The Evolution of Economic Inequality in the United States, 1969-2012: Evidence from Data on Inter-industrial Earnings and Inter-regional Incomes

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Abstract

This paper provides measures of earnings inequality in the United States across economic sectors, measured within states, from 1969 through 2012, and of income inequality across counties, from 1969 through 2007. These measures permit detailed decomposition of changes in inequality, highlighting the major gainers and losers in relative terms. They illustrate the roles played by the financial sector, by the technology boom, by war-time public spending and by the real estate bubble in driving the evolution of economic inequality in the United States.

Between-industry earnings inequality in the United States

In 1955 Simon Kuznets postulated that industrialization first increases inequality because factories pay more than farms, but that inequality later declines as the weight of agriculture in the employment mix drops. Thus in Kuznets' simple model there are two sources of inequality: the difference in average wages between farms and factories, and the distribution of the population across these sectors. A reduction of either sector or of the differential will decrease the inequality measured between sectors.[2] The famous inverted-U hypothesis is mainly based on inter-sectoral transitions in the process of economic development, as the balance of workers in the two sectors first increases and then declines.

In the complex modern U.S. economy we can measure changing earnings inequality using the same principles. Overall inequality measured across sectors depends on the differentials between average wages by sector and on their comparative size. As the work of Conceição, Galbraith and Bradford (2001) shows, classification schemes that break the economy into a relatively small number of sectors often capture the major dimensions of pay variability. Economic sectors are a particularly sensitive fault line – the relative fortunes of sectors capture many important economic changes. With sectoral data, for instance, it is true that pay inequalities among individuals *within* particular firms and industries are not captured. But while these inequalities are substantial, they tend (partly for institutional reasons, such as the stability of intra-firm pay hierarchies) to vary less, over time, than the inequalities between sectors. So even a coarse, sector-level disaggregation often captures most of the changes that occur.

Method and measurement

The Bureau of Economic Analysis (BEA) publishes annual earnings and employment data for industrial sectors the nation as the whole and for individual states. Earnings are defined as "the sum of Wage and Salary Disbursements, supplements to wages and salaries and proprietors' income" and derive from a virtual census of employers' tax records. (BEA 2008). As such, there is almost complete coverage of the (formal) working population with minimal reporting error.

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[2] Kuznets was not interested in inequalities stemming from non-labor sources of income, such as capital gains, and excluded them from his analysis to avoid undue complications. Our sector analysis follows Kuznets in being based on payrolls; however the geographic analysis is based on income tax returns and so includes capital gains and other forms of unearned income.

From 1969 until 2000, data were organized according to the Standard Industrial Classification (SIC) coding system. Beginning in 2001, the BEA dropped the SIC schema in favor of the North American Industry Classification System (NAICS). To ease comparisons between the two taxonomies, the BEA released recoded data for the 1990 to 2000 period using the NAICS categories. Thus, there are two annual datasets with a decade of overlap, one from 1969 to 2000 and the other from 1990 to 2012.

Many of the standard inequality metrics can be used to describe the distribution of pay; we focus on Theil's T in our calculations. Given the wage bills and employment levels for a mutually exclusive and completely exhaustive set of industries, Theil's T is:

$$T'_{Sectors} = \sum_{i=1}^{m} \frac{p_i}{P} * \frac{y_i}{\mu} * \ln(\frac{y_i}{\mu})$$

where p_i is the number of jobs in sector i, P is the total number of jobs in the United States, y_i is the average pay in sector i, and μ is the average pay for all jobs. We refer to the terms within the summation sign, one for each category, as "Theil elements." As with Kuznets' hypothesis, inter-sectoral pay inequality is a function of the relative size of the sectors and of their relative wages.

In addition to measuring inequality between sectors, Theil's T Statistic allows us to identify those sectors most responsible for changing inequality. By examining the Theil elements, we can isolate the contribution of each sector to total inequality between sectors. The Theil element will be positive or negative, depending on whether the sector's average earnings are greater or less than the national average, with the contribution weighted by sector size. By construction, the sum of the positive elements must be greater than the sum of the negative elements.

An attractive property of Theil's T is decomposability. Given two or more groups, total inequality is made up of two components, a between-group component (T'_g) and a within-groups component (T^w_g), each of them always positive, and the latter a weighted sum of the inequalities measured inside each group.

$$T = T'_g + T^w_g$$

As a moment's reflection will confirm, expanding the number of groups transfers inequality from the within-groups component to the between-groups component, so that T'_g grows and becomes a closer approximation of total inequality as the group structure becomes more fine. However, if we are correct in thinking that between-sector movements dominate the evolution of inequality, it should not be necessary to disaggregate too much, before the major movements in the structure of incomes over time become clear. In practice, Theil's T measured across fairly coarse group structures is a simple, inexpensive, and robust way to calculate and track the movement of economic inequalities through time.

The evolution of between-sector earnings inequality

Figure 1 displays *earnings inequality* calculated on the SIC basis from 1969 to 1990 and the NAICS basis from 1990 to 2012 (authors' calculations from BEA data) and Census Bureau measures of household *income inequality* over a similar period (DeNavas-Walt et al. 2008). These earnings inequality measures are based on a relatively fine disaggregation of sectors-within-states -- that is oil drilling in Texas compared to farming in Utah compared to retail in Rhode Island compared to all the other combinations of states and sectors.
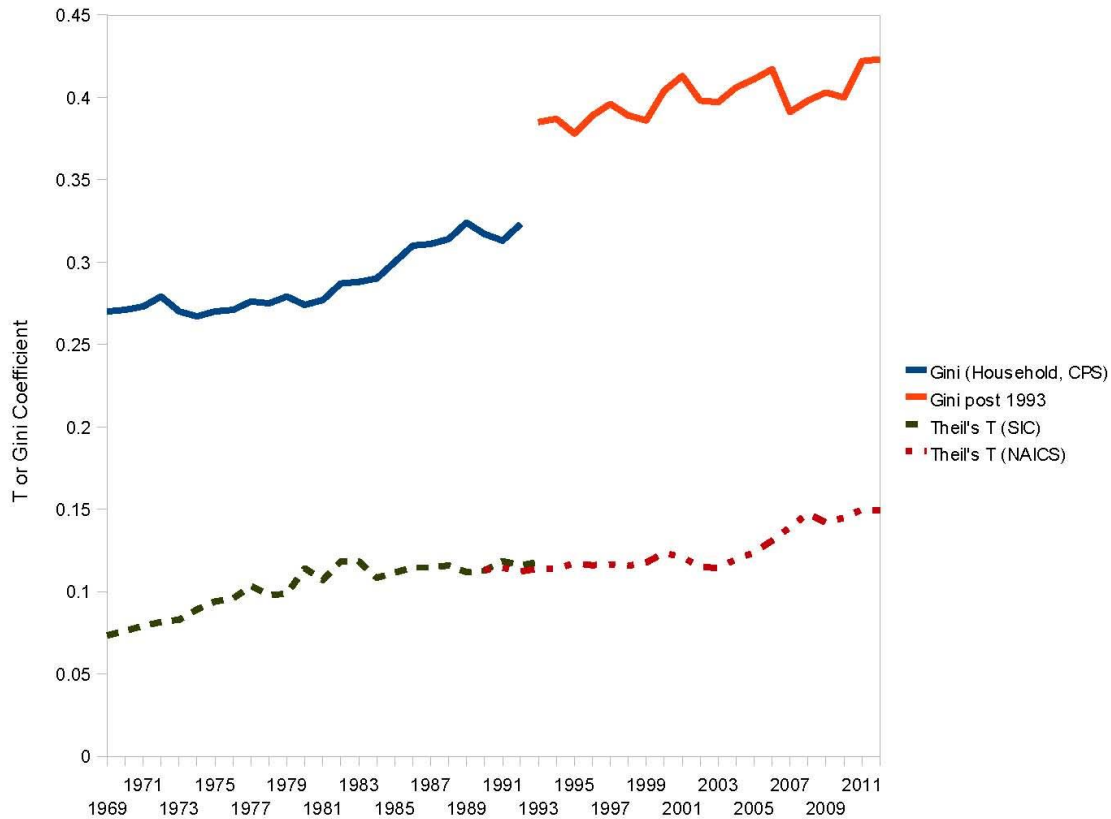
Figure 1. Between State-Sector Earnings Inequality and Household Income Inequality 1969–2012[3]

Earnings inequality rose substantially over the period observed, but the rate of change varied. From 1969 to 1982, the between state-sector measure of Theil's T increased 61%, but following the sharp rise in the recessions of the early 1980s, earnings inequality remained flat until 1994. There was another run-up in the late 1990s, coinciding with the information-technology boom, and then again in the 2000s.

