The Swedish income distribution during the 1990’s
Abstract
The paper studies the Swedish income distribution during the 1990’s using panel data set on the county level. County specific effects have been controlled with a fixed effects model. The measures used as indicators of inequality are the Gini-Coefficient and a 90/10 income share quota. The results show that a change in unemployment has a negligible affect on the income distribution. An increased share of college educated people increases the income distribution and an increase in the age groups 30-39 and 50-64 also had the same effect. The age group of 65+ seemed to decrease the difference between the share of income that the poorest and the richest had.
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1. Introduction

Sweden is known as one of the most equal countries in the world. However, during the 1990’s, inequality actually increased in Sweden according to different measures. One of the most common measures that show this inequality is the Gini-coefficient which explains how income is distributed in a country. If everybody had the same income, the Gini-coefficient would be 0 and if all income went to one individual only, there would be perfect inequality and the Gini-coefficient would be 1. When looking at the Gini-coefficient during the 90’s in Sweden, it started at 0.220 in 1990 and increased to 0.313, by 2000\(^1\). This increase is a big change for a country well known for the “Swedish model” of equality with high taxes that aim to finance an equal society.

Sweden was affected by a strong recession in the beginning of 1990’s that led to a dramatic fall in employment and, soon after, a lowering of benefits and higher demands for social insurances. On top of all this, there was an increase in income tax called värnskatten which was introduced in 1995 and affected those with higher incomes. This dramatic change in the Swedish welfare system during the 90’s affected many different sectors of the society, and the development of the income distribution shows that this period led to an increased inequality. How have different social sectors affected the income distribution inequality during the 90’s in Sweden? This is what my paper will study.

The purpose of this paper is then to examine the increase of income inequality in Sweden during the 1990’s and which social sectors affected this development. There have been other studies made in this area with various results, but I hope to give another angle of approach to this through the use of new data that has been gathered. The study will be an empirical study of the development of the income structure in Sweden. To see more explicitly why a change in income developed, the research will handle a set of data for income differences in Sweden’s twenty-one counties during the ten year period of 1991 to 2000. The reasons for the increased income inequality will be analyzed through commonly used variables for income differences such as unemployment, demographic changes and college education.

\(^1\) http://www.scb.se/templates/tableOrChart_____163550.asp
The data for the explanatory variables have been found in the Official statistics of Sweden and it covers all the counties and the 10 year period giving a total of 210 observations. The data for the income differences has been worked out by Mats Johansson (2006) at the Institute for Futures Studies. The data is used in a Panel data set with fixed effects to control county-specific effects on the income differences and therefore hopefully give a more robust result.

This paper starts in section 2 with an overview of the theory of income differences and the research in this area. In section 3, I will go through the data and method used to study the income inequality in Sweden during the 90’s. Finally, section 4 shows the results of my study and a discussion of the findings.

2. Income distribution, theory and research

2.1 Income distribution Theory

Equality is simply defined as when all have the same amount of income (or welfare) and, although this generally never is the case, it is still the measure against which inequality is being derived. But is inequality always a bad thing? Equity, which is an ethical concept, looks at what seems fair according to one’s perspective of right and wrong. Societies that strongly favour equality of income still want to reward and give incentives for education, hard work, saving and the ability to produce economic growth. Economic growth is necessary for a society because if there is no growth people can only become well off through others money or assets. Therefore, though economic growth is important for better living conditions it is not a sufficient condition to improve living standard. There has to be a distribution of the income created. (Perkins 2001 ch.4)

There are roughly, two categories of ways to measure the distribution of income. The first category is a measure of the ratio between the poorest or the richest at a certain time period, often called Kuznets-ratio. (Svedberg 2001) Kuznets discovered the relationship between GDP per capita and the inequality in the distribution of income as an inverted U-

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2 Appendix
shape. This means that as income increases, inequality may initially rise and reach a maximum at a certain intermediate level, and then decline as the country gets richer and develops mass education and social policies that will counteract the inequality. He did this from fragmented data for the distribution of income from a few rich and poor countries in the 1950’s and this has inspired further research about inequality. (Perkins 2001 ch4.) The other category of measures for the income distribution is by studying the whole scale of income. The one most commonly used is the Gini-Coefficient, the measure used in this paper.

