TAMPERE ECONOMIC WORKING PAPERS
NET SERIES

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Working Paper 7
December 2001
http://tampub.uta.fi/econet/wp7-2001.pdf

DEPARTMENT OF ECONOMICS

FIN-33014 UNIVERSITY OF TAMPERE, FINLAND

ISSN 1458-1191
ISBN 951-44-5271-2

04.12.2001

Inherent inequality and the extent of redistribution in OECD countries

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Abstract:

The purpose of this paper is to examine the relationship between the inherent inequality and the extent of redistribution by utilising the Luxembourg Income Study (LIS) database. This database provides both market and disposable income distributions for a number of OECD countries. Our finding that redistribution in OECD countries is positively associated with inherent inequality is not the new one. The point we have made in this paper is that this finding can be explained through the Mirrlees optimal income tax model. If the inherent inequality increases (decreases) for any given incentive effects and the degree of espoused egalitarianism so will the society's redistributive effort.

1. Introduction

The OECD's postwar history can be divided, at least roughly, into two phases.[1] From 1945 to about 1980 the degree of inherent inequality or the inequality of market incomes (incomes from earnings and investment) decreased because of reduction in skilled/unskilled wage differentials and asset inequality. The second phase has occurred between 1980 and the mid-1990s when the degree of inherent inequality reversed course and increased. It is striking that in a number of OECD countries inherent inequality has risen between 1980 and the mid-1990s but perhaps surprisingly redistribution as well. What might be an explanation of this evolution of redistribution policy? There is now a large literature on the relationship between inequality and growth (see Perotti, 1992, 1996, Persson-Tabellini, 1994, Alesina-Rodrik, 1994, Tanninen, 2000 or Milanovic, 2000). A key element in this literature is the link between inherent inequality and the extent of redistribution. The explanation of this literature is the political mechanism (the median voter theory) through which greater inherent inequality leads to greater redistribution. The median voter theory implies that if there is a redistribution of income within the society, so that the income of the median voter increases, then the demand for redistribution in the society will rise even though the average income remains the same.[2] There are, however, some well-known and less well-known limitations of this theory. First, we know that in many OECD countries voter participation rates are relatively low.[3] This means that the median voter is not the median income earner. Secondly, it is hard to believe that the middle income voters are able to identify that they just belong to the fifth and sixth decile of the market income distribution.

An analytical framework for thinking through the relationship between inherent inequality and the extent of redistribution is put forward by James Mirrlees in his Nobel Prize winning paper (Mirrlees, 1971). It captures the central features in thinking about the evolution of redistribution policy. Three elements of the Mirrlees model are useful for our purposes. First is the concept of inherent inequality reflecting among other skilled /unskilled wage

[1] See Kanbur (1999).
[2] Greater inherent inequality is usually expected to increase the gap between mean and median incomes, leading to more redistribution because the loss to the median voter from an increase in the tax rate is now reduced relative to his or her gain from the increased amount available for redistribution (see Meltzer-Richard, 1981 and Persson-Tabellini, 1994).
[3] Furthermore, there is a remarkable variation in voting activity between countries and some evidence on declining trend in voting activity in several countries (see e.g. Blais-Dobrzynska 1998, or Tanninen, 2000).

differentials, asset inequality and social norms. If there is no intervention by the government, the inherent inequality will be fully reflected in the disposable income. However, if the government want to intervene – as it seems to be the case in OECD countries – it will find the second component of the Mirrlees model, the egalitarian objectives of the government. And if the government tries to redistribute income from high-income people to low-income people, there will be incentive and disincentive effects. In other words the redistribution policy is the product of circumstances and objectives. Of course, distributional objectives differ from one country to another and from one government to another, but there have not been significant changes in the overall progressivity of the OECD countries between 1985 and 1994 (see Messere, 1998). Given that we believe that holding constant the degree of egalitarianism espoused and the level of incentive effects between the 1980 and the mid-1990s are not bad approximations.

The purpose of this paper is to examine the relationship between the inherent inequality and the extent of redistribution by utilising the Luxembourg Income Study (LIS) database. This database provides both market and disposable income distributions for a number of OECD countries over last two or three decades. The structure of the paper is as follows. In sections 2 and 3 we look at what the data say. In section 4 we provide some theoretical explanations on the relationship between the inherent inequality and the extent of redistribution. Section 5 concludes.

2. The Data and some summary findings

Most of the median voter studies mentioned in the introduction utilise data sets including the largest possible number of countries all around the world. For example recent and widely used data set compiled by Deininger and Squire (1996) covers 108 countries and 682 observations. However, such data sets have many problematic features that are discussed in detail by Atkinson and Brandolini (2001). Furthermore, as Milanovic (2000) has recently pointed, inequality is merely measured from disposable income and therefore do not properly make a distinction between inherent income and redistribution (for different definitions of income see Atkinson et al., 1995). Fortunately this distinction can be taken into account in the Luxembourg Income Study (LIS), which is a comparable data on income distribution for a

maximum sample of 25 countries. Given the consistency of this source, which satisfies many minimum quality requirements, income inequality is measured by the Gini coefficient and the squared coefficient of variation, CV^2. The income and recipient concept employed here is market income (MI), pension transfers (P) added to market income (MI+P) and disposable income (DPI) per household where the latter has been adjusted by the square root of household member.

Table 1. Changes in the inequality between 1980 and the mid-1990s in 12 OECD-countries; (Gini coefficient for different income definitions).

Part A: Percentage point changes between "first wave" and "fourth" wave"

Country	years	MI	MI+P	GI	DPI	RD	RD+P
AUS	81-94	5.6	6.2	3.3	3.2	2.4	3.0
BEL	85-92	-4.2	4.0	5.1	-0.7	-3.5	4.7
CAN	81-94	4.1	2.4	0.4	-1.0	5.1	3.4
FIN	87-95	5.7	6.7	1.7	2.2	3.5	4.5
FRA	79-89	1.9	-0.7	-2.2	-0.4	2.3	-0.3
GER	81-94	6.3	4.6	4.5	1.8	4.5	2.8
ITA	86-95	5.2	5.8	37.6	3.9	1.3	1.9
NET	83-94	-5.5	-4.7	-2.8	-0.2	-5.3	-4.5
NOR	79-95	1.1	-6.7	-2.1	-1.8	2.9	-4.9
SWE	81-95	4.1	6.8	1.7	2.0	2.1	4.8
UK	79-95	10.1	11.5	8.2	8.0	2.1	3.5
USA	79-94	6.2	5.0	5.7	5.8	0.4	-0.8

Part B: Percentage point changes between historical data bases and "first wave"

Country	years	MI	MI+P	GI	DPI	RD	RD+P
CAN	75-81	-0.9	-1.0	-0.7	-0.9	0.0	-0.1
GER	73-81	3.8	-5.4	-1.1	-1.7	5.5	-3.7
SWE	67-81	-1.6	-8.8	-12.1	-11.2	9.6	2.4
UK	69-79	0.8	-1.5	-4.6	-4.8	5.6	3.3
USA	74-79	-0.4	0.7	-0.4	-1.4	1.0	2.1

Part C: Percentage point changes between historical data bases and "fourth" wave"

Country	years	MI	MI+P	GI	DPI	RD	RD+P
CAN	75-94	3.2	1.4	-0.3	-1.9	5.1	3.3
GER	73-94	10.1	-0.8	3.4	0.1	10.0	-0.9
SWE	67-95	2.5	-2.0	-10.4	-9.2	11.7	7.2
UK	69-95	10.9	10.0	3.6	3.2	7.7	6.8
USA	74-94	5.6	5.6	4.8	3.9	1.7	1.7

Notes: For definitions see the Data Appendix. The LIS database has been collected in five different periods. It contains historical bases for observations before 1979 and four "waves": around 1980, around 1985, around 1990, and around 1995. See http://lisweb.ceps.lu/techdoc.htm

As our interest is in the evolution of redistribution, our focus is in those 12 OECD countries having at least three or more observations. In our sample the Gini coefficients and the squared coefficients of variation can be summarized as follows (see also the figures for the individual countries at the data appendix). Over the sample period the inequality of market income and market income plus pension transfers has risen in many OECD countries, but not in all. The extent of redistribution in turn has increased in almost all countries. Thus, the redistributive role of government has corrected slightly increasingly for some of the increase in inherent inequality. As shown in the Table 1, between 1980 and the mid-1990s in the United Kingdom the Gini coefficient for market income increased by some10 percentage points; in Finland, in Germany and in the United States by about 6 percentage points; and in Australia and in Italy by around 7 points. On the other hand, during that time period the Gini coefficient for market income decreased in the Netherlands by 5.5 percentage points. The extent of redistribution (RD; measured as difference in the Gini coefficients between market and disposable incomes), in turn, increased in Canada by more than 5 percentage points; in Germany by 4.5 percentage points and in Finland and in Norway around 3 percentage points. In the United Kingdom the extent of redistribution increased by 2 percentage points; in the United States by 0.4 percentage points; and decreased in the Netherlands by about 5 percentage points. As the second half of the Table 1 shows for five countries LIS data available, there is some evidence for decreasing income inequality in the pre-1980s period, in particular, as inequality is measured in disposable income. However and probably due to limited observations in the LIS data, both the inherent inequality and the extent of redistribution has increased during the period available for those five countries.

3. Empirical test

The relationship that we test can be expressed as follows

(1) $RD = f(MI, x)$

where RD is the extent of redistribution measured in terms of the difference between the inequality measure for market income, MI, and the inequality measure for disposable income,

DPI, RD = MI – DPI. x denotes control variables (e.g. dependence ratio, public employment etc.).[4]

Table 2 reports the results for the relationship between inherent inequality and the extent of redistribution for those 12 OECD countries having three or more observations since 1967. It should be noted that our data set is an unbalanced panel what regards to the number of observations for individual countries and to the division of observations between different decades or between different waves of collection. Given our control variables for population structure, government employment and unobserved country differences, Table 2 indicates that increase in inherent inequality will increase the extent of redistribution.[5] However, effect is not particularly strong: in the most propitious case shown in column (5) one standard deviation increase in the Gini coefficient for market income (i.e., 4.42) will increase the redistribution (measured as the difference in the Gini coefficients between market and disposable income) in 3 percentage points. In terms of standard deviations this is around 0.64 standard deviations of the extent of redistribution.

Of our two control variables, percentage share of government employment of total employment, enters significantly into our regression equations in Table 2: one standard deviation increase in government employment (5.31) will increase redistribution by 3.1 percentage points, which is 0.66 standard deviations of the extent of redistribution (calculated from column 6). Our second control variable, dependency ratio, however, does not enter significantly into our regression equations except in column (3) where we do not have country dummies. In this case, one standard deviation increase in government employment (1.9) will increase redistribution by 1.6 percentage points, which is 0.34 standard deviations of the extent of redistribution. Finally, to control fixed effects, country dummies give us some indication of general attitude towards redistribution in the society against to that in the United States. Not surprisingly all of the coefficients have a positive sign. Given our two control variables (in column 6), countries strongly in favour of redistribution are Belgium, Germany, Finland and the Netherlands. Interestingly, when comparing columns (5) and (6) we can find

[4] Full assessment of the extent of redistribution would also take account of various publicly provided services at less than market value, which in Nordic countries are considerable. Many of these items - health care, education and social services - are very extensive.