The shift in coding regimes from SIC to NAICS has little effect on the pay inequality metric. On the other hand, the CPS-based household income inequality measure has a major data break in the early 1990s (apparently related to the revised treatment of top-coding), as the figure shows. When this is adjusted for, the two series show approximately similar rates of change through time, though year-to-year fluctuations do vary. The richness of the BEA data allows us to explore pay inequality through a myriad of lenses – broader or narrower sectorizations at the state and the national level. Figure 2 displays Lorenz Curves for 4 different group structures in 2007: 51 states (all sectors combined), 21 national sectors, 93 national sectors, and 4389 (very narrow) sectors-within-states.[4]

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[3] A change in top-coding values and survey methodology accounts for the break in the Gini series between 1992 and 1993.
[4] We variously treat Washington D.C. as a state- and a county-equivalent depending on the context. The Appendix lists the available NAICS-based sectors.
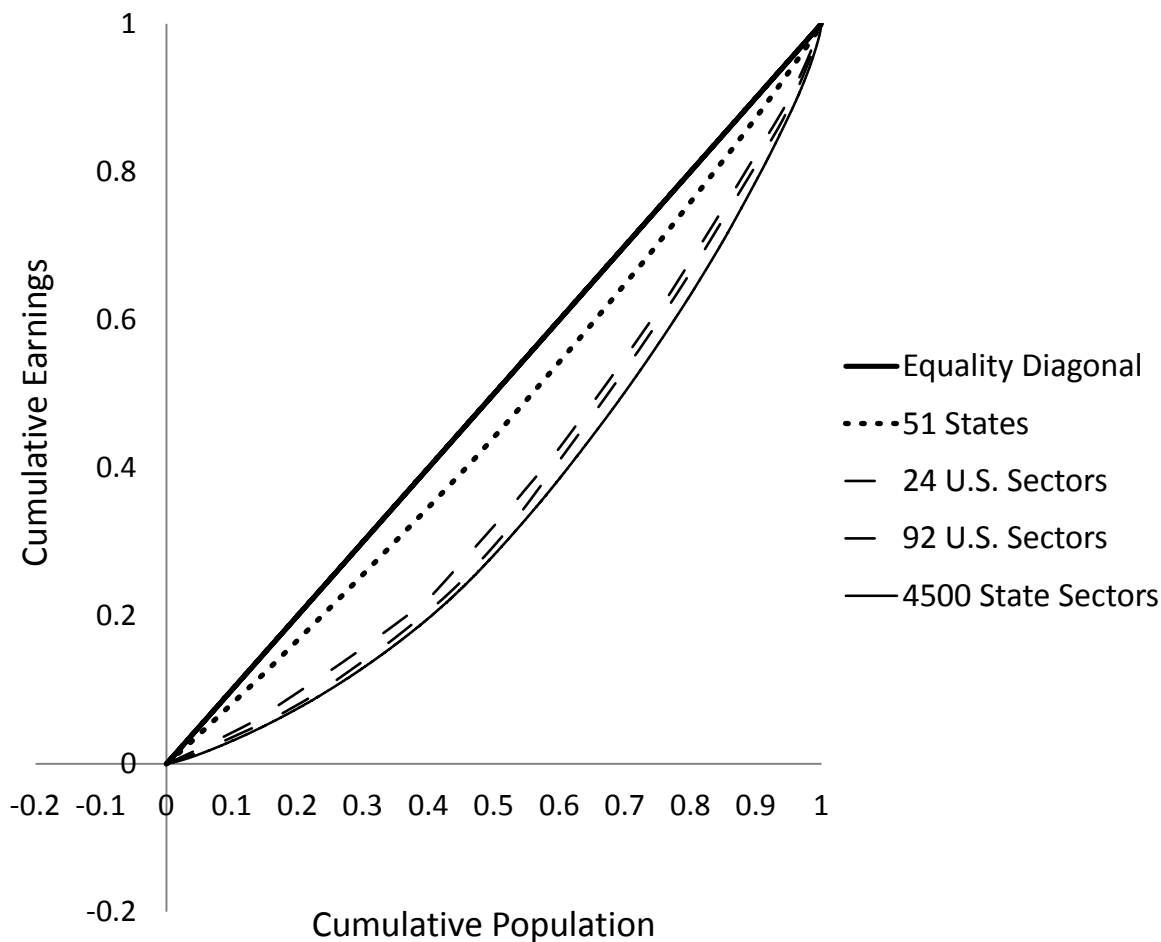
Figure 2. Lorenz Curves for the U.S. Distribution of Pay in 2012 Using Various Group Structures

Each of these Lorenz curves has an associated Gini coefficient – 51 States: 0.089; 21 National Sectors: 0.259; 93 National Sectors: 0.301; 4389 State Sectors: 0.320. As one adds detail, of course inequality increases. The graphs and Gini coefficients also show that in the United States, sector matters more than state. There is greater inequality in pay *between* industries, even at a fairly coarse level of disaggregation, than *between* states. Second, adding sector detail or combining state detail with the sector detail provides little additional information – the set of 21 national sectors captures the bulk of between-state-sector pay differences and the set of 93 national sectors captures almost all of it.

Figure 3 displays the evolution of pay inequality from 1990 to 2012 using the same four category structures. The different measures move together over time, which shows that it is not necessary to disaggregate in order to capture time-variation. Yet each between-sector metric is useful in its own way. The 21-sector national measure is easier to visualize, while the more detailed measures help to identify those narrow groups most responsible for changes.
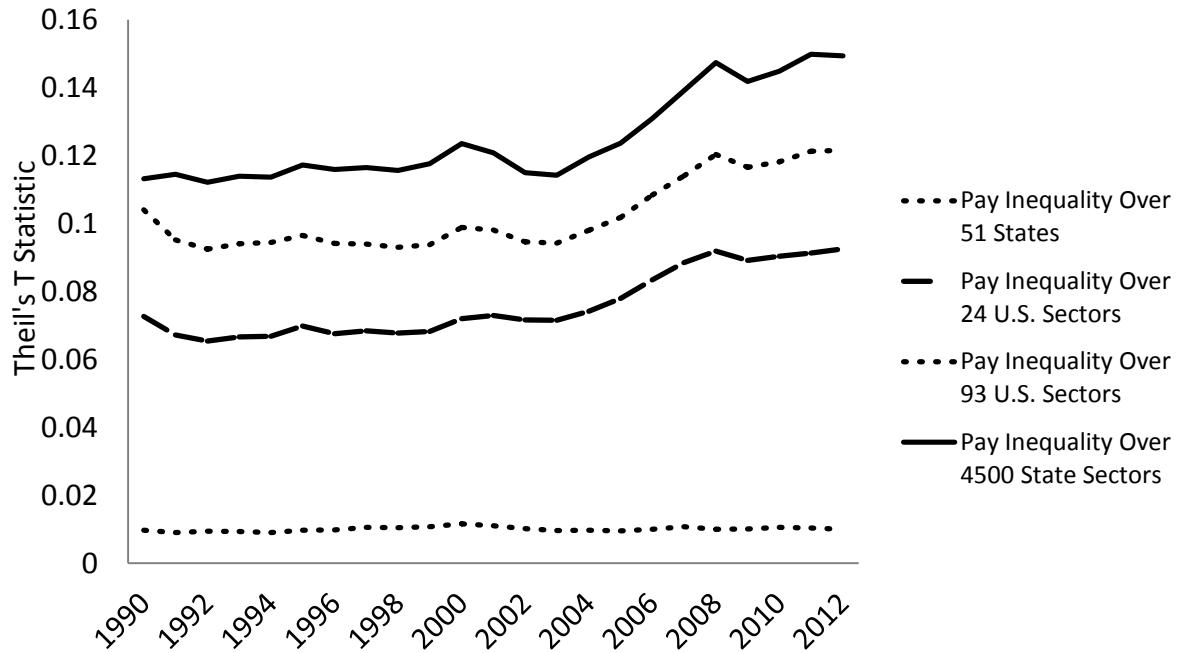
Figure 3. U.S. Pay Inequality 1990 to 20012 Calculated Using Alternative Category Structures