When discussed in the media or in everyday terms, salary and income are not always distinguished from each other. But it is obvious that several factors in the society affect the economic situation for people other than the salary. Something that influences the change of salary differences may or may not influence the change of income differences; the two are not always influenced by the same factors in the same way. For example, it is commonly known that more than half of the population does not receive a salary and therefore they are usually not included in studies on salary distribution. Generally speaking, it can be said that an individual’s standard income depends on three comprehensive institutions: the family, the market, and the state. (Fritzell 2001)

Within income difference research, income has mainly been defined as what an individual can consume during a time period, without the real net capital being changed at that same period. Thus, the factors that are the sum of what a person can consume are in addition to the salary, many other things such as own business, other family members salary, Social insurance, subsidies, and income from capital that lately has become a bigger source of income. The factors that have a negative affect on consumption are taxes from government, municipalities and the county council. To get the entire picture of a fair analysis of inequality one has to account for the household income by viewing the composition and size of it. This is done by incomes in a household being adjusted through something called equivalent scale. The equivalent scale works by taking into account that the more family members in the household the more the income needs to increase, but also that there are large-scale advantages. The scale weights the household members. The adult is set to one and for other adults 0.55 is added and for every child, 0.47. The household equivalent disposable income is then derived by dividing all household income with the added weights from household members. This is the income measure that is most
commonly used in studies. The income formulation process can be described by this graphical illustration. (Fritzell 2001)

**Figure 1: Graphical illustration of income formulation process**

Labor Supply

Business income + work income from others in household + Capital income

Income from work related transfers

Other transfers and subsidies

Income taxes and other negative transfers

Household size and composition

Salary per time unit

Annual salary

Factor income

Market income

Gross income

Disposable income

Equivalent income
2.2 Gini Coefficient

There are many different ways to measure income inequality; however, the most commonly used measurement is called the Gini coefficient, which is derived from the Lorenz curve. The Lorenz curve shows the share of the income that a share of the households in a society has. When perfect equality exists, ten percent of the households earn ten percent of all income and thirty percent of the households earn thirty percent and so on. If perfect inequality exists then all income is earned by one household.

**Figure 2: Lorenz Curve**

![Lorenz Curve]

Source: Wilson 2002

Figure 2 represents a graphical definition of the how the Gini coefficient relates to the Lorenz curve. In this graph, the Gini Coefficient \( G \) equals the area of the shaded part divided by the total area under the 45° line or \( G = A/(A+B) \). Inequality of income distribution is greater as the Lorenz curve moves further away from the 45° line. The Gini coefficient basically describes the deviation of the Lorenz curve from the 45° line, also called the line of equality, revealing the inequality. The theoretical range of the Gini ratio is from 0, when there is perfect equality, to 1, when it’s perfect inequality. (Perkins p.118ff)

The Gini coefficient was developed by statistician Corrado Gini. The following is the mathematical formula for calculating the coefficient:

\[
G = \frac{1}{2} \sum_{i=1}^{k} |x_i - y_i|
\]
Where $x_i$, which is the population variable, and $y_i$, which is the income variable, are relative frequencies, rather than cumulative, and $k$ is the number of classes or groups. (Wilson 2002)

2.3 Earlier Research

Economic resources and income are important for our living conditions and the size of income differences are seen by many as the basic inequality indicator. Therefore, there is always a special interest for how income distribution changes and the levels of these differences. There have been an increasing number of studies of the different aspects of the income distribution changes in Sweden and how it compares to the international changes in income distribution. Studies concerning the 1990’s have also been in focus. The official statistics around household incomes in Sweden are presented yearly by the Official Statistics of Sweden and are often recognized in media and among researchers.

A recent study that goes back to 1903 and looks at the top income distribution in Sweden to 2004 shows how unequal the income distribution was previously. The top ten percent of households had a share of 46% of all income around 1916. This share dropped down to 23% in 1980. (Waldenström 2006)

![Figure 1: The top 10 percent income share (with and without capital gains), 1903–2004.](Source: Waldenström 2006)
Here one can get an overview of the top income distribution over a hundred year period in Sweden and the development from the 90’s shows how it differs from the trend. This also reveals the effect that capital gain has had for the top income distribution and that the effect has increased from the 90’s. The effect that capital gain had on top income distribution in Sweden is equal to that of the U.S. or U.K. during the 90’s but taken the capital gain effect away, the Swedish development of top income distribution looks more equal that of the continental European countries. Most of the drop under the hundred year period of time is explained by the decreased income from capital according to Waldenström. Among the decreases was the financial crisis in the early 1930s. Though, just after World War I, the decrease of top income was due to increased wages below the top decline. During World War II, there was hardly any decline; instead, the decline came just after the war, when the marginal taxes for the top groups had risen sharply.

