Do They Really Matter?

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Abstract
The study examines income inequality in Texas during the period 1975 through 2004. The objective of the study is to estimate income inequality within the state and suggests ways to address possible policy measures that affect or involve implications related to income inequality. The Theil Index is used to examine income inequality in the 254 counties in Texas. The results indicate that there is a significant upward linear trend in income inequality in Texas during the period under consideration. Further analysis suggests that only a few regions within Texas extensively contribute toward changes in income inequality. Further, within the various regions, few counties account for the upward trend in income inequality in Texas. Income inequality in the state as well as within each region is concentrated within a relatively small group of counties.

Introduction
“The millions of today want, and have a right to, the same security their forefathers sought—the assurance that with health and the willingness to work they will find a place for themselves in the social and economic system of the time” (Shales, 2007). These words uttered in 1938 by Franklin D. Roosevelt are still true today. The United States of America (U.S.) is known throughout the world as the “world’s greatest super power”, both in military muscle and in economic strength. The U.S. is one of the wealthiest nations in the world and has one of the highest standards of living in the developed world. It is the land of dreams and opportunity, where anyone who is willing to work hard has a reasonable probability of acquiring at least some measure of wealth.

Unfortunately, this dream and the opportunities to pursue the great American dream do not exist for many people. Despite the presence of obvious wealth as a nation, it has become common knowledge in recent years that income inequality in the United States has been on the rise. The gap between the richest Americans and the poorest Americans has been widening for some time. Comprehensive studies from as far back as the 1970’s have documented the trend of rising income inequality; and many have successfully linked increased income inequality to health related issues (Lasser, Himmelstein, and Woolhandler, 2006), and education levels (Zuckerman, 2006; [1]). The purpose of this investigation, therefore, is to evaluate the various studies that have been conducted on income inequality and to develop our own analysis of trends in income inequality in the state of Texas.

Income inequality is a subject that repeatedly gains the attention of policy makers and the public in the U.S. Whether it is to draw attention to rising income inequality in an attempt to emphasize the poor job public officials are doing, or whether it is to draw attention to a decrease in income inequality to emphasize effective public policy, income
inequality is a hot topic for debate in the political arena. At any given time, it is possible to find experts who make logical and persuasive arguments that income inequality is decreasing while another set of experts make logical and persuasive arguments that income inequality is rising.

Both extreme sets of conclusions are often based on the same data that has been manipulated in different ways. For example, Treasury Secretary Henry M Paulson Jr (with a “solid consensus of experts”) has acknowledged that income disparities have increased, but has attributed the widening gap to “the rapid pace of technological change” (Johnston, 2007). Diana Furchtgott-Roth, a former chief economist at the Labor Department argues that earnings in recent years have been strong when one takes into account benefits such as health care (Shlaes, 2007). On the other hand, Robert Greenstein, the executive director of the Center on Budget and Policy Priorities, says that economists need to look beyond rising incomes and reduced taxes and include fringe benefits to workers and government services that middle-class and poor Americans rely on more than the affluent, such as health care, child care, and education spending (Johnston, 2007). The expectation of this study is that a long term trend in rising income inequality in the state of Texas does exist. Presuming that this expectation is supported, evidence will exist to support additional implications regarding income distribution.

The income distribution in the United States is constantly changing due to many factors, including innovation, entrepreneurship and perhaps even corruption. Corporate collapses and outsourcing leave well-paid workers to join the ranks of the unemployed. New government public policies, particularly with respect to changes in government leadership, create new rules and new winners and losers. This somewhat turbulent political and economic environment affects individuals as well as income differences between states, regions, and even counties within a given state. What causes these fairly sweeping changes in income inequality? Why is income inequality such an important element of the American macroeconomic environment? This paper investigates various issues surrounding the importance of a rising trend in income inequality and suggests some implications with respect to public policy.

Documenting the trends of income distribution is so important because as income inequality increases, more and more people find themselves migrating between income brackets. The majority of work done on income inequality has focused on national trends. The focus of this study is income inequality in the state of Texas. Texas is home to some of the wealthiest people in the nation as well as some of the poorest people in the nation. Loving County, in the region identified as West Texas, is the wealthiest county in the United States. Of the 250 poorest counties in the nation, 30 are located within Texas, including the poorest county in the nation, Starr County (Center on Budget Policy and Priorities, 2007). The added factor of increased legal and illegal immigration into Texas (due to its proximity to Central and South American countries), exacerbates income inequality in Texas. In a recent study conducted by the Center on Budget and Policy Priorities (2007), Texas had the greatest income inequality between the top and middle-income families in the early 2000s, and has the second greatest income inequality gap between the top and bottom-income families in the early 2000s. In three other national distributions identified in this income inequality study, Texas ranks sixth in the nation for having the greatest disparities between income percentiles (see Appendix – Table A). It is therefore relevant to examine the rising income inequality as a potential guide for future researchers and policy makers in their efforts to address issues related to income inequality. This paper next will briefly review selected literature
related to income inequality, followed by a discussion of the research methodology, including the research hypothesis, the data for the study and the analysis. We conclude with a short discussion of the findings and some potential policy applications conclude the paper.