Figure 4 breaks down the annual measures of pay inequality among the 21 broad national sectors into their constituent Theil Elements. The black line tracks the Theil's T, while the stacked portions of the bar graphs show the Theil elements. From the zero line upward, the major contributors to inequality are manufacturing, professional scientific and technical services, management of companies and enterprises, federal civilian government, wholesale trade, information, local government, and finance and insurance – the last being the volatile large blocks toward the top of the diagram[5]. From the zero line downward, retail trade, accommodation, other services, waste management and real estate are the leading lower-income sectors. Health care occupies a thin line just at the zero line: health is a large sector, but with average earnings just at the national average, and therefore little net effect on inequality.

Several trends emerge clearly. One is the rise of professional, scientific and technical services in the information-technology boom through 2000. Another is the waning of the public sector, both federal and local, from 1990 to 2000 and then its recovery as a significant contributor to inequality in the early 2000s. It is notable that the Democratic years under Presidents Clinton and Obama were not banner ones for government; this sector fared better under the Republicans. A third trend is the rising importance of finance and insurance during the boom years from 1990 until 2001 but even more so during the run up to the financial crisis in 2007. Thereafter, the relative weight of the financial sector shrinks – and overall inequality also declined a bit. Taken as a whole, the period from 1990 to 2012 was one of rising earnings inequality, with a peak in 2000 and again in 2007. Inequality then subsides, but quickly recovers and by 2012 it was near or at its previous peak.

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[5] Finance and insurance is shown in orange in the color version of the graphic.
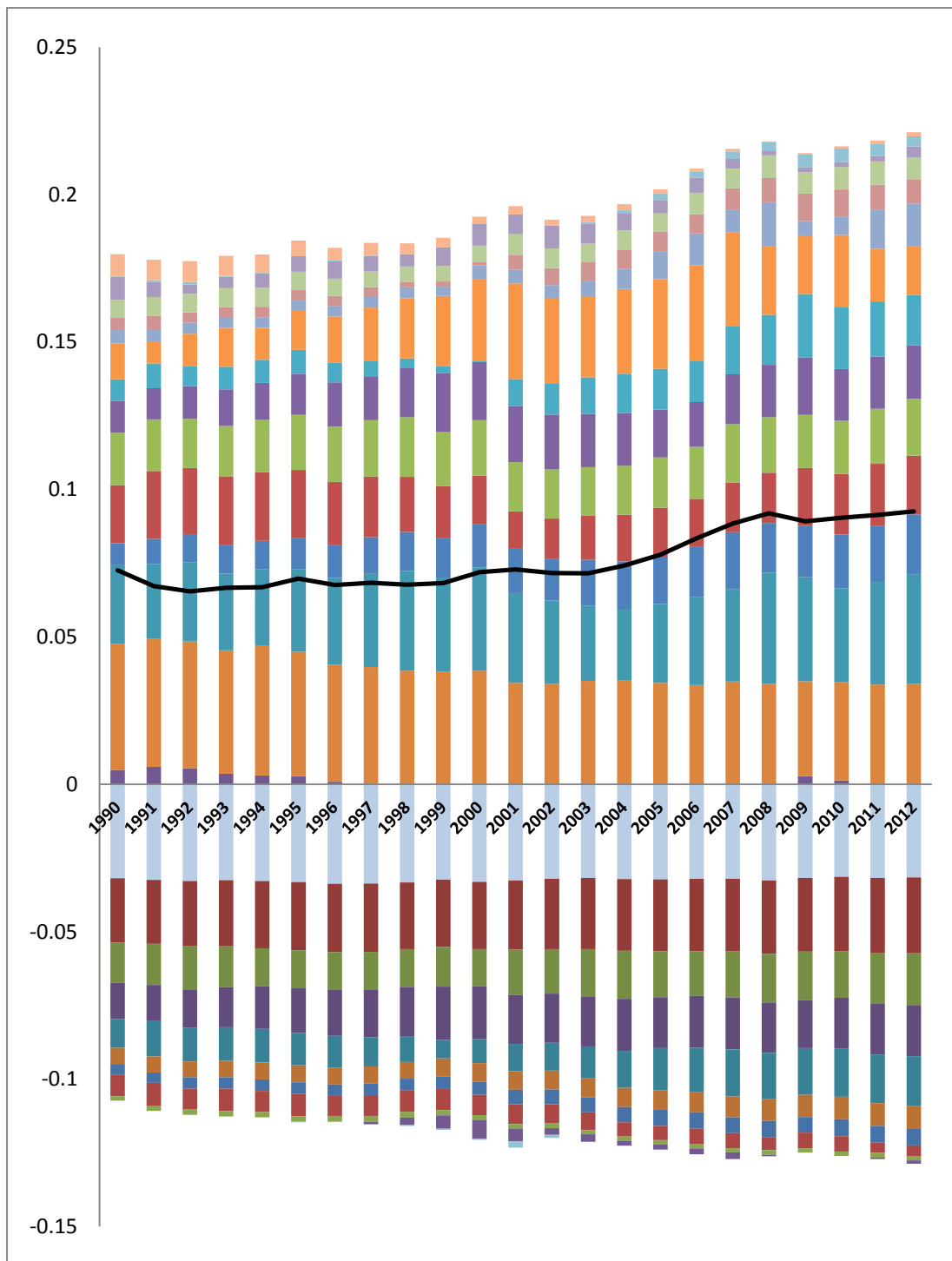
Figure 4. Theil Elements of Between-Sector Pay Inequality in the U.S. 1990 – 2012

As Kuznets taught, the source of increasing inequality may be either changes in relative wages or changes in sector employment shares. Though a massive contributor to inequality, finance and insurance saw a slight decline in jobs over this period. Its contribution to rising inequality came from strong (though variable) growth in relative earnings. Professional and technical services, spurred (as noted) by the information technology revolution, gained employment share and also experienced a small increase in relative earnings. Manufacturing, a high-wage sector, maintained or improved its relative wage position but lost employment. Administrative and waste services and real estate rental and leasing, which both

experienced significant employment gains, added the most to growing inequality from below. Relative average earnings in real estate actually improved, which would tend to reduce inequality, but not enough to offset the flood of new jobs into what remains a low-paid sector.