[5] This is also well documented in the original work of Milanovic (2000) who mainly concentrated on the evolution of income share gain between market and disposable income of particular income groups (i.e. bottom half, bottom 20 per cent or the middle class). Given the same data set our focus is merely concentrated on extent of redistribution in general.

some evidence that redistribution has been organised through public employment in the Nordic countries and in the lesser extent in Canada, France and Belgium.

Table 3 reports the results between inherent inequality and redistribution, when pensions are included in market income. As discussed in Milanovic (2000: 37) in addition to their redistributive role, pensions can be considered as deferred wages (i.e., redistribution over time), and therefore, treating pensions as market income, we can better focus on those government social transfers having a clearer redistributive role (e.g. unemployment benefits and social assistance).[6] Again, inherent inequality enters significantly into all of our regression equations: one standard deviation increase in the Gini coefficient for market income including pensions (4.65) will increase redistribution in column 4 by 2.6 percentage points, which is 0.56 standard deviations of the extent of redistribution. As well as in the case of our two control variables, the effect of inherent inequality is marginally diminished when compared the estimations in Table 2. However, the main conclusions remain.

It is well known that different inequality measures weight different aspects of income distribution and therefore might give a little different view of inequality (see e.g. Sen, 1997, Lambert, 1993 or Cowell, 2000). Therefore it is in our interests to study whether our observed relationship survives, when we utilise another inequality measure – namely the squared coefficient of variation, CV^2. As a measure differences between every pair of income and their ranks, the Gini coefficient can be thought to place weight on observations nearby the mode of income distribution, while squared coefficient of variation places more weight on high incomes. Table 4 reports our results. As this LIS data is taken from a different source, we first show the respective equations (3) and (6) of Table 2 in columns (1)-(2) of Table 4. As can be seen, results for the Gini coefficients do not differ from each other. Furthermore, our estimations for squared coefficient of variation confirm previous results: increase in inherent inequality will increase the extent of redistribution. As shown in column (6) of Table 6, one standard deviation increase in squared coefficient of variation for market income (0.36) will increase the redistribution (measured as the difference in squared coefficient of variations between market and disposable income) in 0.28, which is 0.98 standard deviations of the extent of redistribution. Thus, our results for CV^2 indicate somewhat stronger response – while one standard deviation increase in inherent inequality measured in the Gini coefficient

[6] Note that in fact in LIS definition pensions are included in market income and what Milanovic (2000: 373) has included into market income is actually the social retirement benefits (see the Data Appendix).

indicated increase in the extent of redistribution by two-thirds of standard deviation, the relationship almost one-to-one, when CV^2 is utilised.

Table 2. Inherent inequality and redistribution in 12 OECD-countries; (Gini coefficient); OLS.

	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	-21.114	-7.324	6.159	-30.615	-18.995	-21.126
	(-4.07)	(-0.63)	(0.83)	(-10.16)	(-1.25)	(-2.77)
INHERENT	0.561	0.496	0.538	0.637	0.679	0.602
INEQUALITY	(5.12)	(3.73)	(5.64)	(11.02)	(7.93)	(9.14)
PUBLIC	0.496		0.638	0.581		0.588
EMPL.	(9.01)		(8.46)	(5.66)		(5.12)
DEP.		-0.029	-0.854		-0.134	-0.229
RATIO		(-0.11)	(-3.61)		(-0.38)	(-1.51)
AUS				3.883	4.231	3.681
				(7.22)	(5.51)	(6.67)
BEL				11.229	13.446	10.928
				(13.46)	(15.22)	(12.52)
CAN				1.261	4.308	0.830
				(1.34)	(3.95)	(0.83)
FIN				7.507	11.451	6.680
				(5.88)	(7.44)	(4.83)
FRA				2.012	5.482	2.125
				(2.22)	(6.69)	(2.10)
GER				8.472	7.900	7.871
				(12.87)	(6.09)	(11.21)
ITA				3.250	3.818	2.417
				(2.99)	(2.29)	(2.01)
NET				6.812	5.274	6.111
				(10.44)	(3.90)	(7.64)
NOR				3.173	10.621	3.160
				(2.02)	(11.56)	(1.82)
SWE				4.314	12.010	4.433
				(2.33)	(5.62)	(2.14)
UK				2.671	4.828	2.905
				(3.02)	(4.15)	(3.13)
nobs.	55	55	55	55	55	55
adj. R^2	0.508	0.188	0.596	0.936	0.835	0.938
SEE	3.305	4.248	2.995	1.191	1.916	1.177

Notes: Redistribution and inherent inequality are measured in Gini coefficients. White heteroscedasticity-consistent t-statistics are reported in parenthesis.

Table 3. Inherent inequality (ingl. pensions) and redistribution in 12 OECD-countries; (Gini coefficient); OLS.

	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	-12.014	-12.963	-8.512	-26.317	-20.576	-30.989
	(-3.31)	(-1.59)	(-1.14)	(-7.76)	(-3.81)	(-4.71)
INHERENT	0.335	0.180	0.356	0.595	0.514	0.602
INEQUALITY	(4.43)	(2.17)	(4.52)	(10.58)	(6.03)	(10.59)
PUBLIC	0.343		0.373	0.340		0.342
EMPL.	(6.24)		(5.07)	(2.76)		(2.90)
DEP.		0.410	-0.145		0.095	0.125
RATIO		(1.74)	(-0.59)		(0.52)	(0.93)
AUS				4.012	4.236	4.106
				(7.15)	(7.96)	(6.95)
BEL				7.358	8.152	7.605
				(5.69)	(6.29)	(5.90)
CAN				2.337	3.797	2.480
				(2.44)	(4.31)	(2.50)
FIN				8.799	10.278	9.070
				(7.98)	(9.98)	(8.40)
FRA				1.969	3.551	1.888
				(2.12)	(5.38)	(2.06)
GER				6.048	5.194	6.364
				(7.41)	(5.65)	(6.80)
ITA				0.404	0.465	0.878
				(0.34)	(0.43)	(0.70)
NET				5.607	4.935	5.998
				(7.40)	(5.22)	(6.39)
NOR				5.788	9.132	5.625
				(3.03)	(7.92)	(2.97)
SWE				4.578	8.191	4.458
				(2.13)	(4.11)	(2.14)
UK				2.936	3.708	2.775
				(3.47)	(3.96)	(3.13)
nobs.	55	55	55	55	55	55
adj. R^2	0.379	0.124	0.373	0.847	0.774	0.846
SEE	2.443	2.900	2.455	1.213	1.474	1.218

Notes: Redistribution and inherent inequality are measured in Gini coefficients. White heteroscedasticity-consistent t-statistics are reported in parenthesis.

Table 4. Inherent inequality and redistribution in 12 OECD-countries; (Gini coefficient (1) and (2), CV^2 (3)-(6)); OLS

	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	6.162	-0.159	-0.333	0.157	-0.931	-1.051
	(1.90)	(-1.70)	(-4.05)	(0.51)	(-2.04)	(-2.22)
INHERENT	0.550	0.574	0.741	0.755	0.768	0.767
INEQUALITY	(7.14)	(6.90)	(9.85)	(9.68)	(11.35)	(10.99)
PUBLIC	0.692	0.363	0.928	1.278		0.536
EMPL	(8.65)	(4.87)	(3.80)	(4.10)		(0.77)
DEP.	-1.131	-0.147		-1.695	1.858	1.964
RATIO	(-3.95)	(-0.66)		(-1.79)	(1.43)	(1.52)
AUS		0.0343			0.133	0.130
		(5.28)			(2.75)	(2.70)
BEL		0.0934			0.265	0.243
		(7.73)			(4.92)	(3.99)
CAN		0.0153			0.135	0.109
		(1.33)			(2.55)	(1.73)
FIN		0.0690			0.248	0.215
		(4.62)			(4.29)	(2.91)
FRA		0.0245			0.111	0.081
		(1.75)			(1.28)	(0.82)
GER		0.076			0.221	0.226
		(7.65)			(3.23)	(3.28)
ITA		0.0104			0.036	0.030
		(0.79)			(0.54)	(0.46)
NET		0.0630			0.145	0.159
		(6.77)			(1.94)	(2.09)
NOR		0.0423			0.115	0.049
		(2.77)			(1.75)	(0.53)
SWE		0.0772			0.235	0.153
		(6.63)			(4.74)	(1.33)
UK		0.0301			-0.012	-0.032
		(3.34)			(-0.13)	(-0.36)
nobs.	48	48	48	48	48	48
Aaj. R^2	0.615	0.931	0.870	0.875	0.916	0.915
SEE	0.028	0.012	0.102	0.100	0.082	0.082

Notes: LIS-data is provided by Markus Jäntti. This data is not in percentages. Redistribution and inherent inequality are measured in columns (1) and (2) in Gini coefficients and in columns (4)-(6) in squared coefficient of variations (CV^2's). White heteroscedasticity-consistent t-statistics are reported in parenthesis.

Of course, there are several reasons to be cautious about our results. Our sample is relatively small. There may be problems with measurement errors and with endogeneity of our explanatory variable. It is possible that the redistributive policy has itself caused rising inequality of market incomes (cf. Lindbeck, 1997). In principle we can distinguish two ways of redistributing income, a direct one, transferring income between different individuals and an indirect one, through manipulations of equilibrium quantities and prices (wages). For examples an increase in the statutory progressivity of tax/transfer system could make members of lower-income group worse off, because it reduces their before-tax wage rates. It is not easy empirically to separate out these two effects.

4. Possible explanations

(i) Optimal non-linear tax theory[7]

The statistical association between the extent of redistribution and inherent inequality appears to be a robust one. The question is why this relationship exists. The simplest model in which incentives, inherent inequality, preferences for equity, and revenue requirement can be integrated in a coherent framework, and which can provide a useful background for the questions we are interested in, turns out to be the Mirrlees (1971) model of optimal non-linear income taxation. In this model there is inherent inequality because individuals differ in their labour productivities. The government chooses a non-linear income tax and transfer schedule to maximize a welfare function, which is in principle sensitive to inequality, but does so with the added constraint that individuals choose their labour supply in response to the tax function. The government must also satisfy the overall budget balance constraint, with tax revenues equal to outlays. Unfortunately, however, as well recognised in the literature, closed form analytical results are few.

However, in the tradition of the non-linear tax theory following, we can provide better understanding of the form of optimal redistribution policy through numerical simulations.