The Research Methodology

This study is based on data collected from 254 counties in Texas from the 1975 through 2004 time period. The income data for this study comes from the Bureau of Economic Analysis (BEA) Regional Economic Accounts (2007). Annual data on population and personal income was retrieved from the BEA regional accounts archives on a per capita basis. Data collection also included average annual per capita personal income for the state of Texas as well annual population numbers for the state over the analysis period.

There are many measures that can be used to determine inequality, some of which include variation, inter-quartile range and the Gini Coefficient. Inequality can be defined in many ways, and can be subject to various interpretations, which may not be applicable to the study. For this study, we will use Theil’s T Statistic to calculate inequality because of the between-group element of the statistic as well as for the flexibility the statistic offers (Galbraith, 2006). The Theil T Statistic is free of certain distortions that arise from using the Gini coefficient. The Theil Statistic ignores all variation among individuals within counties but it allows us to isolate the effect of each county separately compared to the state distribution.

Theil T values have been calculated for each county for every year from 1969 through 2004. These values are then summed to arrive at a single Theil value for the state of Texas for each year over the selected time period. The final Theil T Statistic values are plotted in order to help determine if any inequality trend exists throughout Texas during the period of interest.

The Theil T Statistic for the ith county is calculated as follows:

\[ T = \sum \{(p_i/P) * (y_i/\mu) * \ln (y_i/\mu)\} \]

Where \( i \) represents the individual county, \( p_i \) is the county population, \( P \) is the total population of the state of Texas, \( y_i \) is the per capita personal income of each county and \( \mu \) is the annual per capita personal income for the state of Texas. Compiling these individual Theil statistics over time provides the Theil index for the area of interest.

Hypothesis

The principle research question under investigation is: Does a linear trend of increasing income inequality exist in Texas? The null hypothesis to be tested is \( H_0: \) No linear trend versus the alternative hypothesis \( H_A: \) Otherwise.

The null hypothesis is that no linear trend in income inequality exists within the state of Texas (e.g. the slope of the regression line is zero). The alternative hypothesis is that a linear trend (TR) of income inequality does exist within the state. A linear trend analysis is modeled as:

\[ TR = \beta_0 + \beta_1 t_i + \varepsilon \]
where $\beta_0$ represents the intercept coefficient and $\beta_1$ represents the slope of the regression line and $t_i$ represents the time period of interest. A linear trend implies that there is a straight-line long-term growth ($\beta_1 > 0$) or long-term decline ($\beta_1 < 0$) (Bowerman, O’Connell, Koehler, 2005). A regression analysis will help determine if any observed long-term linear trend in income inequality in Texas is statistically significant.

Galbraith (2006) provides a rather complete discussion of Theil’s T Statistic, including its computation and its interpretation. Please refer to this paper for additional information relative to the theoretical and practical application of Thiel’s T Statistic.

While it is evident from the data presented in Figure 1 to conclude that there is a steady increasing trend in income inequality in Texas between the years 1969 and 2004; there are some periods where income inequality actually decreased.

The analysis presented in Figure 1 indicates that income inequality in Texas decreased during the following periods: 1969 through 1971; 1975 through 1976; 1980 through 1983; 1990 through 1992; and most recently; 2000 through 2003. The steepest and longest occurring rise in income inequality occurred between 1994 and 2000. Income inequality decreased after World War II due, primarily, to an overall growth in income. This growth in income was fueled by a confluence of private enterprise and government benefits (Zuckerman, 2006). Social Security and Medicare policies were introduced which, for families, reduced worries about providing for elderly parents; and the GI Bill and student loans enlarged the educated middle class (Zuckerman, 2006). The result of all these benefits came to be known as the Great Compression. The Great Compression was the period during the 1970s during which income inequality decreased as a result of the rich getting poorer and the poor getting richer.
Primary data