Winners and losers during the information-technology and beltway booms

When we expand the number of sectors subject to analysis, from 21 to 93 and beyond, we find that only a small handful of sub-sectors, with a very small minority of the nation's workforce, account for the most significant changes in pay inequality observed at this time.

Common sense can guide the search for these high-impact sectors. The emergence of personal computing and information technology as major forces in the mid- to late 1990s and the mortgage-finance bubble of the mid 2000s were the hallmark economic phenomena of those times. From 1996 to 2000, for example, nominal earnings per reported job in computer and electronics manufacturing rose from $57,268 to $83,848. From 2001 to 2006, earnings per job for construction of buildings grew from $53,140 to $66,112, *and* the sector added more than 300,000 jobs. For these reasons, computer manufacturing and construction were significant contributors to the increase in earnings inequality during these episodes. Other sectors saw comparably wide swings in their fortunes, but it turns out that these, taken together, affected only a very small fraction of the total workforce. Thus pay increases in sectors listed in Table 1, which contained only 3.8% of all workers in 2001, account for the entire rise in pay inequality during the late 1990s.

Table 1. Average Earnings in 1996 and 2001 in 12 High-Growth Sectors

Sector	Average Earnings	
	1996	2001
Computer and electronic product manufacturing	$ 57,268	$ 78,198
ISPs, search portals, and data processing	$ 44,426	$ 68,175
International organizations; foreign embassies; consulates	$ 83,632	$ 107,550
Internet publishing and broadcasting	$ 54,116	$ 82,080
Funds, trusts, and other financial vehicles	$ 50,132	$ 79,931
Utilities	$ 82,384	$ 113,605
Oil and gas extraction	$ 49,765	$ 90,958
Broadcasting, except Internet	$ 91,831	$ 133,576
Securities, commodity contracts, investments	$ 46,249	$ 88,604
Petroleum and coal products manufacturing	$ 124,821	$ 200,367
Lessors of nonfinancial intangible assets	$ 91,556	$ 192,836
Pipeline transportation	$ 93,285	$ 299,978
All other Sectors	$ 31,276	$ 38,099

These boom sectors experienced a 58% climb in nominal average earnings in this five year period, while all other sectors gained 22%. The employment growth rate in the high flyers, on the other hand, was roughly half that for the rest of the economy. Thus the separation of the boom sectors from the rest of the economy explains *all* of the increase in between sector inequality from 1991 to 2001. This is evident in Figure 5, which parses Theil's T for between-sector earnings inequality into three components: inequality *among* the IT boom sectors, inequality *among* the sectors in the rest of the economy, and inequality *between* the high-growth sectors and the rest of the economy writ large from 1991 to 2001.
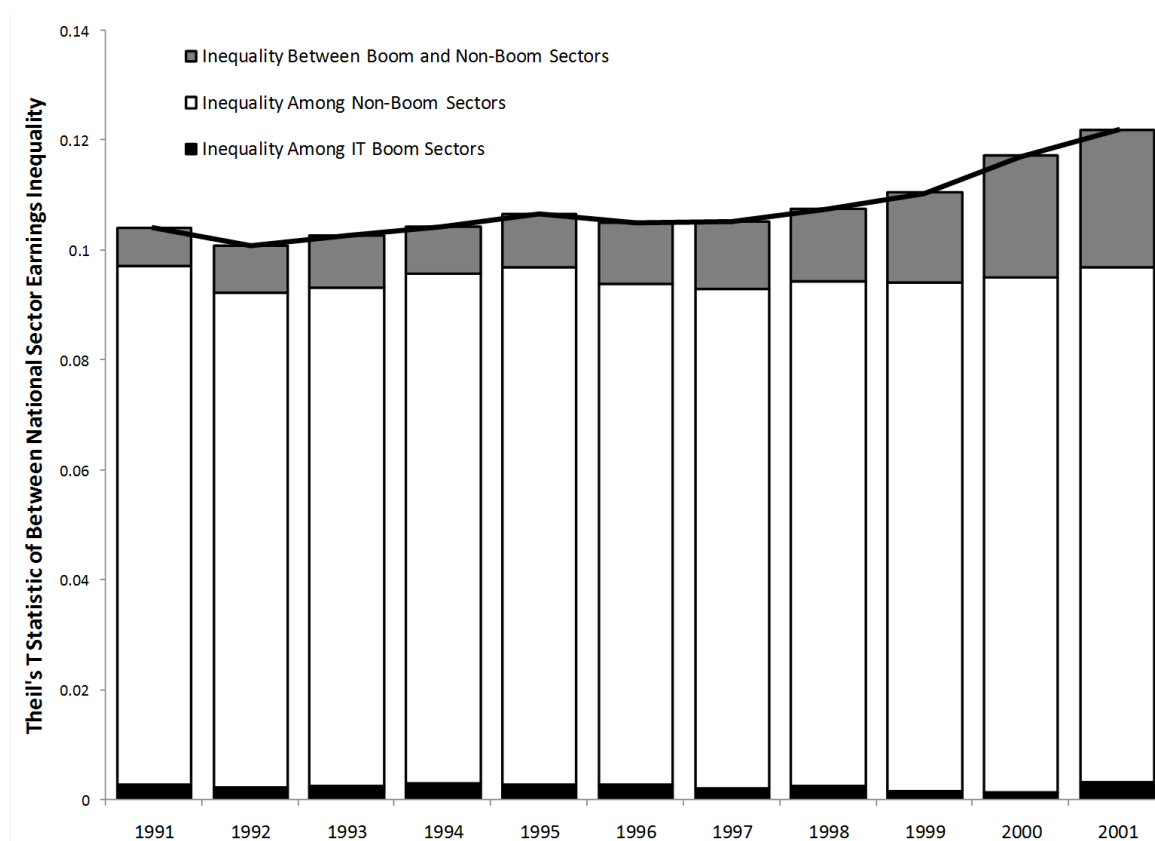

Figure 5. Between-Sector Inequality 1991–2001

Inequality *between* the boom and the not-boom sectors, taken as groups, is clearly the driving force behind rising inequality overall. Inequality between the 12 sectors in Table 1 that make up the boom sectors was essentially unchanged from 1991 to 2001. Inequality between the other 82 national sectors actually declined a bit. But inequality between the booms and the boom-nots rose significantly, accounting for all of the 17.2% increase in between-sector earnings inequality during this period.

The rise in between-sector pay inequality from 2003 to 2007 reflects wage gains in a wider array of sectors that contain a higher percentage of employment, so the gains in those years were more broadly based. But the pattern is similar. Table 2 shows average wages in fifteen high-growth sectors from 2003 to 2007.

These sectors accounted for 7.4% of total jobs in 2007. From 2003 to 2007, average earnings in these "Bush boom" sectors increased 32%, while earnings in the rest of the economy averaged 13%, barely keeping pace with inflation. Once again, the rate of job growth in the high-flyers was half of that for the other sectors. After experiencing brief stagnation in earnings growth during the information-technology bust, computer and electronic product manufacturing and securities, commodity contracts, and investing experienced strong rebounds in earnings from 2002 to 2007. However, neither of these sectors regained the

employment levels of 2000. To the contrary, for instance, computer and electronic product manufacturing shed 29% of its workforce from 2000 to 2007.