The effect that unemployment shocks had on the income distribution during the 1980’s and early 1990’s in the Nordic countries has been studied by Björklund (2000). This study reveals that the rapid unemployment growth during the 1990’s crisis did not change the income distribution to fit with European standards. Instead, distribution stayed surprisingly stable, even though the unemployment rate measured up to the European levels. The stability of the income distribution can only somewhat be explained by the benefits given in Nordic countries. The study also showed that Sweden had an increase in income distribution from 1989 to 1993 of 2 percent for the 20-64 aged group but only 0.5 percent for the prime-aged group. Furthermore, the study showed that the enrolment in higher education rose rapidly during the early 1990s and this might also partly explain the increased income distribution for the 20-64 aged group.

Gustafsson and Palmer have done a study in which they review the effect that different income sources had on the Gini-Coefficient from 1991 to 1998. They show that retired persons during that period increased the income differences in Sweden during the 90’s, especially from 1991 to 1995. This development was due to the simultaneous replacement of the older generation by the new generation of retirees with a better pension and the diminishing real income for the workers. They also showed that transfer systems such as accommodation allowance, social security and income insurance had a stronger negative effect to the Gini-Coefficient than unemployment insurance, somewhat showing the conclusion Björklund had about the effect that unemployment has on the Gini-Coefficient.
Figure 4 also shows how the income taxes affected the Gini-Coefficient and reveals that it was not until 1995 and after that the taxes decreased the income inequality more effectively. The income taxes during 1998 were higher per household then 1991 while the disposable income was lower compared to 1991. (Gustafsson, Palmer 2001)

Source: Gustafson 2001

**Figure 4:** Shows the contribution the different income sources have had on Gini-Coefficient. (pensions), arbetslöshetsstöd(unemployment insurance), Övr. Inkomstförsäkringar(different Income insurance), Skatter (taxes))

Mats Johansson studies the income distribution in Sweden from 1951 to 2000 with the Gini-Coefficient on county level. The county-specific Gini-Coefficient has been worked out by Johansson and in his paper he gives a descriptive overview of different changes during that period. His conclusions were that the income inequality had quite a rapid decrease in the 1970’s compared to the 50’s, 60’s and 80’s. While the income inequality increased during the 90’s. He also looked at how the gender income dispersion developed during that period and found that while the income inequality was reduced for the female population from the 50’s until mid 80’s, the male population had a more stable outcome.

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3 Appendix
During the 90’s, the income differences grew larger for men than women mainly because the capital income was higher for the male population. Johansson also concluded that the income differences for the 20-24 aged population increased rapidly during the 90’s. This happened largely due to the decreased employment for this group, according to his study. (Johansson 2006)

Another study that uses the county specific Gini-Coefficients from Johansson have been made by Nahum (2006). This is a panel study focused on the relationship of inequality and growth using panel data on the Swedish counties from 1960-2000. Here she uses the Gini-Coefficients as an independent variable, among others, with income growth as a dependent variable to evaluate how inequality has effected growth. The results show that there is a significantly positive impact of inequality on growth, but that the effect decreases with the length of the growth period studied.

3. Data and Method

3.1 My contribution

My study contributes by looking at different factors that might have affected the income distribution during the 90’s through the use of Panel data for all the 21 counties in
Sweden. I will use the Gini-Coefficients that have been worked out by Johansson (2006) and then through a regression model with fixed-effects, I will determine how different variables have affected the income distribution from 1991 to 2000.

There is an upside to the study of counties, because having a study focused on countries limits the ability to get an accurate income distribution comparison. Since the definitions of the income measurements are different between different countries it is harder to get a fair conclusion. The quality of the data may vary greatly because of the way the information is gathered or interpreted. Other problems that can create a great deal of heterogeneity are the different policy systems that might vary or that the educational system is different or that there are other types of economies to account for. When analyzing income differences within a country much of these issues are taken away and thus the recent data gathering of county inequality comes in handy. Of course a country-specific study might not always be applicable to other countries because of earlier described issues; it will still be expected to give a more accurate study for that country, which is the main goal for my study.