The primary data used was summary data collected by the Bureau of Economic Analysis and extracted from its website. It is the per capita personal income and population for each county in Texas. The data for each county is arranged by Economic Regions as defined by the Bureau of Economic Analysis and displayed alphabetically within each economic region by county name. Although this data is available beginning with 1969 information, the primary focus of this study is the 30 year time period beginning in 1975 and concluding in 2004. At appropriate times, the discussion includes references to pre-1975 data when this information provides historical value. The information in Figure 1 includes the 1969 – 1974 data to reflect the changes that have occurred over the time period for which the information is available.
Economic Regions

The geographic size of Texas and its diversity in terms of terrain, conditions, economy and population make regional designations more valuable with respect to the findings. For the instant investigation, such is the case. The regional designations for this study are based on common attributes (mostly economic) for these areas that bind them together. While these designations may be too large or too small for some researchers, they do provide an appropriate place for beginning. As a first approximation of estimated income inequality – or lack thereof – these designations are adequate.

Loving County, in far West Texas, has the highest per capita personal income in the United States. Starr County, in the lower Rio Grande Valley of Texas, ranks 3111, among counties with the lowest per capita personal income in the United States (Center on Budget Policy and Priorities, 2007). It is no wonder, therefore, that Texas has such a high rate of income inequality compared to the rest of the nation.

Analysis of Data

Comparing the total Theil Index for each Economic Region in Texas in 1975 and 2004 gives some indication as to which Economic Regions are contributing the most to income inequality in Texas. There are ten economic regions as defined by the Bureau of Economic Analysis. Within each Economic Region, at least one Metropolitan Statistical Area (MSA) exists.

The comparison also allows us to determine major changes in the Theil Index in each Economic Region. Analyzing major changes in each Economic Region shows us which regions are contributing because they have an average per capita personal income that is statistically different from the state average, either lower or higher. From this starting point, the counties within each Economic Region responsible for the major changes within the Economic Regions of interest allows us to focus our analysis on the underlying causes of income inequality in these counties. Collectively, this information allows us to determine which of the Economic Regions in Texas have consistently contributed the most to change in income inequality in the state.

Figure 2 clearly shows that the Metroplex and the Gulf Coast economic Regions have consistently contributed heavily to income inequality in Texas. Each has a high, positive Theil index in both 1975 and 2004. This is interpreted to suggest that these two regions, on average, have a per capita personal income that is considerably greater than the state average per capita personal income. The South Texas Economic Region has also consistently contributed to income inequality in Texas, but from an opposite direction. While the influence of the Metroplex and Gulf Coast regions is positive, the South Texas Economic Region Theil Index in both 1975 and 2004 is considerably less than the average per capita personal income for the state and identifies a negative influence arising from this region with respect to the state average per capita personal income.
The High Plains economic region and West Texas economic region were the only Economic Regions that showed a change from a positive (per capita personal income greater than the average economic region per capita personal income) contribution in 1975 to income inequality, to a negative (per capita personal income less than the average economic region per capita personal income) contribution to income inequality in 2004. No economic region in Texas had movement from a negative contribution to a positive contribution to income inequality in 1975 and 2004. The Northwest, Upper East, Southeast, Central Texas, South Texas, and Upper Rio Grande Economic Regions all made a negative contribution to income inequality in both 1975 and 2004.

Based on the above analysis, we can begin to examine factors in the Economic Regions that contributed the most to income inequality which in this case are the Metroplex, the Gulf Coast, and the South Texas Economic Regions. It is also useful to examine the phenomena that caused the movement from a positive contribution to a negative contribution in the High Plains and West Texas Economic Regions.

While a comparison of economic regions is useful, we can gain further knowledge about income inequality by examining the movement of individual county Theil indexes within each economic region. The first economic region that will be examined is the Gulf Coast Economic Region since it (ref. Figure 2) is the largest contributor to income inequality in Texas in both 1975 and 2004. The Theil index for the Gulf Coast Economic Region is 0.04991 in 1975 and 0.04528 in 2004. Within the Gulf Coast Economic Region, Harris County is the largest contributor to income inequality. The Harris County
Theil Index is 0.04349 in 1975 and 0.04939 in 2004. Harris County is the only county within the Gulf Coast Economic Region that has a Theil Index greater than 0.01. Houston is the major metropolitan area in Harris County and therefore is obviously the largest contributor to income inequality in the Gulf Coast Region.

The Metroplex Economic Region is also a major contributor to income inequality in Texas. Within the Metroplex Region, Dallas County is the largest contributor to income inequality with a Theil Index of 0.02675 in 1975 and 0.02921 in 2004. Collin County had the largest change in its Theil Index within the Metroplex between 1975 and 2004, rising from 0.00060 in 1975 to 0.01203 in 2004.