Table 2. Average Earnings in 2003 and 2007 in 15 High-Growth Sectors

Sector	Average Earnings	
	2003	2007
Military	$ 53,178	$ 71,616
Federal, civilian	$ 79,153	$ 98,844
Computer and electronic product manufacturing	$ 88,365	$ 108,125
Mining (except oil and gas)	$ 66,671	$ 89,371
Water transportation	$ 70,634	$ 93,452
Management of companies and enterprises	$ 83,618	$ 106,587
Support activities for mining	$ 61,650	$ 87,241
Chemical manufacturing	$ 97,062	$ 124,020
Utilities	$ 127,487	$ 157,138
Securities, commodity contracts, investments	$ 83,053	$ 113,907
Broadcasting, except Internet	$ 149,362	$ 197,862
Other information services	$ 34,490	$ 86,726
Oil and gas extraction	$ 98,979	$ 167,418
Pipeline transportation	$ 181,197	$ 263,350
Petroleum and coal products manufacturing	$ 185,070	$ 363,962
All other sectors	$ 38,989	$ 43,949

Figure 6 shows the contributions of inequality among the Bush boom sectors, inequality among all other sectors, and inequality between the high growth sectors and lower-growth sectors from 2000 to 2007.

Unlike the information technology boom, the Bush boom saw rising inequality *among* the boom sectors, *among* the sectors in the rest of the economy, and also *between* those sectors that surged ahead and those that stayed behind. Nonetheless, in this period, as before, the disparity between the booms and boom-nots explains the majority of the total increase in between-sector earnings inequality.
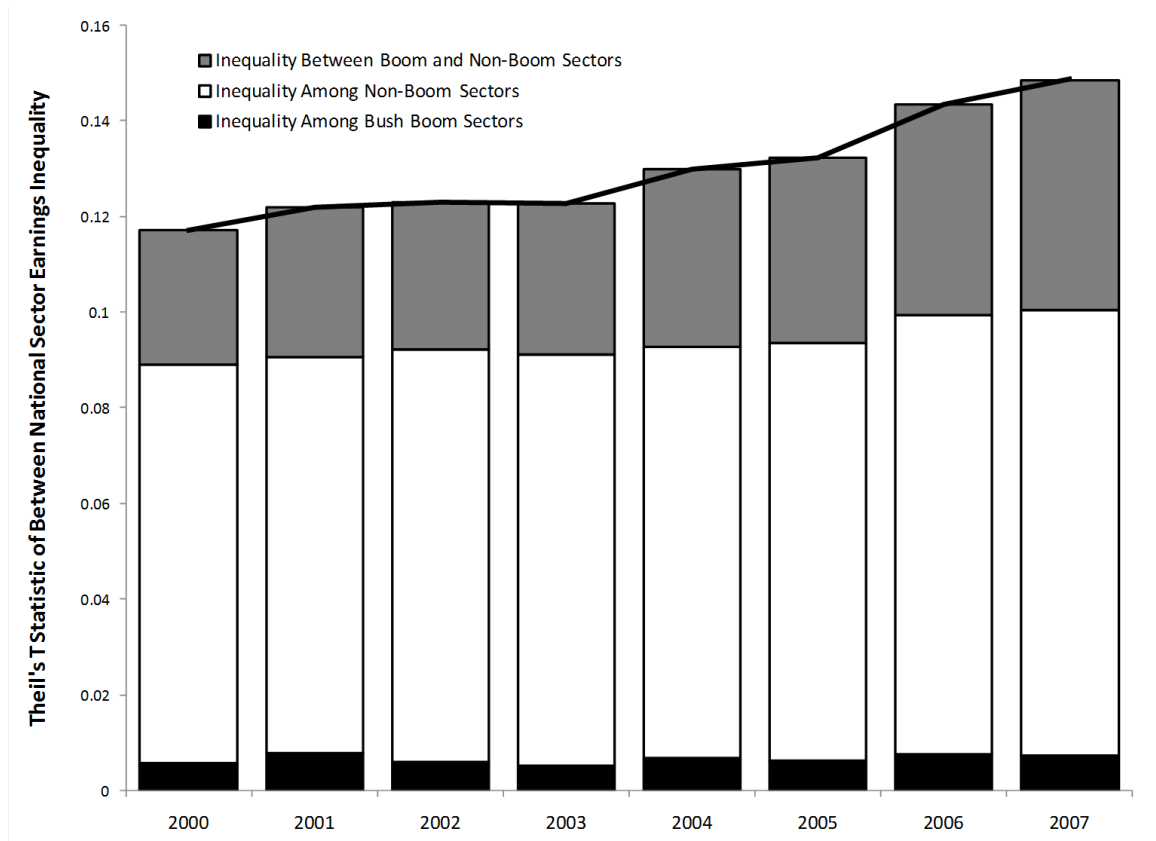
Figure 6. Between-Sector Inequality 2000 –2007

By coincidence or design, sector performance has an apparent political dimension. Bankers and technologists were key supporters of President Clinton; those sectors thrived during his presidency. Under President Bush, workers in extraction industries, the military and government did well, doubtless reflecting the pro-oil and empire-building policies of those years.

The lagging sectors are also informative. In the 2000s, for instance, declining fortunes in the auto industry mitigated the effect on total inequality of expansion and earnings gains in other sectors. The motor vehicles, bodies and trailers, and parts manufacturing sector, which consistently pays high wages, lost jobs and saw stagnant earnings from 2002 to 2007; thus inequality *declined* on that account. This is of course not good news, and sounds a caution against regarding any inequality statistic as *per se* indicative of social welfare.

Education as an inequality remedy?

When public discourse admits inequality to be a problem, education is often given as the cure. According to Treasury Secretary Henry Paulson (2006), for instance, the correct response to rising inequality is to "focus on helping people of all ages pursue first-rate education and retraining opportunities, so they can acquire the skills needed to advance in a competitive worldwide environment." This is a view with powerful support among economists. But the simple inter-sector dynamics show clearly that, as a solution to inequality, education is a bust.

As we've shown, the last two decades have seen significantly *slower* job growth in the high-earnings-growth sectors than in the economy at large. So even if large numbers of young people do "acquire the skills needed to advance" *there is no evidence that the economy will provide them with jobs to suit*. Many will simply end up not using their skills. Moreover, a strategy of investment in education presupposes

advance knowledge of *what the education should be for.* Years of education in different fields are not perfect substitutes, and it does little good to train too many people for jobs that, in the short space of four or five years, may (and do) fall out of fashion. And experience shows clearly that the population *does not* know, in advance, *what* to train for. Rather, education and training have become a kind of lottery, whose winners and losers are determined, *ex post*, by the behavior of the economy.

Students who studied information technology in the mid-1990s were lucky; they were a scarce few who could find places easily in a tiny but lucrative sector. Those who completed identical degrees in (say) 2000 were not so fortunate, as all-too-many of them know. Likewise, who predicted that the *public sector* would prosper under President Bush? And what happened to those who then prepared for public service, under President Obama, the chief executive of the fiscal cliff and the sequester?

The changing geography of American income inequality

Next we turn to a discussion of income inequalities measured across geographic entities, including states and their subdivisions, the counties. As shown above, variation in earnings across 21 sectors exceeds variation in earnings across the 51 states. But there is, nevertheless, substantial geographic dispersion of earnings, and even more of incomes. At the state level, per capita income ranged from $27,028 in Mississippi to $57,746 in Washington D.C. in 2006; county average income spanned $9,140 per person in Loup, Nebraska, to $110,292 in New York, New York. In this section we explore these differences.

Method and measurement

The BEA definition of income includes wages and salaries, but also incorporates rent, interest and dividends, government transfer payments, and other sources.[6] As such, income provides a broader picture of economic well-being than earnings. The ideal dataset for studying income inequality would include regular measurements of income for all individuals or households along with geographical and demographic identifiers. Such data exists in the form of income tax returns, at least for those required to file, but researchers do not have access to individual records. Thus the major work on top incomes (Piketty, 2014) stratifies by percentiles, a useful procedure but one that leaves much to the imagination.