[7] There is another strand of optimal redistribution literature (see Mirrlees, 1974, Varian, 1980, Tuomala, 1990) that stresses the social insurance role of redistributive taxation. In this framework, an increase in variability of income would also increase the optimal degree of progressivity, because it increases the insurance value of the progressivity.

With these techniques, we can compute post tax income at each level of marginal productivities or abilities (in the sense of wage rates), and thus calculate inequality of pre and post tax/transfer income as well as total income, for different values of key parameters. For our purposes the result from Kanbur-Tuomala (1994) are the most useful ones. They show that the inherent inequality plays a critical role in the pattern of optimal redistribution. Their focus is on the consequences of varying the standard deviation of wage rates. The "industry standard" assumption has been of a log-normal distribution of wages, with a standard deviation of logs of 0.39. Kanbur-Tuomala maintain the assumption of log-normal distribution but consider cases in which the standard deviation of logs is greater than 0.39. They choose a standard deviation of 0.7 and 1.0. Mirrlees (1971) justified his choice of 0.39 for the distribution of wage rates from the work of Lydall (1968) on earnings distributions. But the distribution of earnings is not the distribution of wages. For this reason Kanbur-Tuomala (1994) calibrate the log-normal wage (ability) distribution so that the income distribution inferred from the wage distribution matches the actual distribution. We can also find strong support for higher values in recent inequality estimates of OECD countries based on LIS data (see figure in appendix). We know (see Aitchison-Brown, 1957: Theorem 2.7 and table A1) that if the standard deviations are 0.7 and 1.0 then the Gini coefficients are 0.379 and 0.52. Thus it seems to us that the computations based with 0.7 and 1.0 are not based on empirically implausible estimates[8].

Simulation studies, using an unweighted utilitarian social welfare function and a standard deviation of 0.39, suggest that declining marginal rates are optimal. The counter-intuitiveness of these results is lessened once it is noted that marginal tax rates are a relatively poor indication of redistribution powers of an optimal tax structure. In fact, income redistribution is accomplished by giving everyone a sizable poll subsidy and then taxing it away with a declining marginal rate on income and consequently to lessen the disincentives for high productivity workers. Therefore average tax rates may tell more about the extent of redistribution. The average rates range from –13 percent at the tenth percentile point to 31 percent at the 99th percentile of the distribution. Changing the standard deviation to 0.7, the schedule takes a very different shape. It becomes mildly progressive through most of its range. At the bottom of the wage distribution, the marginal tax rate is 57 percent. The

[8] In all cases Kanbur-Tuomala (1994) assume an elasticity of substitution between consumption and leisure of 0.5 and the ratio of government revenue to national income is 10 percent, which is spent on public goods in a way that does not affect the rest of the model.

marginal rate rises to 63 percent by the middle of the distribution (median), and stays there until almost the ninetieth percentile of the distribution. The average tax rates in turn range from –99 percent at the tenth percentile point to 43 percent. With a standard deviation of 1.0, marginal rates range from 47 percent at the bottom to 74 percent at the 84 eighty-forty percentile. Using a weighted utilitarian social welfare function and a standard deviation of 1.0 the lowest marginal rate is 69 percent and the highest is 80 percent. The average rate varies from –100 percent at the tenth percentile point to 62 percent at the 99th percentile point.

In sum, Kanbur-Tuomala (1994) show that when inherent inequality increases the optimum income tax/transfer system becomes more progressive, taxing the better off at higher rates to support the less well off. Thus, one of the policy responses in rise of inherent inequality should be a greater willingness to redistribute through the tax and transfer system. As the degree of inherent inequality changes, for any given degree of egalitarianism and any given degree of incentive effects, so will the amount of redistribution you will attempt to achieve. And similarly, if the inherent inequality decreases, the redistributive role of the government budget decreases.

(ii) Other explanations

The prediction of ("rational") public choice theory of the size of government proposed by Meltzer-Richard (1981) is also that a greater inherent inequality should also increase the amount of redistribution. In their model increased inequality increases mean income relative to the income of the decisive voter and, thus, makes redistribution more attractive to him or her. Persson-Tabellini (1994) and Alesina-Rodrik (1994) among others incorporate versions of this result in constructing models of why greater pre-tax-and-transfer inequality is harmful for economic growth.

Perhaps most surprisingly, some authors have suggested that redistribution is greater the less inherent inequality there is (see e.g. Peltzman, 1980, Persson, 1995 and Lindert, 2000). Peltzman's starting point was his observations that in the US greater inherent inequality seemed to lead less redistribution. He attempts an explanation in a model in which the total support for redistribution increases if income inequality between middle and lower income groups narrow. The problem with this explanation is that because income inequality tends to increase both within group and between group inequality, a decomposition analysis of income

inequality tells that the net effect on redistribution is indeterminate. Persson (1995), in turn, provides an explanation based on the notion that people care not only about the level of their own incomes but also about their incomes relative to those others. Thus people neglect the envy their incomes cause others so that introducing a linear income tax with relatively little inherent inequality can yield Pareto improvement. It is not easy to see how the relationship might go in this way. Keen (1997) writes "such preferences imply, for example, that the non-poor would actually gain by taking resources away from the poor and simply throwing them away". At least our empirical study does not support that redistribution is negatively correlated to inherent inequality.

5. Conclusions

Our finding that redistribution in OECD countries is positively associated with inherent inequality is not the new one. The point we have made here is that this finding can be explained through the Mirrlees model. If the inherent inequality increases (decreases) for any given incentive effects and the degree of espoused egalitarianism so will the society's redistributive effort.

Our empirical results are based on the assumption that the degree of espoused egalitarianism has remained constant over the period considered. There is, however, some recent individual country evidence that there could have been a shift in norms causing government to become less willing to finance transfers and to levy progressive taxes (e.g. in the UK and Finland; see Atkinson, 1999) leading to reduction in the extent of redistribution. One could argue in line with Atkinson that these kinds of changes have been episodic rather than time trend and therefore rather difficult to justify in the context of median voter models. Thus, future research should be focussed on the role of the egalitarian objects of government, which is also an important component of the Mirrlees model.

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Data Appendix:

Industrialised countries included: Australia (AUS), Belgium (BEL), Canada (CAN), Finland (FIN), France (FRA), (West-) Germany (GER), Ireland (IRE), Italy (ITA), the Netherlands (NET), Norway (NOR), Sweden (SWE), The United Kingdom (UK), the United States.

Countries excluded: Austria (AUT) [only 2 observations & not included in Milanovic (2000)], Denmark (DEN) [only 2 observations], Ireland (IRE) [only 1 observation], Luxembourg (LUX), Spain (SPA) [only 2 observations].

For full list of countries, see http://lisweb.ceps.lu/techdoc/datasets.htm

Income inequality

All measures of income inequality are originally from the LIS DataBase (http://www.lis.ceps.lu/). Figures for Tables 1-3 are from Milanovic (2000, 396-398) Appendix A (Gini coefficients). Figures for Table 4 are kindly provided by Markus Jäntti.

Income variables utilised (see Milanovic 2000, 373 note 7) and LIS (http://lisweb.ceps.lu/techdoc.htm):

Market income (MI): factor income [V1: net income and salary income + V4: farm self-employment income + V5: non-farm self-income + V8: cash property income] plus [*V32: private pensions + V33: public sector pensions*]

Market income plus pensions (MI+P): MI plus [V19: social retirement benefits]. What regards to pensions please, note the definition of market income.

Gross income (GI): MI plus [V19: social retirement benefits + V20: child or family allowances + V21: unemployment compensation + V16: sick pay + V17: accident pay + V18: disability pay + V22: maternity pay + V23: military/vet/war benefits + V24: other social insurance, V25: means-tested cash benefits + V26: near-cash benefits + V34: alimony or child support + V35: other regular private income + V36: other cash income]

Disposable income (DPI): GI plus [V7: mandatory contributions to self-employed + V13: mandatory employee contribution + V11: income tax]

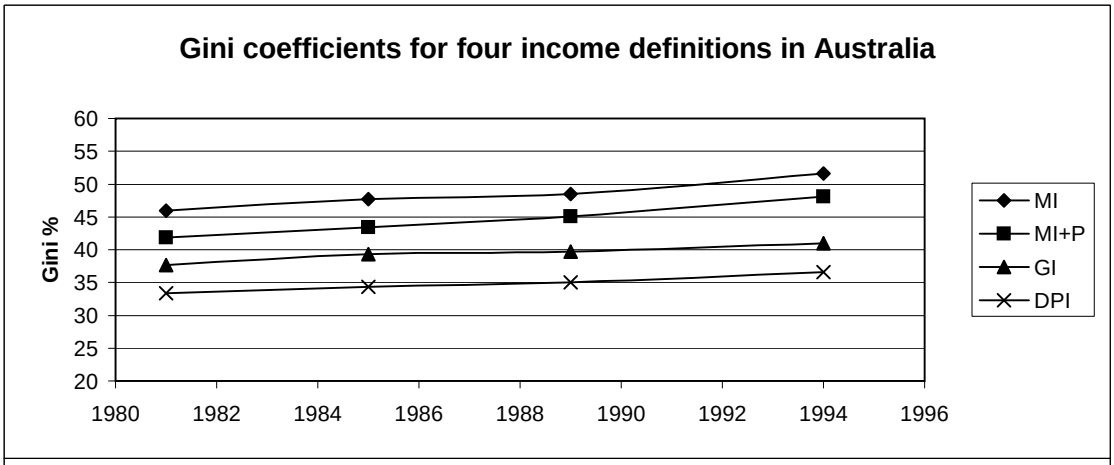
Redistribution (RD): The difference between the inequality measure for market income, MI, and the inequality measure for disposable income, DPI.

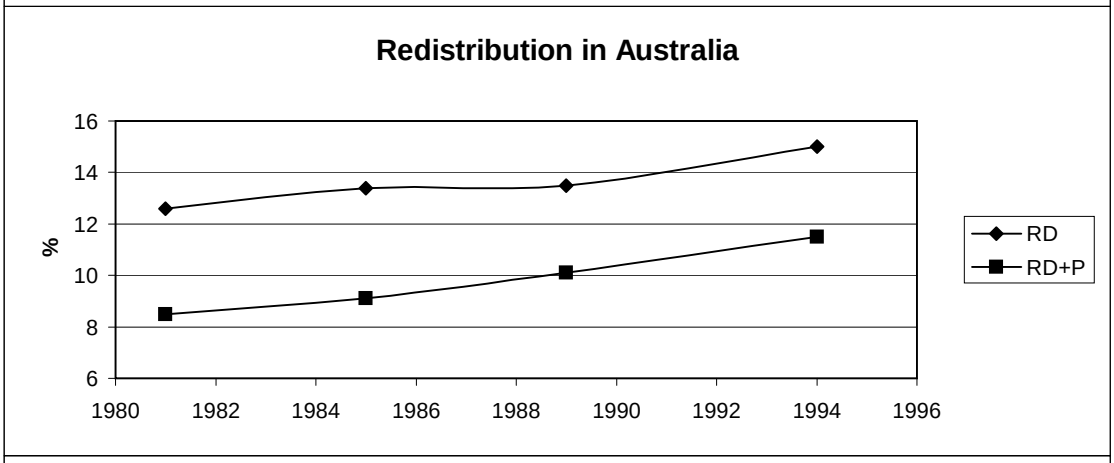
Redistribution plus pensions (RD+P): The difference between the inequality measure for market income including pension transfers, MI-P, and the inequality measure for disposable income, DPI.