The contribution from the South Texas Economic Region with respect to income inequality in Texas is negative based on the Theil Index calculations. Within the South Texas region, Jim Hogg County has the greatest impact on income inequality in the region. The Theil Index for Jim Hogg increased from -0.00618 in 1975 to -0.010109 in 2004. Over the time period considered in this study, the contribution from Jim Hogg County to total income inequality in the South Texas region increased. The counties in the South Texas region have sparse positive Theil values; and the majority of counties made negative contributions to income inequality in the region, making this region.

With per capita personal income that is far less than the state average per capita personal income, the South Texas Region is naturally expected to represent the largest of the negative influences.

In the Northwest Texas Economic Region, a noticeable movement of Theil values occurred in Wichita County. In 1975, Wichita County had the greatest positive Theil Index for the entire region because it had a majority of the region’s total personal income. The Theil Index for Wichita County in 1975 was 0.000608. In 2004, the Theil Index for Wichita County was -0.000250. Wichita County went from contributing greatly to income inequality in the Northwest region due to holding a larger piece of the income pie, to becoming a major contributor to income inequality due to a largely reduced piece of the income pie. Such a significant movement in the Theil Index warrants further attention.

Within the Upper East Texas Economic Region there were no real contributors to income inequality that easily stood out. A few counties, such as Anderson and Hopkins, experienced a relatively large increase in their Theil values. The majority of counties saw a reduction in their Theil values in 2004 compared to 1975. In the Southeast Texas Economic Region, there are no counties that made a positive contribution to income inequality in 2004. In 1975, Jefferson County was the only county that has a positive Theil value, 0.0018525. In 2004, its Theil value had dropped to -0.0010380. In the Central Texas Economic Region, Travis County has the largest Theil value in 2004, 0.007508, up from -0.000285 in 1975. It is the only positive Theil value in the region in either 1975 or 2004. The West Texas Economic Region has two main contributors to income inequality; Ector County and Midland County. In the Upper Rio Grande Economic Region, El Paso County is the greatest contributor to income inequality in the region.

Although absolute changes in the Thiel values are obviously quite small, the relative changes over the 30 year time span of interest are, in most case, sizable. Table 1 shows both the net change and the percent change that occurred for each Economic Region between 1975 and 2004. Two of these regions, the High Plains and the West
Texas regions, had relative changes that exceed (250) percent, suggesting a sizable decrease in their contributions to income inequality. For the same period, the Southeast Texas region changed by 110 percent, suggesting that its contribution to income inequality has experienced a sizable increase.

Summary Results

The United States has a strong principled belief that those individuals who contribute to the nation’s economic growth should enjoy the benefits of that growth. Over the past two decades the benefits of economic growth have been skewed in favor of the wealthiest members of society (Bernstein, McNichol & Lyons, 2006). This may be the result of improved productivity due to investment in improved technologies, but it may also suggest that employee wages are falling behind with respect to their contribution to productivity improvements.

Benefits from economic growth exhibit a similar trend in Texas. Over the last two decades, the incomes in the wealthiest counties have increased substantially, while the incomes of middle-and-lower-income counties have experienced only modest increases. For example, the wealthiest 20 percent of counties in Texas during the early 2000s had average incomes that were 8.1 times larger than the poorest 20 percent of counties. In the early 1980s, this ratio was 6.2. The increase in income inequality in Texas was the 18th largest in the nation (Bernstein, McNichol & Lyons, 2006). The richest 5 percent of counties had average incomes in the early 2000s that were 13.8 times larger than the poorest 20 percent of counties, and 5.0 times larger than the average incomes of the middle 20 percent of counties.

A contributing factor to the cause of the increasing trend in long-run income inequality may have been the national economic policies with respect to tax cuts and spending reductions for social programs. Since many social programs benefit lower-income families, reductions in funds allocated to them will tend to increase income inequality. Congressional consideration of legislation designed to cut programs and/or reduce funding for social programs while simultaneously introducing new tax reductions