On the other hand, the BEA uses tax records to produce income estimates for each county in the United States annually.[7] Together with population records, these data are provided through Local Area Personal Income Statistics in the Regional Economics Accounts (BEA 2008). Given this annual data set, we can calculate Theil's T for between-county income inequality.[8] Income, contrary to the earnings measure, includes capital gains and other returns from capital assets. Our logic is the same as before. Changes in between-county income inequality have two components – changes in relative population and changes in relative incomes. Inequality declines when poor counties add income faster than rich counties or middle income counties add population faster than counties at either tail of the distribution. When rich counties get relatively richer, poor counties get relatively poorer, or middle income counties lose population share, inequality rises.

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[6] "Personal Income is the income that is received by all persons from all sources. It is calculated as the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. The personal income of an area is the income that is received by, or on behalf of, all the individuals who live in the area; therefore, the estimates of personal income are presented by the place of residence of the income recipients" (BEA 2008).
[7] Source data for BEA income estimates come from a host of government sources, including: "The state unemployment insurance programs of the Bureau of Labor Statistics, U.S. Department of Labor; the social insurance programs of the Centers for Medicare and Medicaid Services (CMS, formerly the Health Care Financing Administration), U.S. Department of Health and Human Services, and the Social Security Administration; the Federal income tax program of the Internal Revenue Service, U.S. Department of the Treasury; the veterans benefit programs of the U.S. Department of Veterans Affairs; and the military payroll systems of the U.S. Department of Defense" (BEA 2008). We have not yet updated these measures through 2012.
[8] "Counties are considered to be the "first-order subdivisions" of each State and statistically equivalent entity, regardless of their local designations (county, parish, borough, etc.). Thus, the following entities are considered to be equivalent to counties for legal and/or statistical purposes: The parishes of Louisiana; the boroughs and census areas of Alaska; the District of Columbia; the independent cities of Maryland, Missouri, Nevada, and Virginia; that part of Yellowstone National Park in Montana; and various entities in the possessions and associated areas" (National Institute of Standards and Technology 2002).

The evolution of between-county income inequality

From 1969 to 2006, between-county income inequality in the United States increased, but the path was not smooth. From 1969 to 1976 cross-county inequality declined. A steady rise in inequality occurred until the mid-1980s, and then accelerated through the end of the decade. 1990 to 1994 saw another decline, but another reversal pushed inequality to new heights through 2000. An equally steep decline followed through 2003. Figure 7 plots two series of U.S. income inequality, the Census Bureau between-household measure and our own between-county measure.
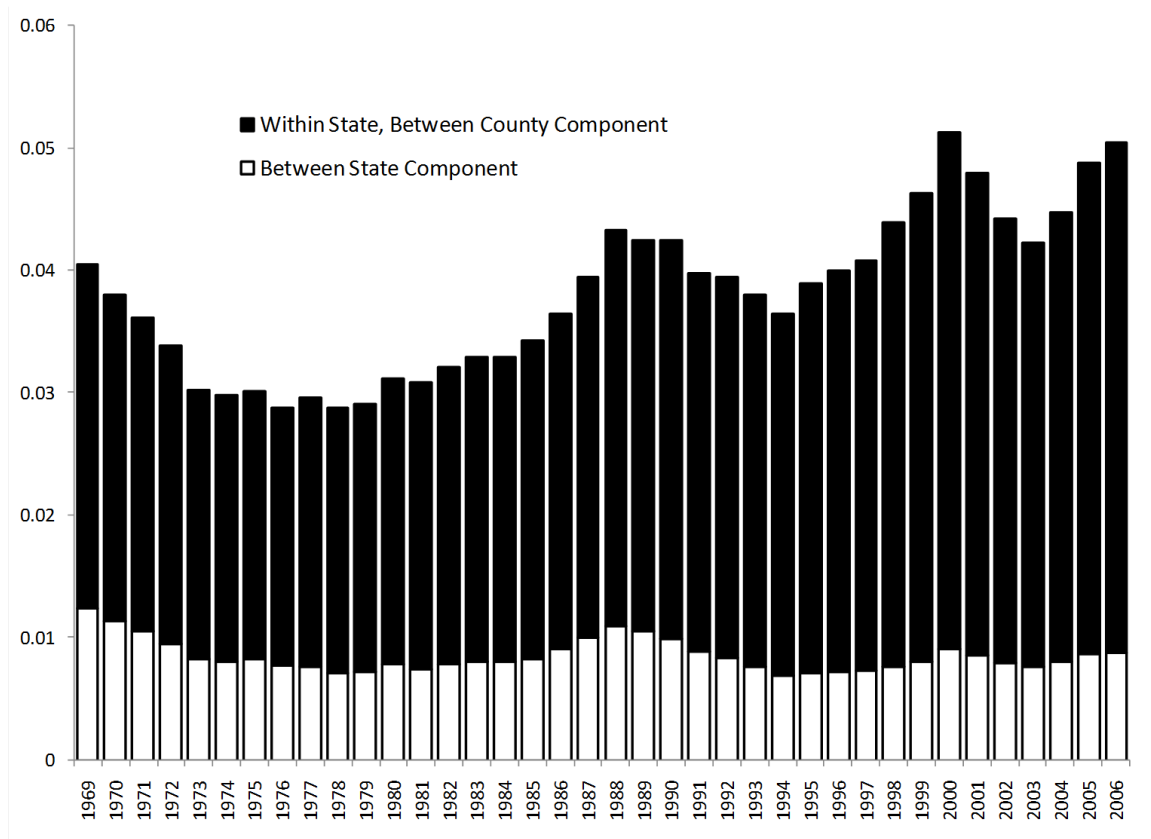

Figure 7. U.S. Income Inequality 1969–2006

Since the early 1970s, the two series show similar trends, a sharp rise in income inequality during the 1980's and a peak and trough around the information technology boom and bust. Between-county inequality shows greater relative variability during this period.

The movements of between-state income inequality and between-county income inequality are closely related, but the volatility of the latter is markedly greater. Figure 8 plots the between-state component and sum of the within-state components of county income inequality from 1969 to 2006. The height of the bar represents total between-county inequality, and the white portion represents the between-state component.

Despite the close association in the annual movements of the between-state and between-county series, state per-capita incomes converged during the 1969 to 2006 period while county and household incomes grew further apart. The reduction in state income variation occurred as the South became more closely integrated with the nation as a whole over the last 40 years. For example, although still the lowest in the nation, per capita income in Mississippi has grown from 62% of national per capita income in 1969 to 74% of national per capita income in 2006. Alabama, Arkansas, Georgia, South Carolina, North Carolina, and Tennessee made similar gains.

Figure 8. Components of Theil's T Statistic of Between-County U.S. Income Inequality 1969–2006

The information-technology boom, the bust, and beyond

From January 1994 to February 2000, the tech-heavy NASDAQ Composite index rose from 776.80 to 4,696.69, a 605% increase. Enthusiasts celebrated the bull market as evidence that the "new economy" would drive American prosperity into the future. Liberals (and not only liberals) lamented the spectacular rises in high-end pay and of inequality more generally. Few noted that the two phenomena were identical. Figure 9 matches the level of between-county income inequality – lagged one year – against the natural logarithm of the NASDAQ Composite. The two series move together seamlessly from 1992 to 2004, with the same peaks and troughs and the same proportional change.

As technology firms' stock prices rose, their employees (especially their executives) and stockholders reaped the benefits in the form of options realizations and capital gains. If employment and share ownership in the technology sector had been uniformly distributed, this would have had little impact on the between-county measure of inequality. But technological firms were and are concentrated around such cities as San Francisco, Seattle, Raleigh, Austin, and Boston. The financiers are concentrated in Manhattan. Income growth in the counties comprising these areas accounted for almost all of the inequality increase between counties in the late 1990s, and when the information technology boom ended in 2000, falling relative incomes in these same areas reduced aggregate between-county inequality.