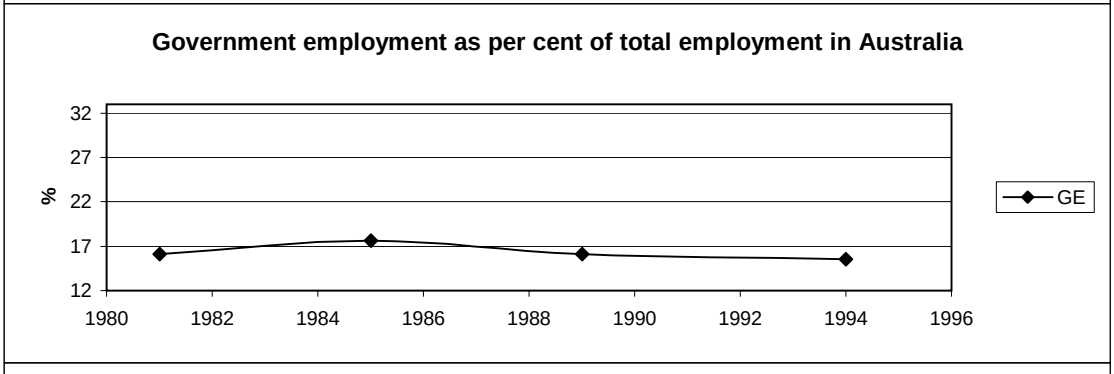
Other variables:

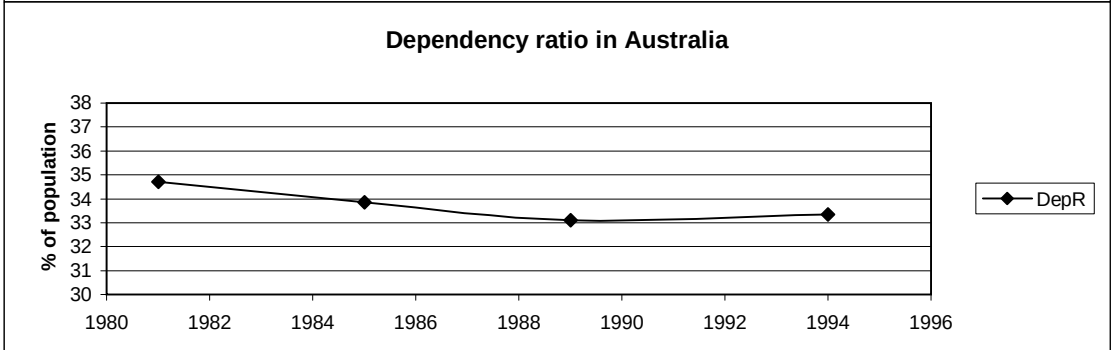
Dependency ratio (DepR): Population under 16-years and over 64-years as percentage of total population. Source: OECD data base (Economic Outlook) provided by in Finland by Etlatieto.

Government employment (GE): General government employment as percentage of total employment. Source: OECD data base (Economic Outlook) provided by Etlatieto.

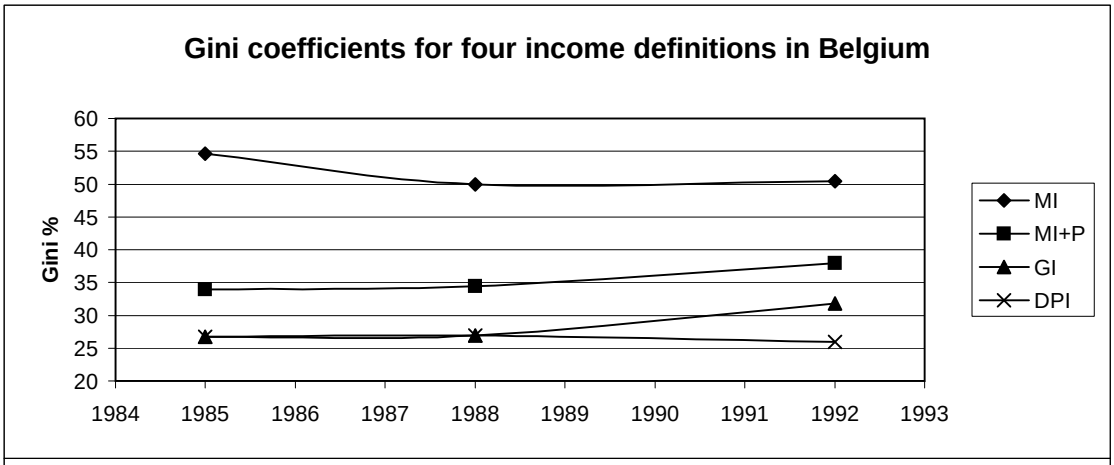


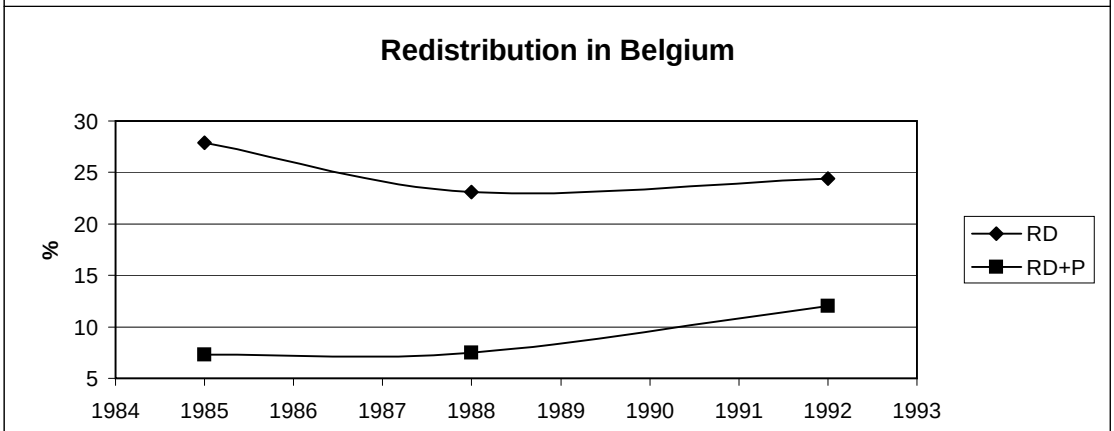


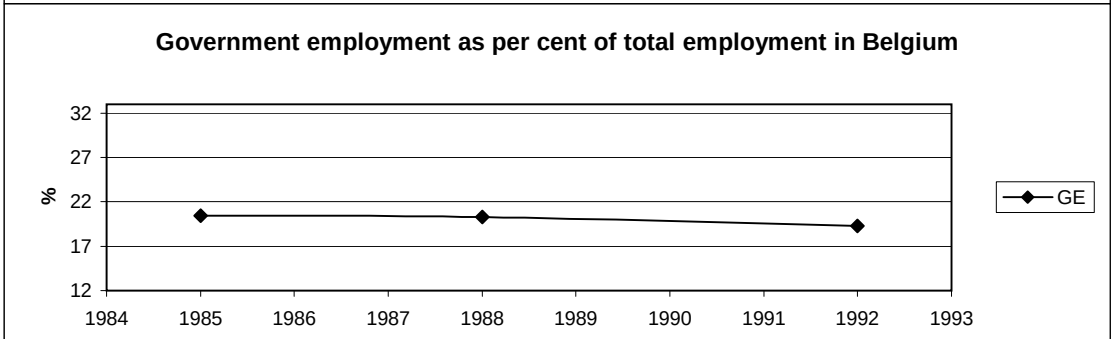


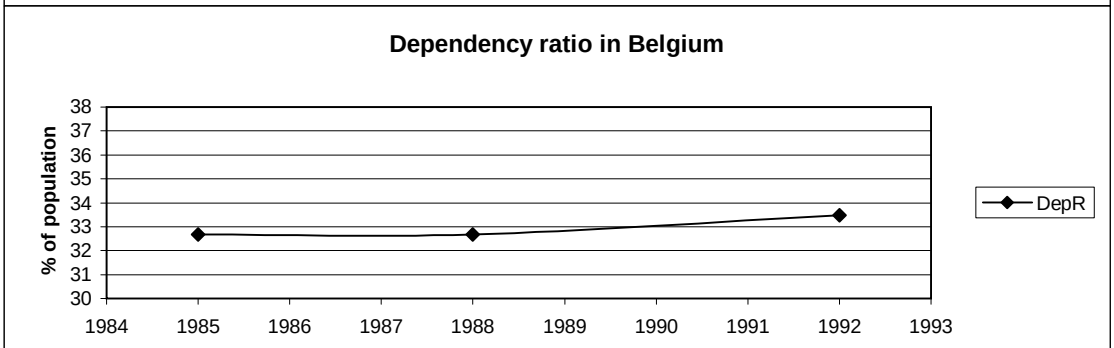


	MI	MI+P	DPI	RD	RD+P
min	46.0	34.0	33.4	12.6	8.5
max	51.6	38.0	36.6	15.0	11.5
diff	5.6	4.0	3.2	2.4	3.0
aver	48.5	35.5	34.8	13.6	9.8
stdev	2.34	2.20	1.35	1.00	1.31
diff/stdevs	2.39	1.82	2.37	2.40	2.29