3.2 Panel data

3.2.1 Characteristics

Panel data, also called pooled data, cross-sectional time series data or longitudinal data is a dataset with multiple cases (in this study, counties) observed over a time period. There are several advantages of using Panel data. One is that one can control omitted variable effects, which differ between cases but are constant over time, even though you don’t observe them. It is also possible to control for variables that vary over time but are constant over cases. This will be more thoroughly explained later. Another advantage is that one can study dynamics of changes, which means certain time period of unemployment can be better studied for example, or a job turnover, or certain labour mobility. It also gives more informative data, more degrees of freedom and more efficiency. (Gujarati 2003)

3.2.2 Fixed effects

As earlier described, there is often a need in studying Panel data to control the omitted variables that might have a specific effect for every case but that are constant over time.
The variables that are not included in the data studied might differ from the model used and therefore have an effect on the dependent variable, which gives a more biased estimation of the model. To get a more “BLUE” (best linear unbiased estimator) model it is of interest to control that through the use of fixed effects. The fixed effects control the unobserved county-specific factors that are unique for a certain county and affects the dependent variable, in this case the Gini-Coefficient. This is equivalent to the use of dummy variables for each case in the regression. Another alternative way of controlling the omitted variables is by the use of random effects. The random effects are chosen if it is known that the omitted variables are not correlated with the explanatory variables. The county-specific effects in the model are expected to be correlated with the explanatory variables and thus the fixed effects have been chosen. If there is doubt in the choice between fixed- or random effects, a Hausman-test is recommended. (Princeton, DSS 2006)

3.3 Data
The data that has been gathered, except from the Gini-Coefficients from Johansson, are all from the Official Statistics of Sweden. The variables have been collected from the regional database for population statistics (BE0101) which is for every county and every year. This gives a total of 210 observations (21 counties, 10 year) for every variable chosen. During the time period chosen, Skåne county (1997) and Västra Götalands county (1998) were formed and this has been accounted for in the Gini-Coefficient by weighting it to the population from the older counties to the new counties. Otherwise there is no broken trend in any of the data collected so the data set is of good quality.

3.3.1 Variables
The Gini-Coefficients from 1991 and forward are developed from the incomes for work, business and capital. Thus the income measured is the factor income illustrated in figure 1. The income measure has also been converted to the price level at 2000 through the consumer price index. Another variable that is accounted for is the unemployment which has been worked out to the share in every county and year. Unemployed are those in labor supply, not employed.\footnote{http://www.scb.se/templates/Standard____131801.asp}

Unemployment is often used in studies of income distribution (Björklund 2000).
I have also chosen several variables that deal with the demographic differences since it is also a common measure for studies in income distribution (Gottschalk 2000 p. 263). The different age groups are 20-29, 30-39, 40-49, 50-64 and 65+. They have also been worked out to the share of the population in every county every year. Finally, I have the share of population with 3 years or more of college education for every year and county since discussions around the effect of higher education on income distribution is of interest.

3.3.2 Limitations

The choice of data from 1991 to 2000 instead from 1990 is because of the tax reform 1990-1991 which created differences between income measures. The tax reform lowered the tax level and, at the same time, broadened the tax base so that more incomes were taxable. This led the income statistic to include more in the statistics.

Another limitation to the model is the lack of a variable that accounts for the foreign-born. The number of foreign-born individuals rose rather drastically from 1960 to 1997 and in 1997, first-generation immigrants made up 13.4% of the entire population. Comparatively, this exceeds the amount of first-generation immigrants in the United States which is seen as the “nation of immigrants” (Edin 2000). There was not any data on a county level that had such information about the change of the share of foreign-born during the 90’s which otherwise would have been an interesting complement since immigrants are expected to have lower income.

3.4 Model

The Gini-coefficient is the measurement of the income inequality changes during the 1990’s. It is the dependent variable in the model and the explanatory variables are unemployment, education and age demography.

The data will be analyzed from the following model:

\[
Gini_i = \alpha + \beta_{age}x_{0i} + \beta_{age}x_{1i} + \beta_{age}x_{2i} + \beta_{age}x_{3i} + \beta_{age}x_{4i} + \beta_{age}x_{5i} + \beta_{age}x_{6i} + \beta_{U} + \beta_{C} + \theta + \tau + \epsilon
\]  

\( i \) : specific county
\( t \): specific year

\( \alpha \): The mean of what the Gini-coefficient would be without any unemployment, demographical changes and people with college studies for three years or more.