<table>
<thead>
<tr>
<th>Econ Region</th>
<th>Sum 1975</th>
<th>Sum 2004</th>
<th>Net Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Plains</td>
<td>0.002807725</td>
<td>-0.004508793</td>
<td>-0.007316519</td>
<td>-260.59%</td>
</tr>
<tr>
<td>Northwest</td>
<td>-0.001875573</td>
<td>-0.003132273</td>
<td>-0.0012567</td>
<td>67.00%</td>
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<tr>
<td>Metroplex</td>
<td>0.029345241</td>
<td>0.042770967</td>
<td>0.013425726</td>
<td>45.75%</td>
</tr>
<tr>
<td>Upper East Texas</td>
<td>-0.00662561</td>
<td>-0.006489381</td>
<td>0.000136229</td>
<td>-2.06%</td>
</tr>
<tr>
<td>Southeast Texas</td>
<td>-0.002360585</td>
<td>-0.004967524</td>
<td>-0.002606938</td>
<td>110.44%</td>
</tr>
<tr>
<td>Gulf Coast</td>
<td>0.045287724</td>
<td>0.049915626</td>
<td>0.004627902</td>
<td>10.22%</td>
</tr>
<tr>
<td>Central Texas</td>
<td>-0.008820633</td>
<td>-0.003114952</td>
<td>0.005705681</td>
<td>-64.69%</td>
</tr>
<tr>
<td>South Texas</td>
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<td>-0.030980301</td>
<td>-0.002482218</td>
<td>8.71%</td>
</tr>
<tr>
<td>West Texas</td>
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<td>-0.002533235</td>
<td>-0.004115878</td>
<td>-260.06%</td>
</tr>
<tr>
<td>Upper Rio Grande</td>
<td>-0.008541712</td>
<td>-0.007990557</td>
<td>0.000551155</td>
<td>-6.45%</td>
</tr>
</tbody>
</table>

Texas regions, had relative changes that exceed (250) percent, suggesting a sizable decrease in their contributions to income inequality. For the same period, the Southeast Texas region changed by 110 percent, suggesting that its contribution to income inequality has experienced a sizable increase.
that tend to favor the wealthiest Americans can greatly impact changes in income inequality. Shapiro and Friedman (2005) argue that the tax policies of the Bush Administration generate a net increase in the income distribution gap nationally. This argument, however, deserves much more research before that argument can be fully supported.

Hacker (2006) believes that middle-class Americans have been asked to shoulder too many of the difficult consequences of economic change. Introduction of health savings accounts and discussions regarding Social Security privatization serve to add economic pressures middle-class Americans face as a result of the turbulent economy. Wages are stagnant or declining, with average hourly wages declining by 3 percent over the past 30 years (Hacker, 2006). Andy Stern (2006) says “something’s wrong with a country that helps the rich get richer while most Americans get the squeeze.” President Bush acknowledged that income inequality is a problem: "Income inequality is real," Mr. Bush said. "The question is whether we respond to [it] with policies that help lift people up, or tear others down." Education and skills, he said, were the key to dealing with it (Economist, 2007).

According to data released by the Commerce Department, the share of national income going to wages and salaries in 2006 was at its lowest level on record with data going back to 1929. At the same time, the share of national income going to corporate profits was at its highest level on record (Aron-Dine & Shapiro, 2007). Economic growth prior to 2008 has not been strong enough to reverse the weak growth in wages and salaries since the current economic expansion began in November 2001.

Conclusions

Aron-Dine & Shapiro (2007) report that the corporate profits share of income growth reached 46 percent during the most recent economic recovery, a greater proportion than for wages and salaries. Clearly, based on the data presented in the study, income inequality has increased in Texas during the period 1975 through 2004. What is not clear is why, during an economic recovery and expansion, workers and average middle-income families in America have received an unusually small share of the economic gains. Commerce data as well as employment data indicate that average households have fared poorly (Aron-Dine & Shapiro, 2007).

Based on the analysis conducted in the study we can conclude that there is a significant rising trend in income inequality in Texas. Despite the rise in income inequality in Texas, only a few Economic Regions contribute significantly to the rise in income inequality. Within the Economic Regions that contribute significantly to income inequality, there are only one or two counties within each economic region that contributes significantly to the rise in income inequality. This being said, the data suggest that there are only a handful of counties in Texas that make a significant contribution to rising income inequality in the state. The upward trend in income inequality within the state is highly concentrated with respect to economic regions and counties.

Specifically, the majority of income inequality is concentrated within the Metroplex, Gulf Coast, and South Texas economic regions. Within each afore mentioned economic region Dallas County, Harris County, and Jim Hogg County account for much of the upward trend in income inequality.
Presuming policy makers and politicians are aware of income inequality issues, as described in this paper, they can begin to include this information in their discussions and analyses of state government spending allocations. Specifically, with respect to public goods and services, increased allocations for economically depressed or underdeveloped areas may deserve an additional look, if income equality is a priority. Failure to maintain public infrastructures, such as schools, transportation arteries, and health facilities in these areas may result in the export of these issues into the wealthier areas of the state as families migrate, searching for opportunities of many kinds, including educational options.

This study adds an additional dimension to the existence of income inequality throughout Texas by focusing on the extent of this inequality. Future studies will appropriately focus on the impact of income inequality on various sectors of the Texas economy.
References