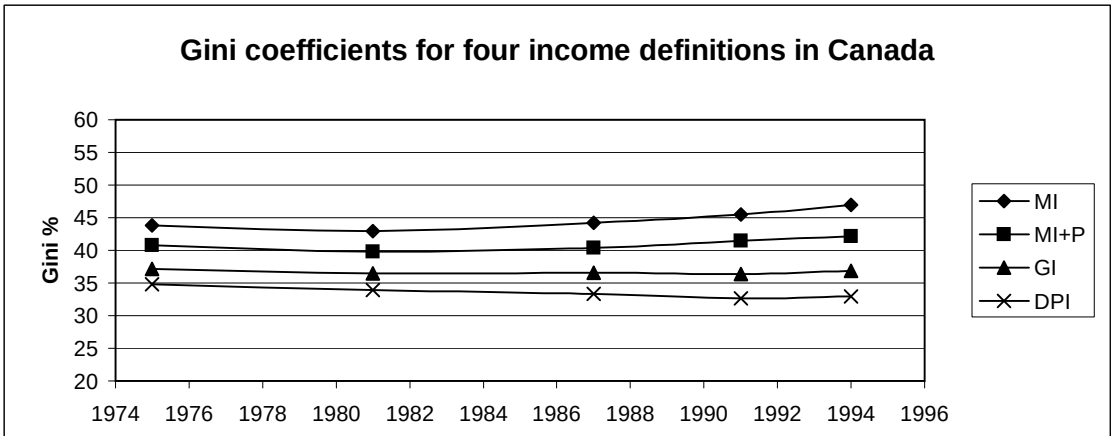


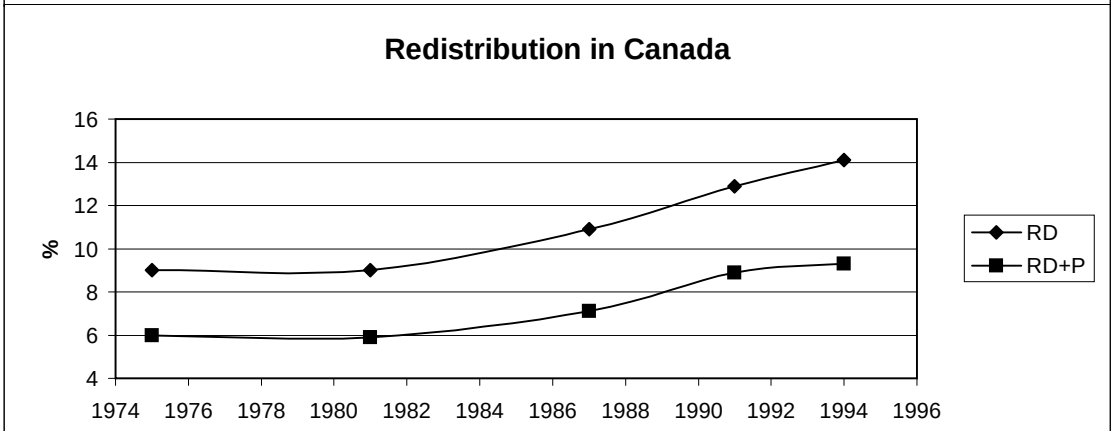


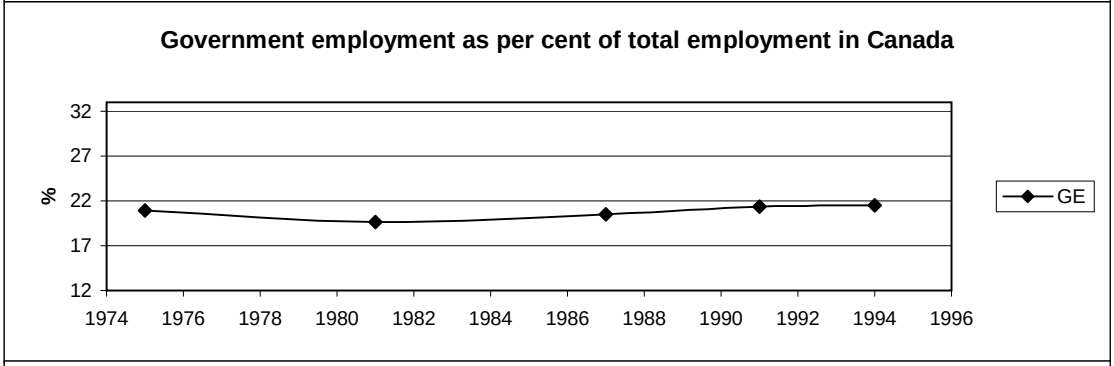


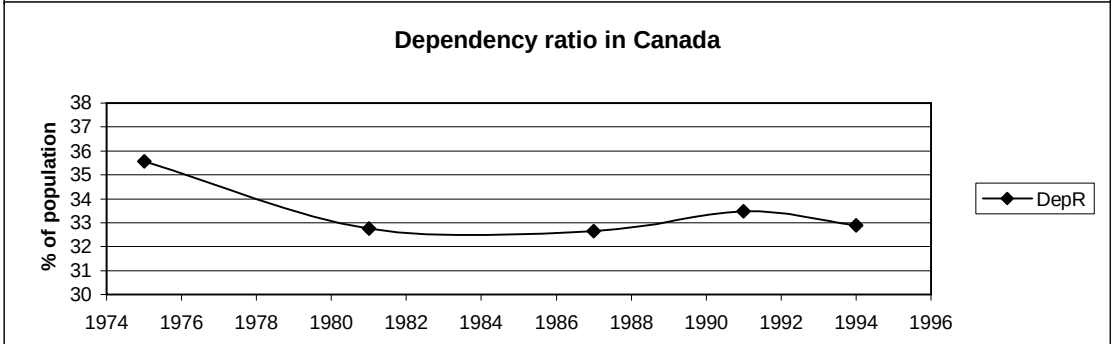


	MI	MI+P	DPI	RD	RD+P
min	50.0	34.0	26.0	23.1	7.3
max	54.6	38.0	26.9	27.9	12.0
diff	4.6	4.0	0.9	4.8	4.7
aver	51.7	35.5	26.5	25.1	8.9
stdev	2.55	2.20	0.47	2.48	2.66
diff/stdevs	1.81	1.82	1.90	1.93	1.77

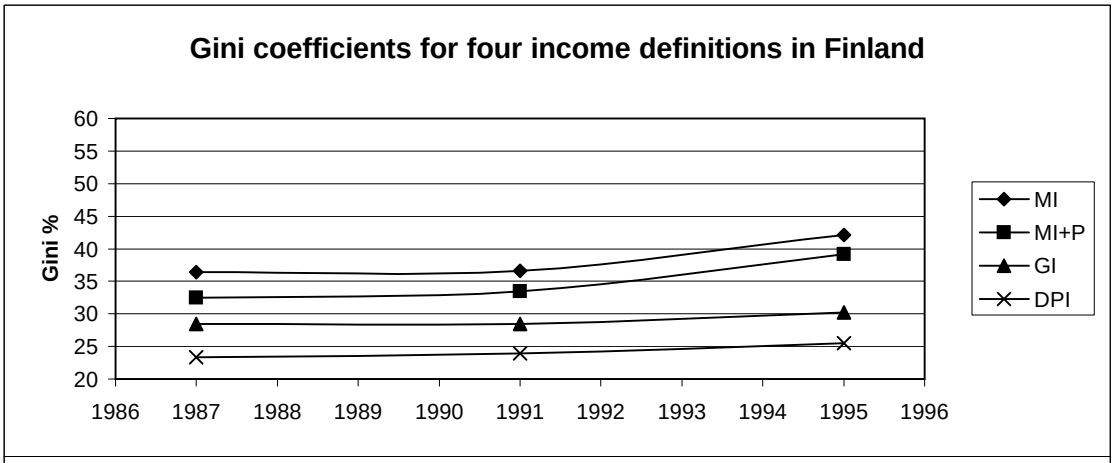


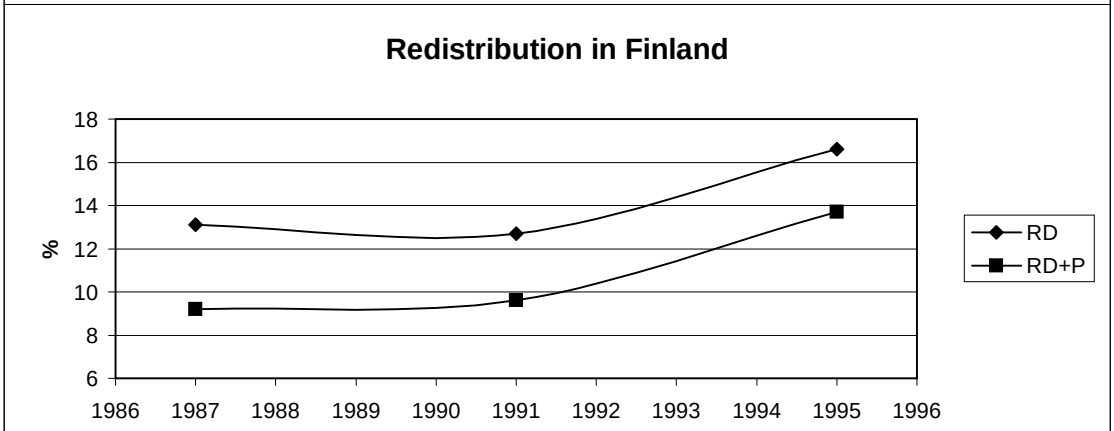


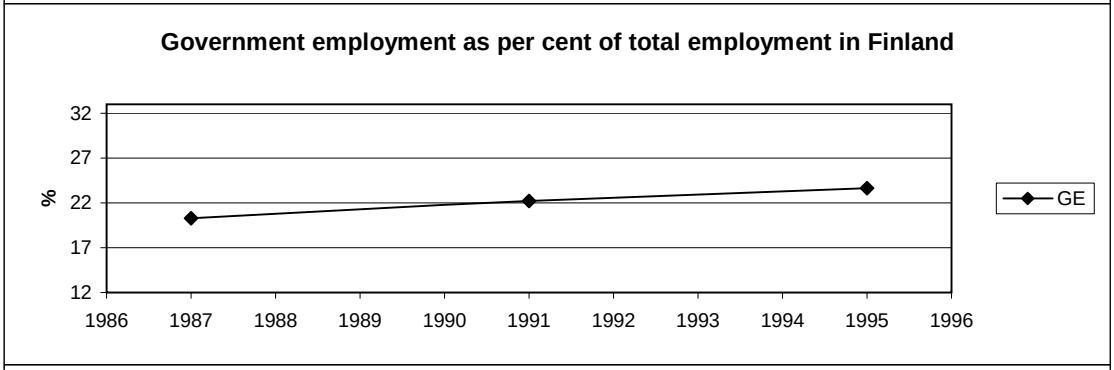


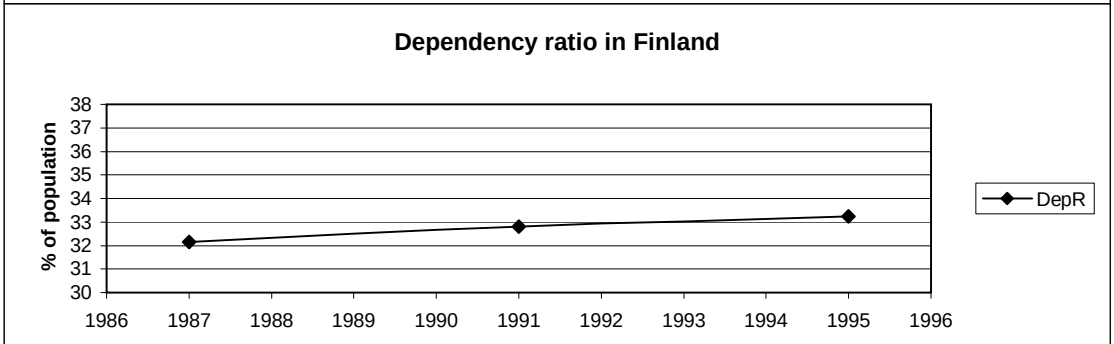


	MI	MI+P	DPI	RD	RD+P
min	42.9	39.8	32.6	9.0	5.9
max	47.0	42.2	34.8	14.1	9.3
diff	4.1	2.4	2.2	5.1	3.4
aver	44.7	40.9	33.5	11.2	7.4
stdev	1.60	0.94	0.87	2.29	1.59
diff/stdevs	2.56	2.56	2.52	2.22	2.13

