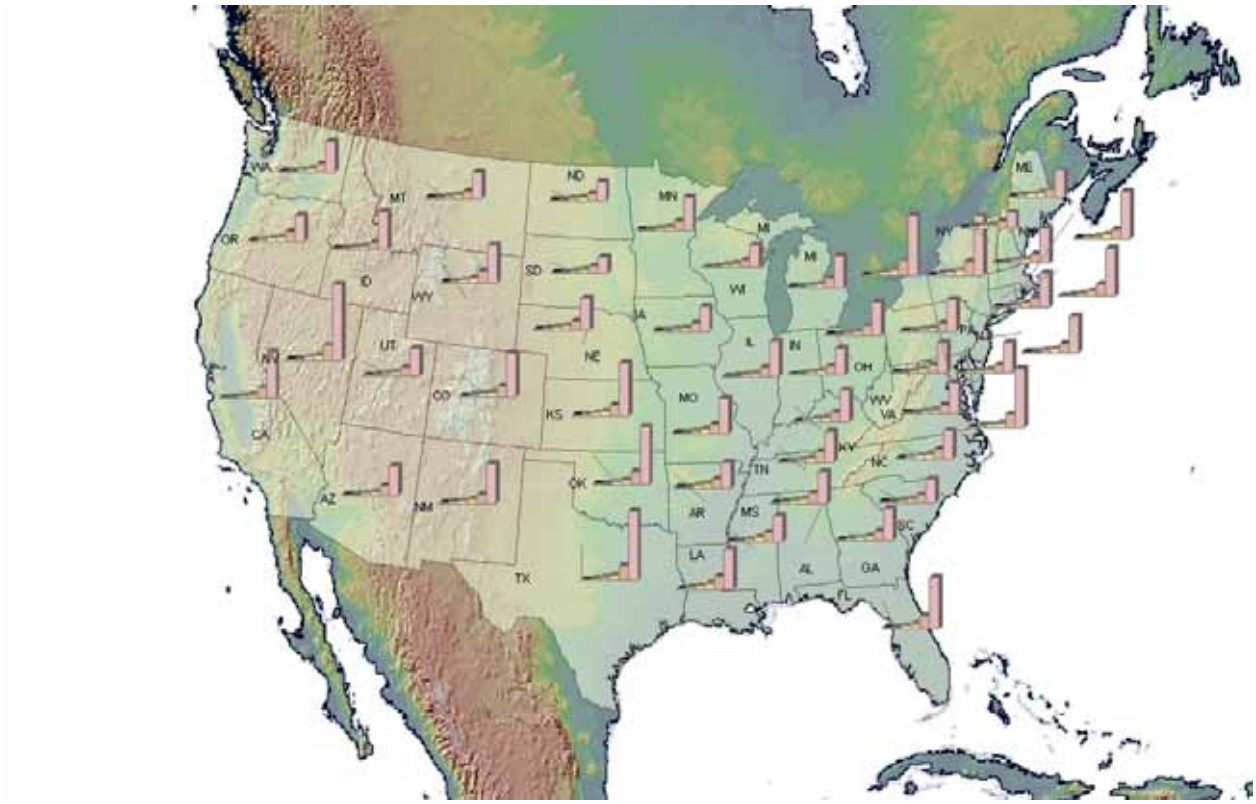
There are at least two ways of visualizing the results. The first one gives the annual picture of the six inequality ratios A to F. For instance, maps for 1980 and 2002 (the beginning and the end of the sample computerized so far) are the following:

State Income Inequality 1980 (top)
State Income Inequality 2002 (bottom)

Legend:



where:
A = P90-95 / state average
B = P95-99 / state average
C = P99-99.5 / state average
D = P99.5-P99.9 / state average
E = P99.9-99.99 / state average
F = P99.99-100 / state average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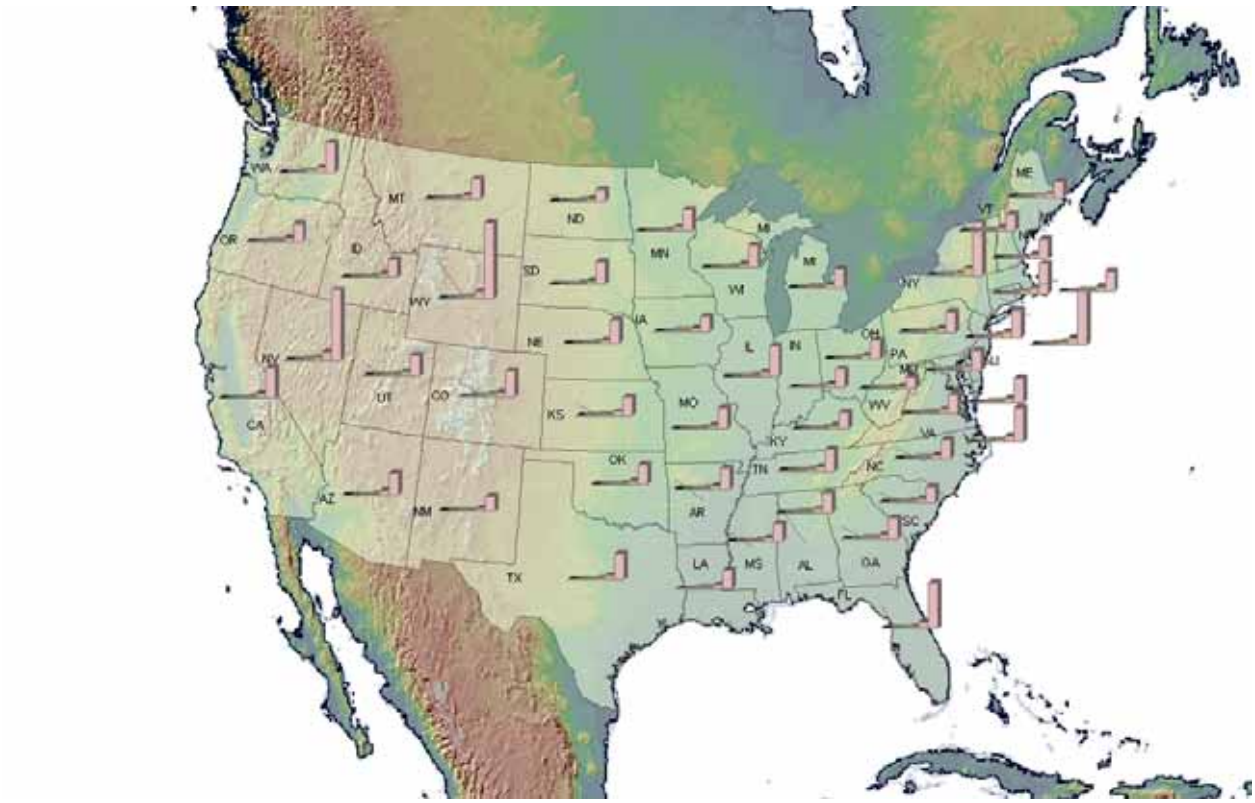
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The second visualization, an ArcScene animation, exhibits all years in just one document. It is not possible, however, to include more than one fractile category at a time. Choosing the last one (ratio F, i.e. P99.99-100 / average income), the animation file below displays from 1980 to 2002 the evolution of the richest 0.01 percent of the household population. The mono-color blue combined with a gradient of shades from light to dark indicates the fluctuations of the F indicator from constant trends (light color) to sharp fluctuations (dark).

Click here to play animation

There are at least two interpretations of the results.

- The first striking feature of the animation is an impression of randomness from one year to the other, with very wide amplitudes and almost no continuity. Typically, the income of the households in category F does not depend on steady salaries and wages as the income of the households in category A usually does. Rather, the upper-income households earn capital gains, and interests on financial assets that are subject to monetary uncertainty (e.g. speculation on international financial markets) and fluctuate in the dynamic context of imperfect information.
- The second feature is the location of the sharpest inequality in the states of Wyoming (on the inequality scale, rank 1 from 2002 back to 1998), Nevada (rank 2 for years 2002, 2001, 2000, and 1998), Connecticut (rank 3 for years 2002, 2001, and 1998), followed by New York, Florida, Delaware, Massachusetts, and Washington state.

To conclude, these preliminary results constitute a very incomplete contribution because the rest of the data (1913-1979) have not been included yet. It is therefore not possible at that point to draw any conclusion in terms of regional convergence over the long-run. But whatever the results are, the methodology used in this paper will remain the same.