\( \beta_{1-5} \): How much a change in the share of an age group affects the Gini-Coefficient.

\( \beta_6 \): How much a change in the share of unemployment affects the Gini-Coefficient.

\( \beta_7 \): How much a change in the share of college educated people affects the Gini-Coefficient.

\( \theta_i \): The county-specific effects to control for the omitted variables that affect the dependent variable.

\( \tau_i \): The time-specific effects to control omitted variables that affect the dependent variable

All the variables are measured by percentage so the model will analyze changes in the explanatory variables and how they affect the dependent variable. The demographic group that has been left out is those under the age of 20. This has been done to avoid the age group shares to be equal to one.

There are different measurements that can be used to analyze the income distribution. One of those is the 90/10 percentile ratio which shows the income at the 90\(^{th}\) percentile relative to the income at the 10\(^{th}\) percentile. This measurement gives good insight to how the highest and lowest income earners are diversified and is also a usable measurement as dependent variables in the regression. From the data I have, there is a share of the income for the population sorted for every tenth percentile. I will look at how the share of the richest ten percent compared to those with the lowest ten percent of the share of income has changed. This will be called the 90/10 income share quota. It could give an interesting contribution to evaluate how the income changed during the 1990’s.

4. Results

We will begin to analyze the results for the Gini-Coefficient as the dependent variable to see how the increased income inequality during the 90’s has been affected by the
independent variables. The next part of this section will have the 90/10 share quota as the dependent variable to analyze the income distribution among those who are the wealthiest compared to the poorest in Sweden.

4.1 Result with Gini-Coefficient

In table 1, we can see the results for the estimation of the model (1) with the use of the OLS (ordinary least square) method without time dummies.

Table 1:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age20</td>
<td>0.176403</td>
<td>0.5340</td>
</tr>
<tr>
<td>Age30</td>
<td>1.047145**</td>
<td>0.0167</td>
</tr>
<tr>
<td>Age40</td>
<td>-0.032185</td>
<td>0.9424</td>
</tr>
<tr>
<td>Age50</td>
<td>0.669482**</td>
<td>0.0121</td>
</tr>
<tr>
<td>Age65+</td>
<td>-0.039389</td>
<td>0.8666</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.058775*</td>
<td>0.0077</td>
</tr>
<tr>
<td>College</td>
<td>0.521847*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Constant</td>
<td>0.041070</td>
<td>0.8504</td>
</tr>
</tbody>
</table>

Model Obs 210 $R^2 = 0.9649$ P(F-stat) 0.0000

Significance level; *: 1%  **: 5%  ***: 10%

The models R-square shows the variation in the dependent variable that is predicted by the independent variables. The R-square has a high value and this is mainly due to the county dummies. The P-value for the model is significant at 1% level. These values indicate that the model is usable for analyze. Table 1 shows that those in the demographic group of 30-39 years of age have had the strongest increase on income difference when controlling the county-specific effects. If the age group of 30-39 would increase with one percent, then the Gini-Coefficient would increase with 1.05%, assuming that the other variables are constant. This result is significant on a 5% level which means that we can reject the null hypothesis that the coefficient is zero, with at least 95% certainty. The demographic group of age 50-65 also increases the income difference but not as much. This is what is expected because those groups are the ones that should have achieved a higher income
and also be an increasing factor to the income inequality. Unemployment seems to have little, or any, effect on the Gini-Coefficient. 1% of higher unemployment lowers the income distribution with only 0.04% which could be considered negligible. This is also in accordance with earlier research by Björklund that shows that unemployment shocks didn’t affect the income distribution; instead it stayed stable during rapid unemployment growth. The last variable that gave high significant results was the college educated. A higher share of collage educated people in the population increases the income distribution in accordance with this result. This also seems reasonable because not only are those with higher education expected to earn more, a higher share of the population who are studying lives on a lower level of income and thus have an increased effect on the income difference.