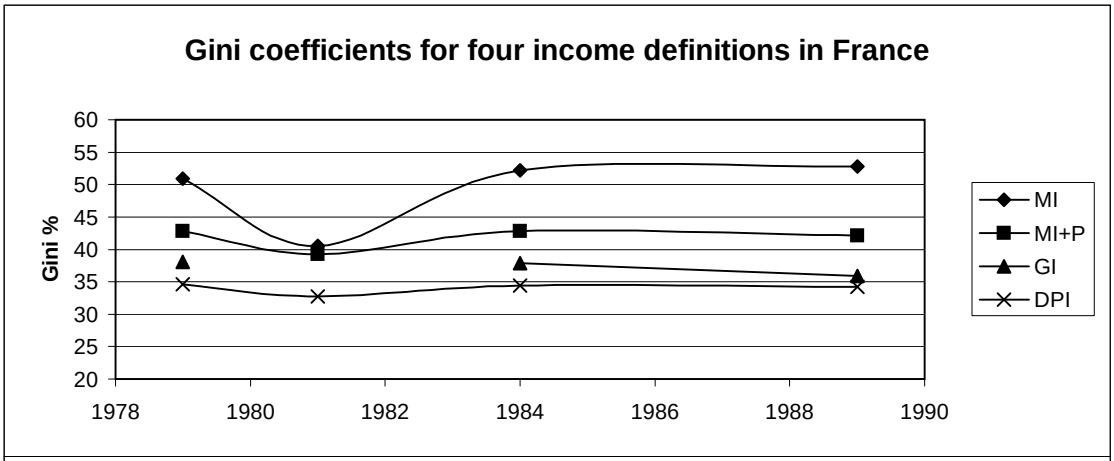


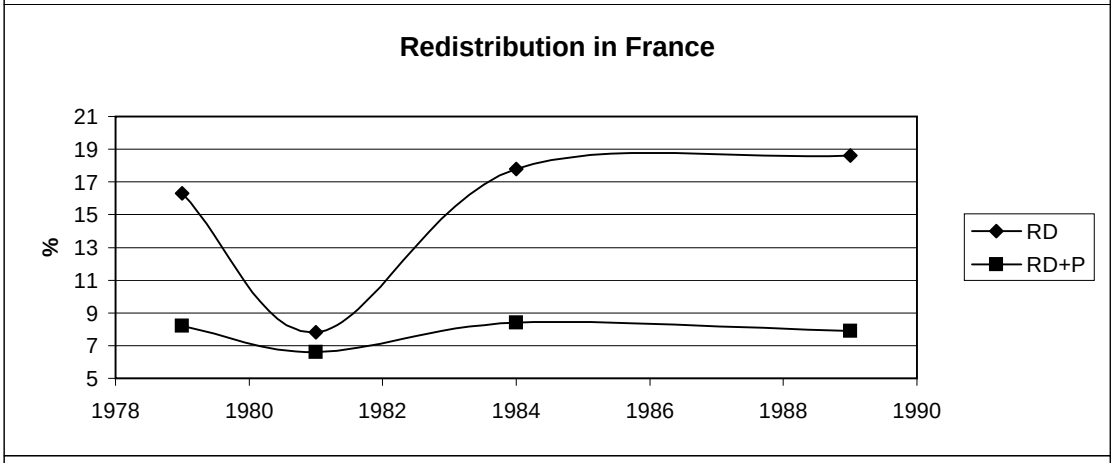


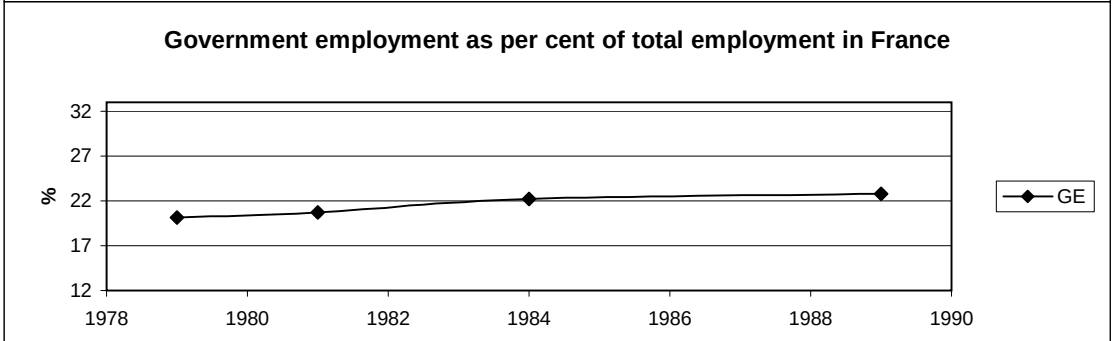


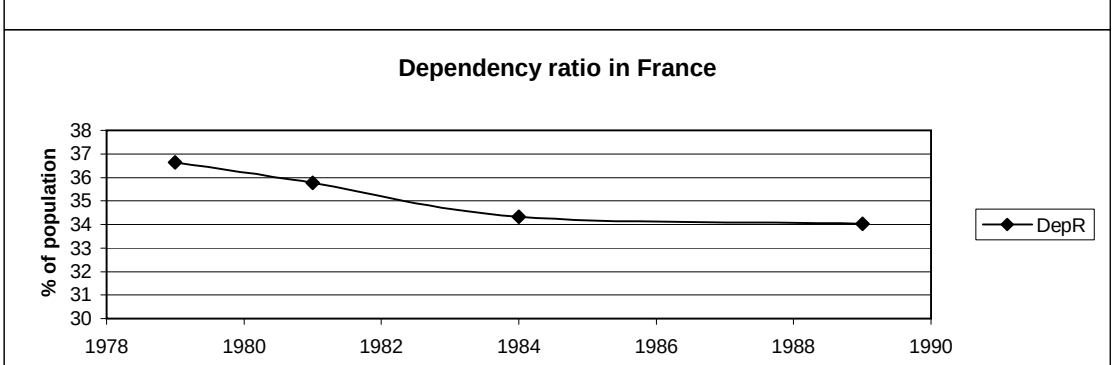


	MI	MI+P	DPI	RD	RD+P
min	36.4	32.5	23.3	12.7	9.2
max	42.1	39.2	25.5	16.6	13.7
diff	5.7	6.7	2.2	3.9	4.5
aver	38.4	35.1	24.2	14.1	10.8
stdev	3.23	3.61	1.14	2.15	2.49
diff/stdevs	1.76	1.85	1.93	1.82	1.81



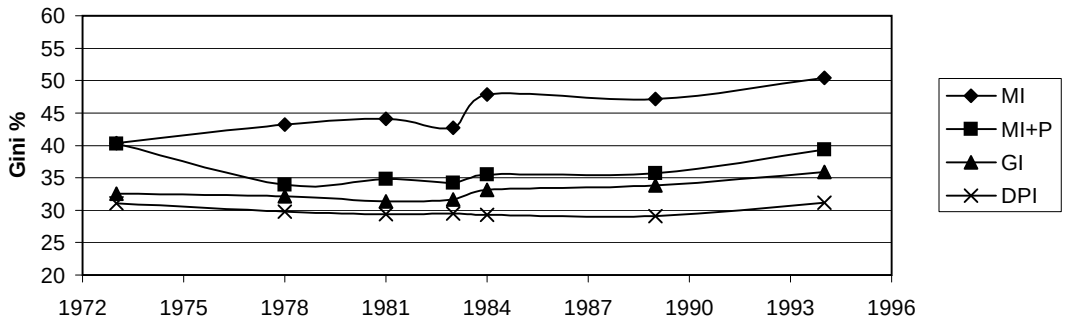




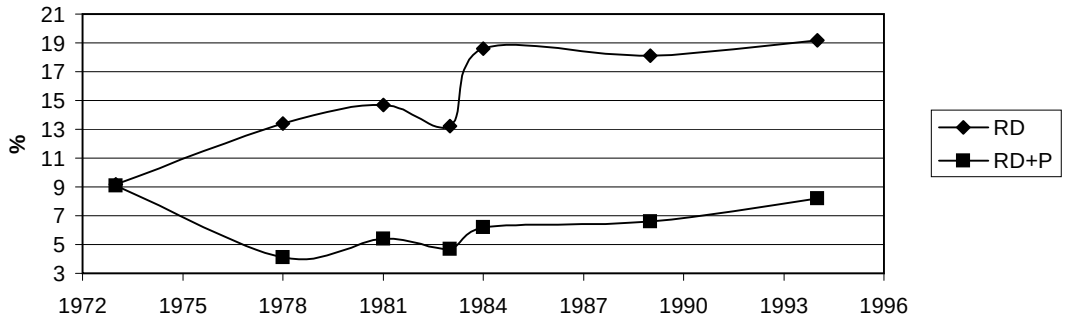


	MI	MI+P	DPI	RD	RD+P
min	40.5	39.3	32.7	7.8	6.6
max	52.8	42.8	34.6	18.6	8.4
diff	12.3	3.5	1.9	10.8	1.8
aver	49.1	41.8	34.0	15.1	7.8
stdev	5.79	1.67	0.87	4.98	0.81
diff/stdevs	2.13	2.10	2.20	2.17	2.22

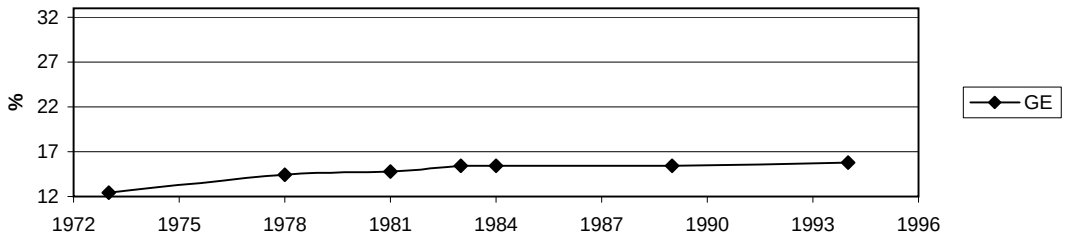
Gini coefficients for four income definitions in Germany