ACKNOWLEDGMENTS

My gratitude and acknowledgments are fully dedicated to Professor Thomas Piketty's exceptional talent for writing passionating economic books. I would have never undertaken the task of this study without the clarity of his comments and the detail of his appendices in his impressive publication Les hauts revenus en France au XXème siècle. Inégalités et redistributions 1901-1998.

APPENDICES

Figure 1. The Kuznets' Curve

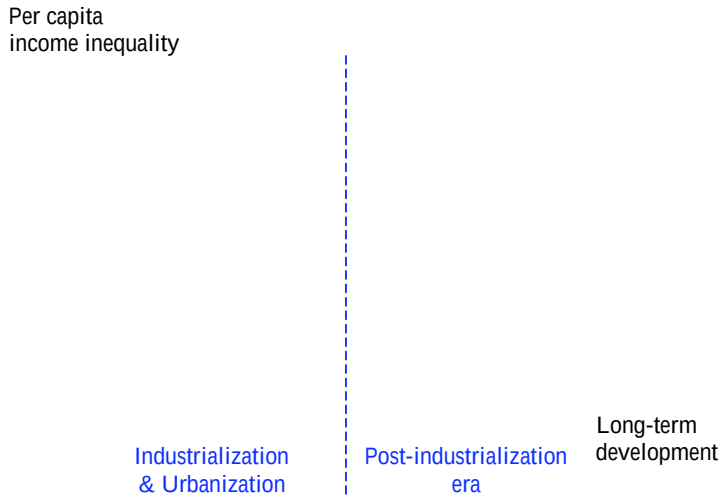

Table 1: Fractile Thresholds in income levels, 1998 dollars

	P90	P95	P99	P99.5	P99.9	P99.99
Alabama	75,876.06	100,064.83	224,606.96	349,028.10	893,903.95	3,660,925.45
Alaska	101,409.25	122,195.78	264,915.27	373,106.86	875,505.57	3,480,818.17
Arizona	82,641.17	109,104.36	264,072.60	414,943.40	1,204,132.73	5,322,952.99
Arkansas	67,688.70	88,616.47	203,474.79	278,731.76	747,022.57	3,457,020.50
California	101,384.90	138,915.18	337,470.34	543,194.02	1,668,207.34	7,964,184.36
Colorado	98,170.38	132,132.17	311,492.65	494,372.99	1,484,905.23	6,662,927.63
Connecticut	116,078.61	180,963.56	553,035.67	940,915.22	2,810,036.98	13,443,566.86
Delaware	96,244.90	122,016.29	294,377.68	459,121.44	1,288,268.04	5,665,986.66
District of Columbia	98,697.63	152,298.58	440,426.65	691,407.60	2,055,887.49	9,774,369.73
Florida	80,953.04	115,002.52	326,422.42	529,447.98	1,670,814.37	8,100,848.23
Georgia	88,919.17	120,166.64	298,684.36	459,241.16	1,251,265.86	5,204,097.45
Hawaii	87,222.49	107,646.41	246,094.13	328,262.05	864,692.23	3,285,399.74
Idaho	75,882.25	99,213.62	222,245.97	323,923.13	919,157.53	3,900,394.88
Illinois	98,517.35	133,834.48	357,467.60	568,033.09	1,695,510.67	7,708,032.43
Indiana	78,065.05	114,112.83	250,726.76	383,413.31	1,057,735.39	4,592,436.48
Iowa	79,703.40	102,821.45	222,135.75	322,195.67	848,086.12	3,584,222.60
Kansas	81,648.80	118,515.51	263,187.39	379,779.31	1,058,180.46	4,450,240.25
Kentucky	74,773.93	97,527.33	221,051.87	334,208.21	892,457.53	3,506,799.81
Louisiana	76,206.16	101,173.75	235,719.69	364,386.50	950,722.54	3,673,380.10
Maine	74,900.48	98,394.70	223,291.46	315,525.37	844,206.32	3,802,116.49
Maryland	108,723.30	141,141.68	312,832.20	487,994.30	1,373,932.93	6,013,816.82