In particular, the four counties that contributed most to the increase in between-county income inequality from 1994 to 2000 also contributed most to the inequality decline from 2000 to 2003 – New York, NY; Santa Clara, CA; San Mateo, CA; and San Francisco, CA.
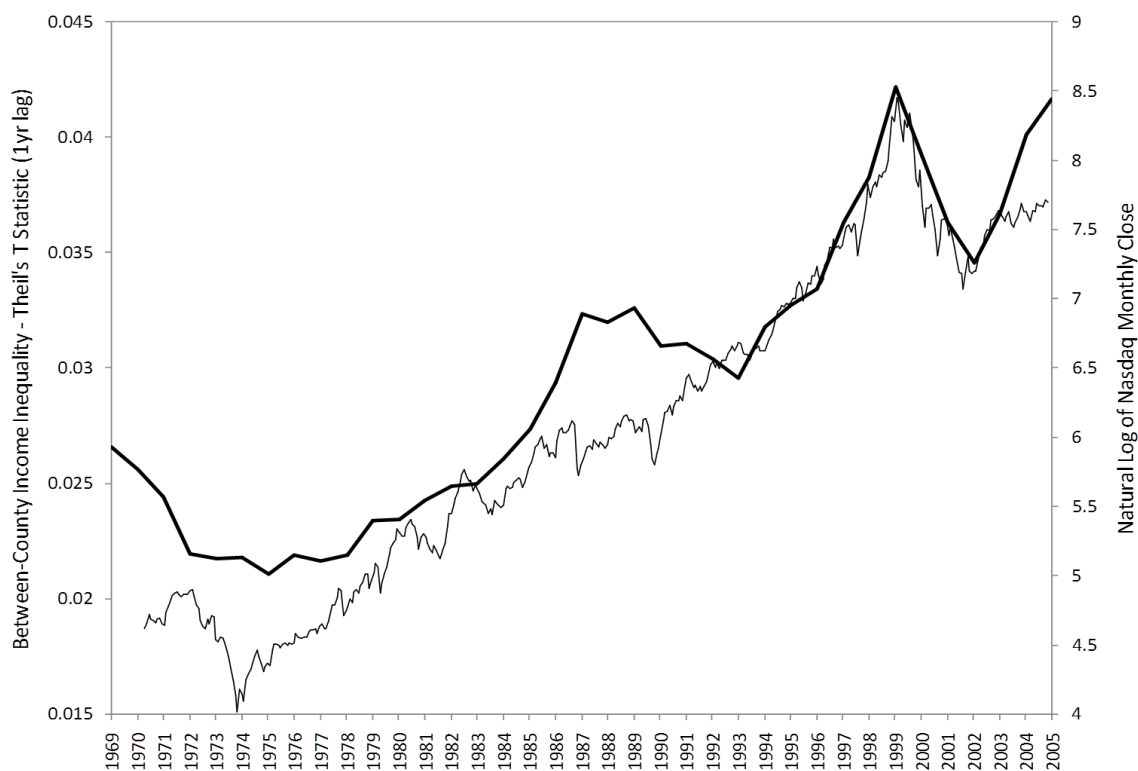
Figure 9. Theil's T Statistic of U.S. Between-County Income Inequality 1969–2006 Plotted Against the Natural Logarithm of the NASDAQ Composite Index

Table 3. County Population and Per Capita Income for Selected Counties 1994, 2000, 2003, 2006

Population	1994	2000	2003	2006
San Francisco, CA	742,316	777,669	759,056	756,376
San Mateo, CA	674,871	708,584	698,132	700,898
Santa Clara, CA	1,561,366	1,686,621	1,678,189	1,720,839
New York, NY	1,503,909	1,540,934	1,577,267	1,612,630
U.S.	263,125,821	282,194,308	290,447,644	298,754,819
Per Capita Income	**1994**	**2000**	**2003**	**2006**
San Francisco, CA	$ 33,164	$ 55,658	$ 53,864	$ 69,942
San Mateo, CA	$ 33,628	$ 58,893	$ 52,235	$ 66,839
Santa Clara, CA	$ 29,255	$ 54,183	$ 46,569	$ 55,735
New York, NY	$ 56,905	$ 85,752	$ 82,904	$ 110,292
U.S.	$ 22,172	$ 29,845	$ 31,504	$ 36,714

The rebound in inequality from 2003 to 2006 was of two pieces. First, many though not all, of the technology and finance counties experienced renewed income growth – New York County most of all. Second, there was a concentration of increasing income around Washington D.C., thanks to the federal government, and in Southern California, New Orleans, Las Vegas, and Southern Florida, areas central to the mortgage-finance boom.

Thus rising geographic income inequality from 1994 to 2000 was largely an artifact of the information-technology boom. That bust inflicted large, arbitrary and unnecessary losses on many who were not prepared to shoulder them. Nevertheless, as Robert Shapiro, former Under Secretary for Economic Affairs in the Department of Commerce, wrote:

> "The American bubble represented an excess of something that in itself has real value for the economy – information technologies. The bubble began in overinvestment in IT and spread to much of the stock market; but at its core, much of the IT was economically sound and efficient. Further, these dynamics also played a role in the capital spending boom of the 1990s, and much of that capital spending translated into permanently higher productivity. The result is that the American bubble should not do lasting damage to the American economy" (2002).

To this, we add that full employment achieved in the late 1990s raised living standards broadly and engendered lasting productivity gains, as well as demonstrating that full employment can be achieved without inflation, something much of the economics profession had not believed possible before that time. From 2003 to 2006, the region around the national capital thrived. Much of this was related to the growth of military activities with wars in Afghanistan and Iraq. However federal civilian spending also grew rapidly, and there was also substantial growth in spending by private sector lobbies. Income growth in Southern California and other areas was likely related to the mortgage-finance boom, the phenomenon that led to the financial crisis.

The economic consequences should, as with the earlier period, be judged in part by the worth of the activities undertaken. However, it is already clear that the 2000s saw no very broad revival of private-sector economic dynamism. A main economic beneficiary of government spending was the government itself and those associated with it. Given the broad ideology of the incumbent administration, this is, as we've said before, ironic.

Interpreting inequality

Even before the onset of the financial crisis, economic inequality was on its way to becoming a bipartisan concern, at least so far as political rhetoric goes. Thus, President Bush:

> "I know some of our citizens worry about the fact that our dynamic economy is leaving working people behind. We have an obligation to help ensure that every citizen shares in this country's future. The fact is that income inequality is real; it's been rising for more than 25 years. The reason is clear: We have an economy that increasingly rewards education, and skills because of that education… And the question is whether we respond to the income inequality we see with policies that help lift people up, or tear others down." – President Bush; State of the Economy Report Address at Federal Hall, New York; Jan. 31, 2007

A week later, Federal Reserve Chairman Ben Bernanke put it this way:

> "Thus, these three principles seem to be broadly accepted in our society: that economic opportunity should be as widely distributed and as equal as possible; that economic outcomes need not be equal but should be linked to the contributions each person makes

to the economy; and that people should receive some insurance against the most adverse economic outcomes, especially those arising from events largely outside the person's control." – Chairman of the Federal Reserve Ben Bernanke, Remarks before the Greater Omaha Chamber of Commerce; February 6, 2007

Perhaps most striking, in an appearance on the Charlie Rose Show on September 20, 2007, former Federal Reserve Chairman Alan Greenspan said flatly, "You cannot have a market capitalist system if there is a significant mood in the population that its rewards are unjustly distributed." Whether sincerely offered or not, these comments echo the concerns of policy makers and analysts on the Left (e.g., Neckerman 2004), who emphasize the effect of inequality on health, education, and democratic participation.