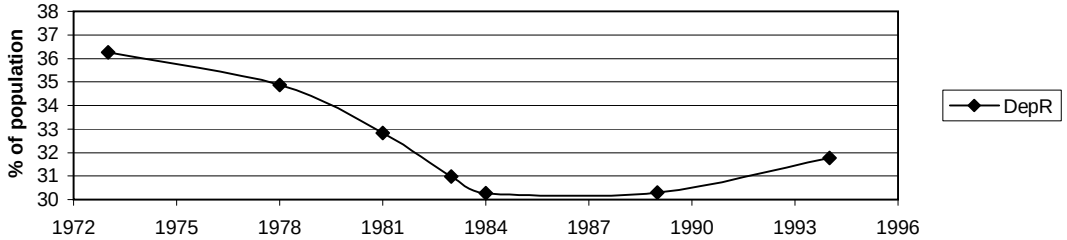
Redistribution in Germany



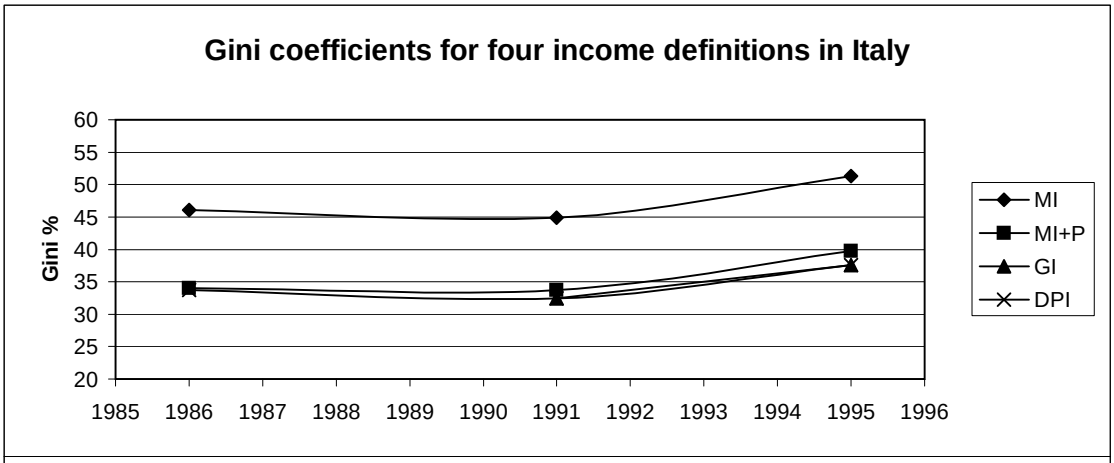
Government employment as per cent of total employment in Germany

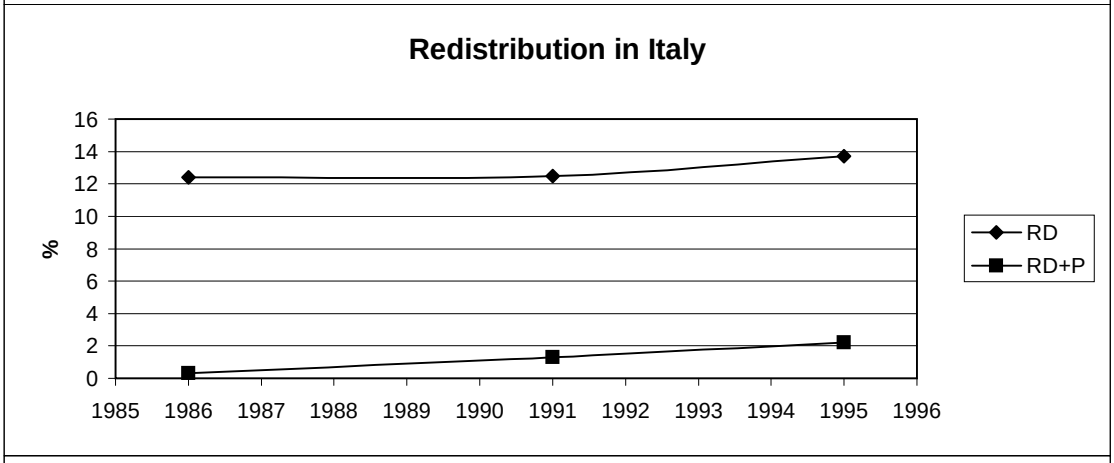


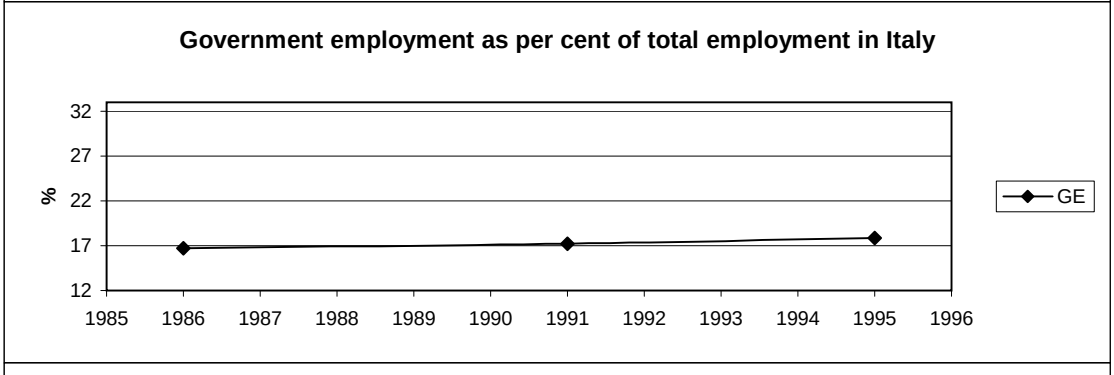
Dependency ratio in Germany

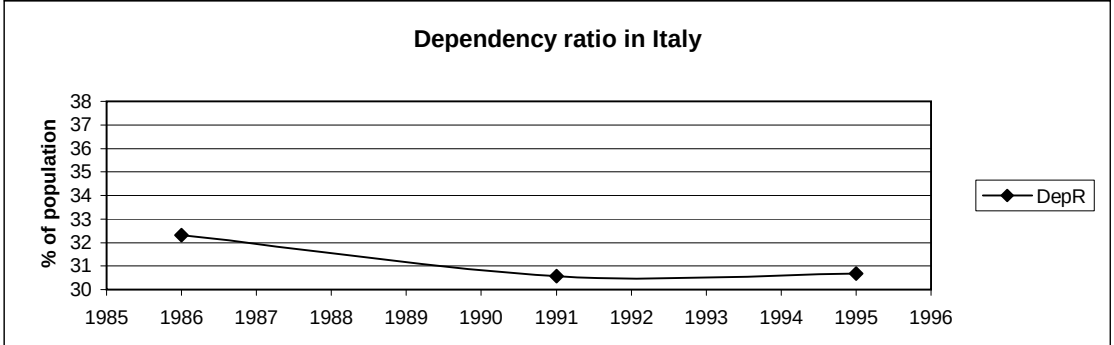


	MI	MI+P	DPI	RD	RD+P
min	40.3	33.9	29.1	9.2	4.1
max	50.4	40.2	31.2	19.2	9.1
diff	10.1	6.3	2.1	10.0	5.0
aver	45.1	36.2	29.9	15.2	6.3
stdev	3.51	2.52	0.87	3.64	1.81
diff/stdevs	2.88	2.50	2.41	2.75	2.76



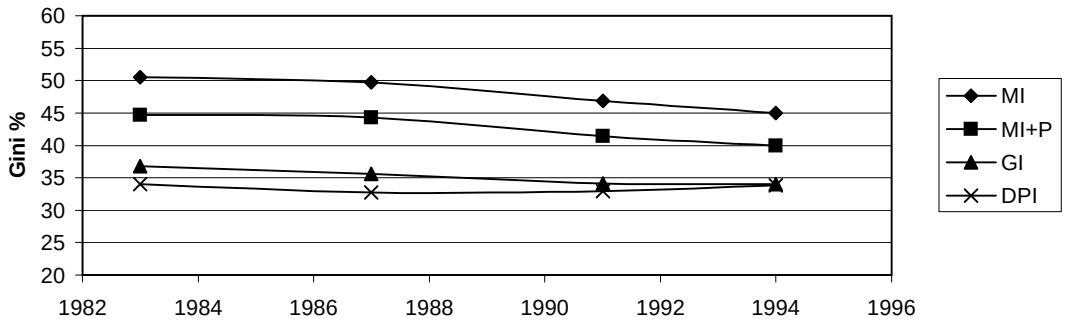




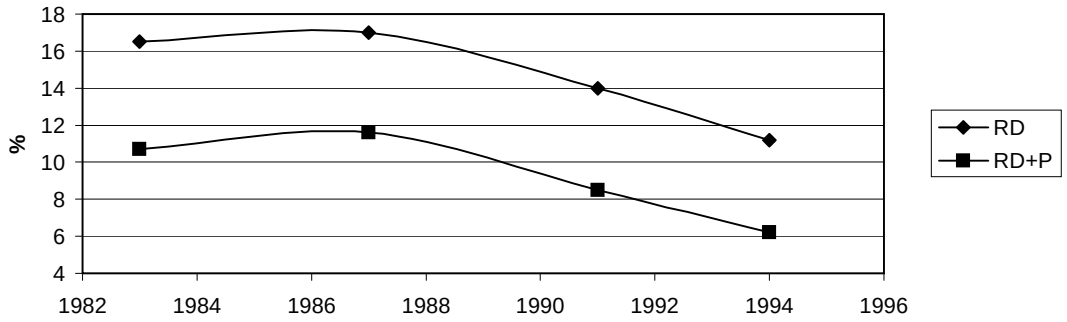


	MI	MI+P	DPI	RD	RD+P
min	44.9	33.7	32.4	12.4	0.3
max	51.3	39.8	37.6	13.7	2.2
diff	6.4	6.1	5.2	1.3	1.9
aver	47.4	35.8	34.6	12.9	1.3
stdev	3.40	3.44	2.71	0.72	0.95
diff/stdevs	1.88	1.77	1.92	1.80	2.00

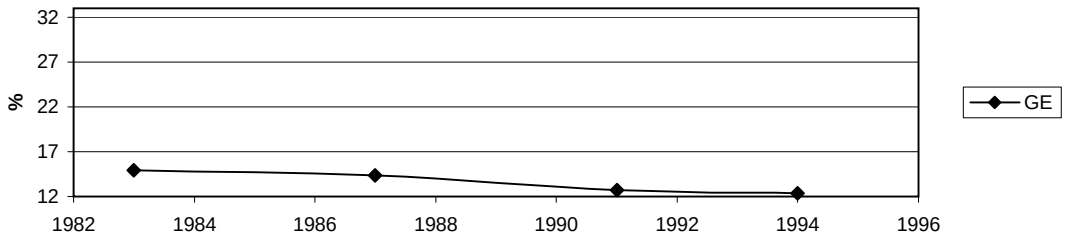
Gini coeff.s for four income definitions in the Netherlands