Massachusetts	110,701.11	154,651.19	387,806.90	624,583.88	1,903,122.94	9,190,338.86
Michigan	91,874.46	112,595.21	266,154.67	418,058.35	1,200,488.03	5,351,747.43
Minnesota	92,620.34	122,795.66	297,016.01	469,079.84	1,348,101.97	6,195,527.17
Mississippi	66,663.85	85,629.07	194,154.04	300,597.80	777,449.36	3,069,383.27
Missouri	83,726.24	112,066.67	254,771.33	377,349.20	1,080,831.39	4,785,967.80
Montana	68,267.66	90,875.14	200,831.45	274,508.28	682,268.22	2,887,520.56
Nebraska	82,832.12	109,465.76	250,729.97	356,847.36	1,106,359.96	5,741,714.87
Nevada	81,138.54	108,704.11	338,763.55	573,037.89	2,028,371.01	11,198,052.90
New Hampshire	99,982.40	131,123.42	299,454.66	480,646.28	1,436,769.09	6,937,607.70
New Jersey	113,821.77	173,206.17	437,288.74	695,782.83	1,932,565.31	8,334,293.99
New Mexico	76,261.40	101,441.73	208,286.13	295,221.49	736,677.16	2,912,958.80
New York	97,665.72	136,549.10	400,160.95	688,009.46	2,092,239.07	10,271,934.83
North Carolina	85,477.13	117,140.01	267,428.41	394,204.79	1,050,562.46	4,292,296.01
North Dakota	70,031.18	91,192.62	201,312.88	239,562.57	626,802.55	2,879,414.20
Ohio	83,649.78	111,875.07	260,288.09	390,158.42	1,048,911.59	4,254,708.47
Oklahoma	71,856.92	93,677.75	207,919.37	300,633.90	860,079.83	3,600,334.84
Oregon	80,935.79	117,821.86	265,970.46	381,603.08	1,064,767.01	4,389,076.84
Pennsylvania	84,362.68	112,665.10	273,625.07	428,732.93	1,227,082.56	5,408,850.66
Rhode Island	85,970.70	112,486.67	265,468.89	415,143.90	1,183,458.88	5,196,543.14
South Carolina	78,485.32	104,073.80	236,159.86	345,766.22	931,640.29	3,858,581.71
South Dakota	69,646.90	92,692.30	225,629.13	341,063.81	922,221.73	4,493,427.28
Tennessee	79,146.14	107,962.48	260,075.53	398,516.37	1,129,486.98	4,767,140.23
Texas	85,878.69	114,635.19	286,081.66	460,357.66	1,395,009.40	6,754,518.50
Utah	80,312.66	118,123.64	270,962.28	390,007.90	1,139,854.41	4,902,486.49
Vermont	83,480.04	113,386.65	253,114.24	358,355.45	1,021,493.55	3,879,509.36
Virginia	101,546.34	132,714.69	277,793.03	435,778.42	1,212,111.70	5,556,186.50
Washington	90,411.41	117,960.62	302,418.11	499,778.88	1,687,200.13	8,541,971.36
West Virginia	65,312.06	80,884.87	173,690.98	250,873.79	600,309.39	1,954,939.25
Wisconsin	79,939.80	117,933.85	267,351.27	401,881.16	1,143,667.62	5,088,371.86
Wyoming	81,185.68	103,177.29	265,705.73	440,165.28	1,656,243.23	9,779,456.01
United States	**89,116.63**	**119,699.56**	**301,445.65**	**479,694.57**	**1,427,298.70**	**6,600,098.45**

Table 2: Average Income within Each Fractile, in 1998 dollars

	P90 - 100	**P95 - 100**	**P99 - 100**	**P99.5 - 100**	**P99.9 - 100**	**P99.99 - 100**
Alabama	153,976	221,998	573,182	872,258	2,305,659	8,970,543
Alaska	181,303	249,017	583,841	869,926	2,185,608	8,255,023
Arizona	189,484	279,316	758,786	1,192,297	3,396,499	14,263,739
Arkansas	140,225	201,882	518,227	786,058	2,232,372	9,814,279
California	246,282	375,082	1,077,171	1,733,821	5,195,148	23,562,036
Colorado	225,862	337,610	933,736	1,481,942	4,266,557	18,187,268