There is little doubt that when rising inequality reflects higher unemployment and lower pay at the bottom of the scale, the measure of inequality captures a major economic problem. But inequality in earnings and incomes can rise in response to growing employment, or innovation or speculation – under circumstances where no one is actually losing ground. In such cases it is necessary to take a more subtle view. Consider the relationship between changes in employment and changes in U.S. between-county income inequality, as shown in Figure 10.
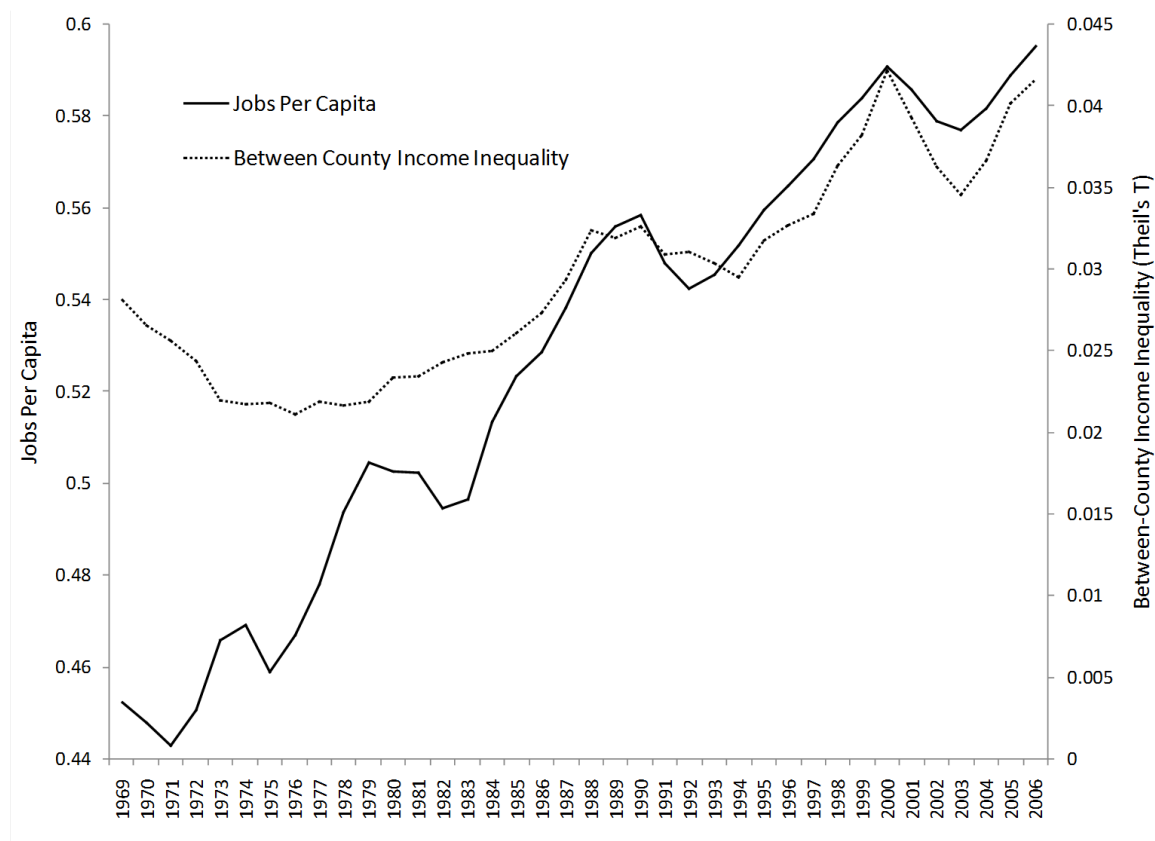
Figure 10. U.S. Between-County Income Inequality and Jobs Per Capita 1969–2006

From 1969 to 1989 the series measuring inequality and jobs-per capita are only loosely linked. Over this period, the levels have a correlation of 0.47, and year-to-year changes are almost totally uncorrelated. However, since 1990, employment and inequality have moved together. The levels have a correlation of 0.95 and the year-to-year changes have a correlation of 0.79. A rising tide may lift all boats, but recent business cycles have been more like waves, in which certain sectors and areas ride the peaks before crashing to the shore. This is a sign, surely, not of the social evil of inequality as such, but of the instability of bubble economies, for which, since 2007, we have paid a fearsome price.

Conclusion

In recent decades economic inequality increased, mainly due to extravagant gains by the already-rich. This type of inequality has consequences; most notably it affects the distribution of political power. Increasing incomes at the top of distribution may also ratchet up consumption in ways that filter down throughout society and cause behaviors that reduce social welfare (Frank 2007). Still, relative deprivation is not the same as absolute deprivation. Rather, the deeper issue with inequality of this type is instability: the rocket also falls. A problem with the trick of generating prosperity through inequality is that it cannot be repeated indefinitely, or even often.

Finally, the economic downturn after 2008 led to somewhat larger losses in the absolute earnings, wealth and incomes of the well-off than those the working poor. As such, the slump led, briefly, to a decrease in measured inequality within the United States. *Schadenfreude* aside, this was not especially good news. The debacle, after all, was a terrible debacle, irrespective of the effect on an inequality number. But it was not good news either, that inequality then recovered, alongside the stock market, while so little else did.

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Appendix: NAICS Sectors

Farming

Forestry, fishing, related activities, and other

   Forestry and logging

   Fishing, hunting, and trapping

   Agriculture and forestry support activities

   Other

Mining

   Oil and gas extraction

   Mining (except oil and gas)

   Support activities for mining

Utilities

Construction

   Construction of buildings

   Heavy and civil engineering construction

   Specialty trade contractors

Manufacturing

   Wood product manufacturing

   Nonmetallic mineral product manufacturing

   Primary metal manufacturing

   Fabricated metal product manufacturing

   Machinery manufacturing

Leather and allied product manufacturing

   Paper manufacturing

   Printing and related support activities

   Petroleum and coal products manufacturing

   Chemical manufacturing

   Plastics and rubber products manufacturing

Wholesale trade

Retail trade

   Motor vehicle and parts dealers

   Furniture and home furnishings stores

   Electronics and appliance stores

   Building material and garden supply stores

   Food and beverage stores

   Health and personal care stores

   Gasoline stations

   Clothing and clothing accessories stores

   Sporting goods, hobby, book and music stores

   General merchandise stores

   Miscellaneous store retailers

   Nonstore retailers

Transportation and warehousing

Air transportation

Rail transportation

Water transportation

Truck transportation

Transit and ground passenger transportation

Pipeline transportation

Scenic and sightseeing transportation

Support activities for transportation

Couriers and messengers

Warehousing and storage

Information

Publishing industries, except Internet

Motion picture and sound recording industries

Broadcasting, except Internet

Internet publishing and broadcasting

Telecommunications

ISPs, search portals, and data processing

Other information services

Finance and insurance

Monetary authorities - central bank

Credit intermediation and related activities

Securities, commodity contracts, investments

Insurance carriers and related activities

Funds, trusts, and other financial vehicles

Real estate and rental and leasing

Real estate

Rental and leasing services

Lessors of nonfinancial intangible assets

Professional and technical services

Management of companies and enterprises

Administrative and waste services

Administrative and support services

Waste management and remediation services

Educational services

Health care and social assistance

Ambulatory health care services

Hospitals

Nursing and residential care facilities

Social assistance

Arts, entertainment, and recreation

Performing arts and spectator sports

Museums, historical sites, zoos, and parks

Amusement, gambling, and recreation

Accommodation and food services

Accommodation

Food services and drinking places

Other services, except public administration

Repair and maintenance

Personal and laundry services

Membership associations and organizations

Private households

Government and government enterprises

Federal, civilian

Military

State government

Local government