Table 2:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age20</td>
<td>-0.647307*</td>
<td>0.0001</td>
</tr>
<tr>
<td>Age30</td>
<td>-1.114444*</td>
<td>0.0002</td>
</tr>
<tr>
<td>Age40</td>
<td>-1.778576*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Age50</td>
<td>-1.075011*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Age65+</td>
<td>-0.845456*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.023831</td>
<td>0.4093</td>
</tr>
<tr>
<td>College</td>
<td>0.811473*</td>
<td>0.0000</td>
</tr>
<tr>
<td>Constant</td>
<td>1.098985*</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Model Obs 210 \[ R^2 = 0.9907 \] P(F-stat) 0.0000

The reason for time-dummies is to be able to control the omitted factors that changes over time and affects the dependent variable. There was a tax change to capital income 1995 which made it profitable to sell off capital gains in 1994 and therefore it was a peak on the income difference during that year period. (Fritzell 2001 p.142) This is one of the reasons for the use of time-dummies and the results might bring other perspectives to the change of the income difference. The result gives many variables with high significance and all the demographic groups seem to have a decreasing effect on the income difference which
was not expected. However, the college variable has a significant positive effect on the Gini-coefficient and this seems to be in order.

4.2 Result with the 90/10 income share quota

From 1991 to 2000, the share of the total income for those with the ten percent lowest income decreased from 2% to less than 1%. At the same time, the ten percent with the share of the highest income increased from 25% to 30%. This dispersion of the income share between the richest and the poorest is analyzed here using the 90/10 income share quotient between the richest and the poorest.

Table 3:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age20</td>
<td>-1.336001</td>
<td>0.3331</td>
</tr>
<tr>
<td>Age30</td>
<td>1.552815</td>
<td>0.4621</td>
</tr>
<tr>
<td>Age40</td>
<td>-5.445095**</td>
<td>0.0127</td>
</tr>
<tr>
<td>Age50</td>
<td>-0.654052</td>
<td>0.6111</td>
</tr>
<tr>
<td>Age65+</td>
<td>-4.139714*</td>
<td>0.0004</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.278521*</td>
<td>0.0093</td>
</tr>
<tr>
<td>College</td>
<td>0.646765</td>
<td>0.1598</td>
</tr>
<tr>
<td>Constant</td>
<td>1.725028</td>
<td>0.1046</td>
</tr>
</tbody>
</table>

Model Obs 210 R² = 0.9365  P(F-stat) 0.0000

Significance level; *: 1% **: 5% ***: 10%

The results show that an increase in unemployment is widening the income share differences slightly and might explain the decrease of the share for those with lowest income. An increase in the age demography group 40-49 had a strong negative effect of the income share difference which is surprising as they are expected to become financially stronger during this period (Johansson 2006). The retirees (age65+) also seem to have a decreasing effect on the income dispersion in these results. However, earlier studies show that they increased the income differences (Gini) (Gustafsson 2001) giving the possible conclusion that more retirees may have moved to the richest ten percent, thus increasing
this difference; but since this result gives the opposite indication, it might be that they have been more accounted for among those with lowest share of the income.

5. Conclusion

The purpose of this research paper was to examine the income distribution in Sweden during the 1990’s with the help of a panel data on a county level. There has been a lot of earlier research between countries on the subject of how income difference is affected by different variables. Some papers have also had an approach on national level. My contribution is by looking at this subject with data on a county level with the use of a fixed effect model in Sweden which has not been done before. This has been done in hopes of shedding some light on the reasons for this strong increase in income difference during the 90’s. Earlier research had shown that unemployment did not have any obvious affect to the income distribution. My results provided the same conclusions. The variable college shows that an increase in the share of college educated people in Sweden increases inequality. The demographic variables show that age groups 30-39 and 50-64 also had an increasing effect on inequality, while the age group of 65+ seemed to decrease the difference between the share of the income that the poorest and the richest had. Johansson (2006), shows that the younger aged group 20-24 had an increasing effect on income distribution and that this was due to the higher unemployment in this group. This effect of the income differences increasing I believe is partly hidden in my college variable since those without jobs start studying instead and thus increase the share of the population of college educated. My findings complement earlier research by looking more in depth on income distribution in Sweden and it also brings other perspectives to what changed the inequality during the 90’s.
6. Literature

*Articles / working papers*


- Edin, Per-Anders and Fredriksson, Peter, (2000), LINDA, *Department of economics* Uppsala University.


*Books*


*The Web*

- Official Statistics of Sweden, [www.seb.se](http://www.seb.se)

7. Appendix

Län

Figur 6.19 Gini-koefficienten 1951-2002 i de svenska länen

Source: Johansson 2006
Karta över Länsindelningen i Sverige

Teckenförklaring

- Länsgrens

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<th>Kommuner</th>
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