Connecticut	368,552	593,228	1,823,688	2,938,546	8,775,949	39,885,969
Delaware	206,435	301,367	820,468	1,279,629	3,611,318	15,088,938
District of Columbia	287,504	455,015	1,349,269	2,141,174	6,366,739	28,756,107
Florida	228,173	357,238	1,079,971	1,751,682	5,314,334	24,477,933
Georgia	200,752	296,362	787,317	1,210,537	3,284,126	12,975,954
Hawaii	165,112	228,336	540,833	796,712	2,057,452	7,426,428
Idaho	153,663	221,706	574,397	888,307	2,468,986	9,953,157
Illinois	243,745	373,131	1,077,237	1,711,781	4,952,464	21,388,875
Indiana	172,600	252,301	675,398	1,047,823	2,919,229	12,040,869
Iowa	153,507	218,653	550,735	836,189	2,267,337	9,103,214
Kansas	176,566	256,290	664,315	1,020,608	2,812,991	11,238,689
Kentucky	150,316	216,024	549,781	837,380	2,199,924	8,212,108
Louisiana	157,123	227,813	587,033	890,185	2,302,059	8,449,911
Maine	153,178	221,615	569,668	869,479	2,436,922	10,426,585
Maryland	225,960	330,109	872,554	1,361,118	3,829,081	15,922,190
Massachusetts	276,446	426,581	1,241,208	1,999,032	6,019,963	27,617,357
Michigan	195,687	283,673	763,582	1,199,385	3,421,537	14,490,474
Minnesota	212,754	316,947	871,763	1,376,783	3,992,667	17,431,799
Mississippi	134,545	191,619	486,221	739,446	1,926,187	7,224,387
Missouri	174,618	256,140	688,038	1,073,187	3,055,024	12,851,389
Montana	135,861	192,905	466,561	691,240	1,827,031	7,345,805
Nebraska	179,906	268,576	764,751	1,230,617	3,883,943	19,148,803
Nevada	259,417	418,316	1,401,888	2,371,373	7,861,754	41,232,360
New Hampshire	226,281	337,674	943,574	1,514,505	4,544,189	20,845,040
New Jersey	288,678	439,290	1,219,892	1,904,869	5,290,853	21,676,239
New Mexico	144,264	201,806	477,804	712,626	1,828,242	6,867,750
New York	276,914	439,009	1,361,960	2,226,863	6,771,898	31,584,568
North Carolina	176,977	257,535	662,322	1,010,581	2,702,535	10,489,692
North Dakota	136,150	192,135	461,796	662,311	1,855,397	8,097,182
Ohio	172,628	252,385	656,061	1,001,940	2,676,689	10,314,601
Oklahoma	145,351	208,506	536,149	820,475	2,274,165	9,043,774
Oregon	176,622	257,117	660,767	1,015,241	2,766,481	10,833,527
Pennsylvania	194,604	288,230	777,076	1,217,572	3,449,101	14,443,111
Rhode Island	191,121	280,138	747,944	1,169,646	3,310,943	13,811,367
South Carolina	159,398	230,430	591,544	900,657	2,433,621	9,575,381
South Dakota	156,630	232,652	639,689	1,003,011	2,953,400	13,670,621
Tennessee	174,646	259,487	702,968	1,091,420	3,014,994	12,088,899
Texas	210,605	317,805	912,041	1,467,641	4,428,844	20,371,886
Utah	181,128	266,403	707,204	1,103,416	3,110,676	12,709,997

Vermont	168,252	242,351	610,149	926,634	2,429,473	8,765,505
Virginia	210,852	305,038	792,753	1,243,604	3,578,022	15,581,197
Washington	234,035	360,645	1,098,685	1,815,697	5,707,550	27,451,420
West Virginia	118,360	161,250	369,901	534,273	1,230,334	3,652,228
Wisconsin	182,092	268,637	729,499	1,142,513	3,251,633	13,743,716
Wyoming	220,522	353,247	1,193,289	2,069,539	7,238,527	40,603,587
United States	**214,838**	**323,731**	**914,076**	**1,454,582**	**4,261,045**	**18,718,683**

Table 3: Average Income within Intermediate Fractiles, in 1998 dollars.

	P90 - P95	**P95 - P99**	**P99 - 99.5**	**P99.5 - 99.9**	**P99.9 - 99.99**
Alabama	85,954	134,202	274,106	513,908	1,565,116
Alaska	113,589	165,311	297,756	541,006	1,511,229
Arizona	99,652	159,448	325,274	641,247	2,189,028
Arkansas	78,568	122,796	250,396	424,480	1,389,938
California	117,482	199,560	420,522	868,489	3,154,383
Colorado	114,113	188,578	385,531	785,788	2,719,811
Connecticut	143,877	285,613	708,830	1,479,196	5,319,280
Delaware	111,502	171,592	361,306	696,707	2,336,027
District of Columbia	119,993	231,452	557,364	1,084,782	3,879,032
Florida	99,107	176,555	408,259	861,019	3,185,045
Georgia	105,143	173,623	364,097	692,140	2,207,257
Hawaii	101,888	150,212	284,955	481,527	1,460,899
Idaho	85,620	133,533	260,488	493,137	1,637,411
Illinois	114,360	197,104	442,693	901,610	3,126,196
Indiana	92,899	146,527	302,974	579,971	1,905,713
Iowa	88,362	135,632	265,281	478,402	1,507,795
Kansas	96,841	154,283	308,023	572,512	1,876,802
Kentucky	84,608	132,585	262,182	496,744	1,531,903
Louisiana	86,433	138,008	283,882	537,217	1,618,964
Maine	84,741	134,602	269,857	477,618	1,549,182
Maryland	121,812	194,497	383,991	744,127	2,485,402
Massachusetts	126,311	222,925	483,384	993,799	3,620,253
Michigan	107,700	163,696	327,779	643,847	2,191,655
Minnesota	108,560	178,243	366,744	722,812	2,499,430
Mississippi	77,471	117,968	232,996	442,761	1,337,498
Missouri	93,096	148,165	302,889	577,728	1,966,539
Montana	78,817	124,491	241,882	407,293	1,213,834
Nebraska	91,236	144,532	298,884	567,286	2,187,848
Nevada	100,519	172,423	432,402	998,778	4,153,909
New Hampshire	114,888	186,199	372,644	757,084	2,732,983

New Jersey	138,066	244,140	534,915	1,058,374	3,470,254
New Mexico	86,722	132,806	242,982	433,722	1,268,297
New York	114,819	208,271	497,057	1,090,604	4,014,934
North Carolina	96,419	156,339	314,064	587,592	1,837,295
North Dakota	80,164	124,720	261,282	364,039	1,161,866
Ohio	92,871	151,467	310,182	583,253	1,828,032
Oklahoma	82,196	126,595	251,824	457,053	1,521,986
Oregon	96,128	156,204	306,293	577,431	1,870,142
Pennsylvania	100,978	166,018	336,581	659,690	2,227,545
Rhode Island	102,104	163,187	326,243	634,322	2,144,229
South Carolina	88,365	140,152	282,431	517,416	1,640,093
South Dakota	80,608	130,892	276,368	515,414	1,762,598
Tennessee	89,805	148,617	314,516	610,527	2,006,782
Texas	103,404	169,246	356,441	727,340	2,657,395
Utah	95,854	156,203	310,992	601,601	2,044,085
Vermont	94,153	150,402	293,665	550,924	1,725,470
Virginia	116,666	183,110	341,902	660,000	2,244,336
Washington	107,425	176,135	381,673	842,733	3,291,564
West Virginia	75,470	109,087	205,528	360,258	961,234
Wisconsin	95,547	153,422	316,485	615,233	2,085,846
Wyoming	87,797	143,237	317,040	777,291	3,531,298
United States	**105,945**	**176,145**	**373,570**	**752,966**	**2,654,641**

END NOTES

[1] In Kuznets' time, the Department of Commerce defines personal income as the sum of wages, salaries, and other labor income; entrepreneurial income; dividends, interest, rent and royalties; and transfer income; less personal contributions for social insurance – or an approximation to it in the case of the Leven estimates for the earlier years.

[2] Absolute convergence refers to the tendency for the living standards of *different* countries to become more equal over time, independently of the particular characteristics of individual countries.
Conditional convergence features the tendency of living standards within groups of countries with *similar* characteristics to become more equal over time.

[3] Kuznets' inverted-U curve in capitalistic economies was conceived in the political context of the Cold War, a detail that should not appear as the result of a pure coincidence.

[4] The original version is the following: Piketty Thomas. Les hauts revenus en France au XXème siècle. Inégalités et redistributions 1901-1998. Grasset. 2001.

[5] Piketty and Saez (2003), p.37.

[6] The problem of the mean will not be totally overcome, however, in the sense that the estimates calculated not only provide income thresholds above which a household belongs to a particular income group, but also provide the average income of that income group.

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