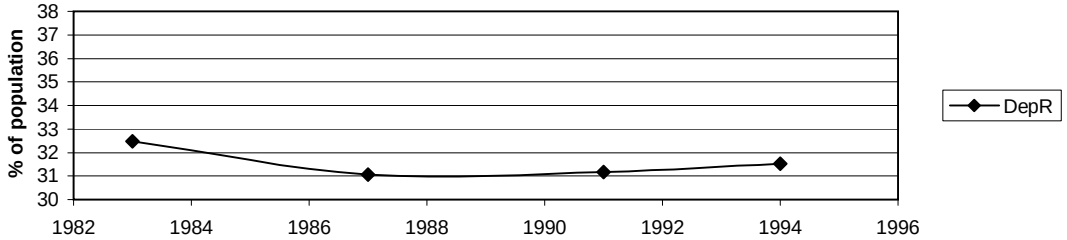
Redistribution in the Netherlands



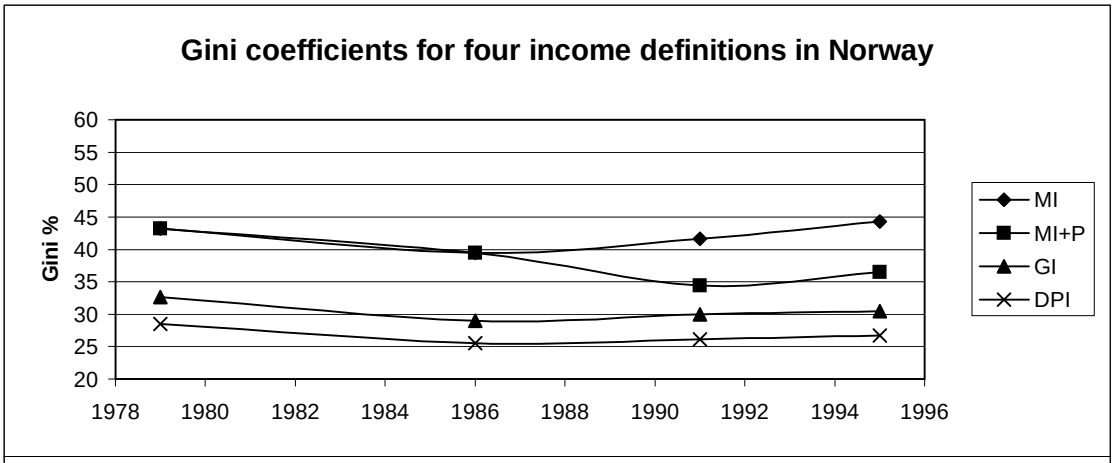
Government employment as per cent of total empl. in the Netherlands

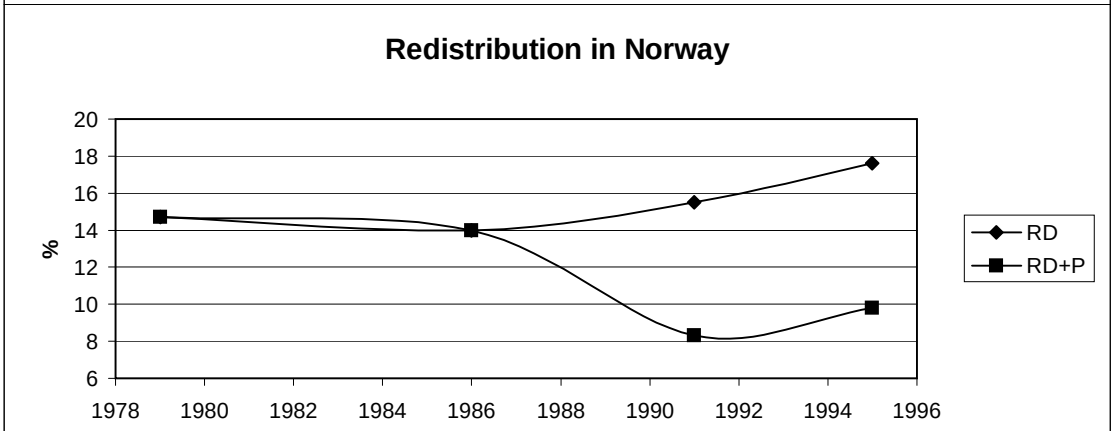


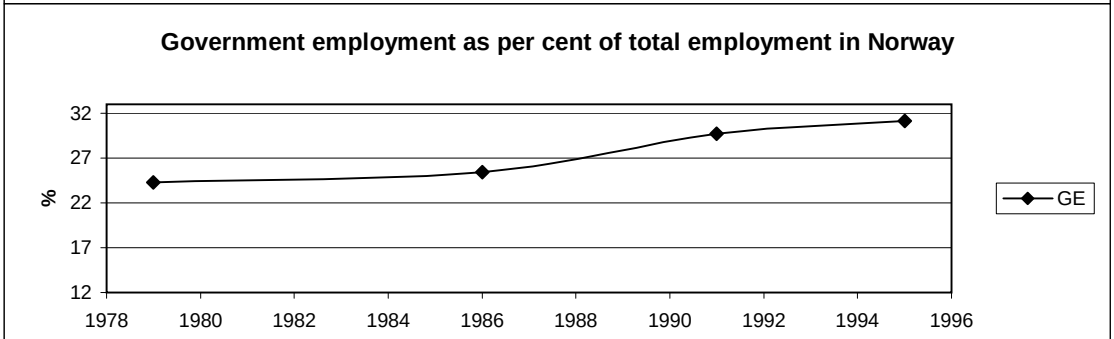
Dependency ratio in the Netherlands

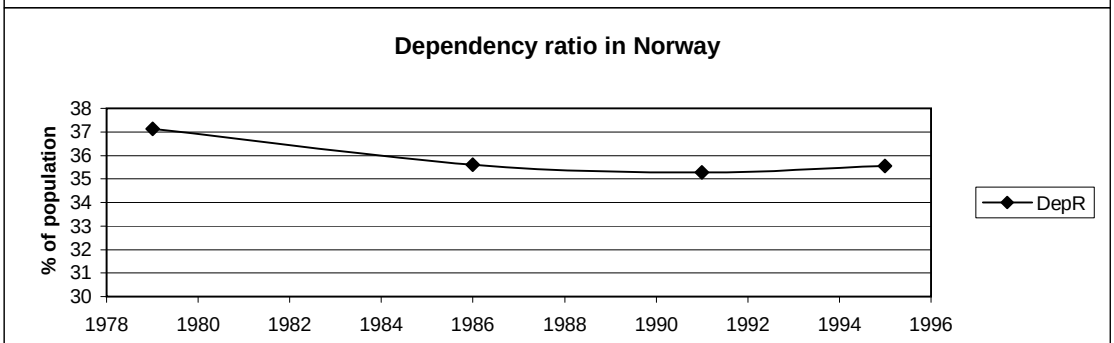


	MI	MI+P	DPI	RD	RD+P
min	45.0	40.0	32.7	11.2	6.2
max	50.5	44.7	34.0	17.0	11.6
diff	5.5	4.7	1.3	5.8	5.4
aver	48.0	42.6	33.4	14.7	9.3
stdev	2.54	2.27	0.65	2.66	2.41
diff/stdevs	2.17	2.07	2.01	2.18	2.24

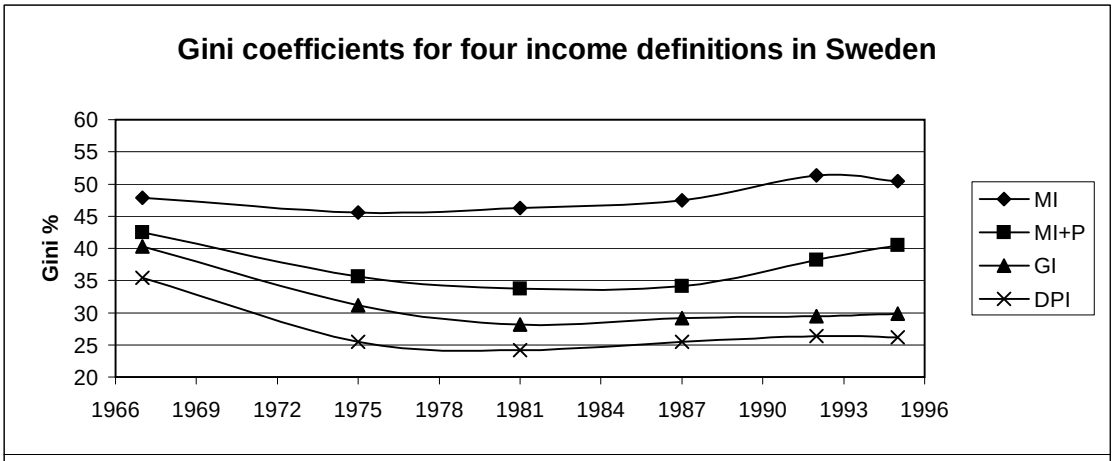


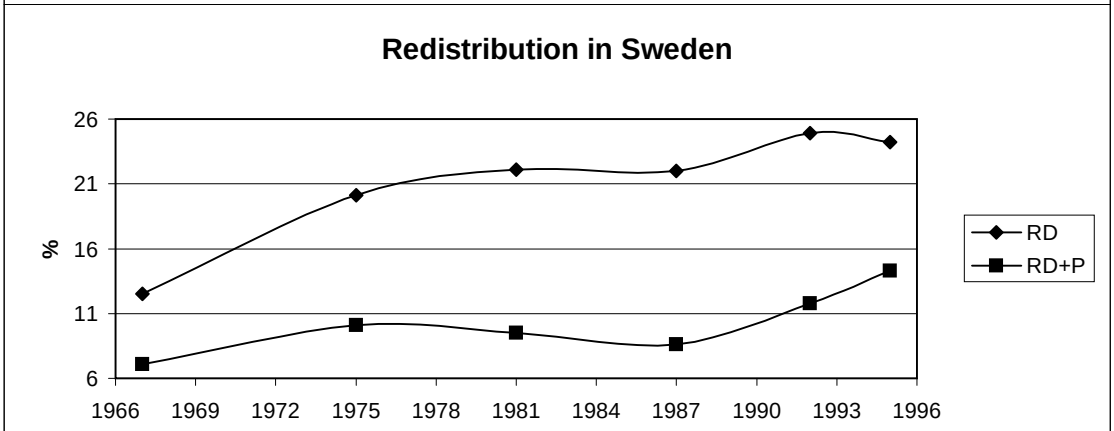


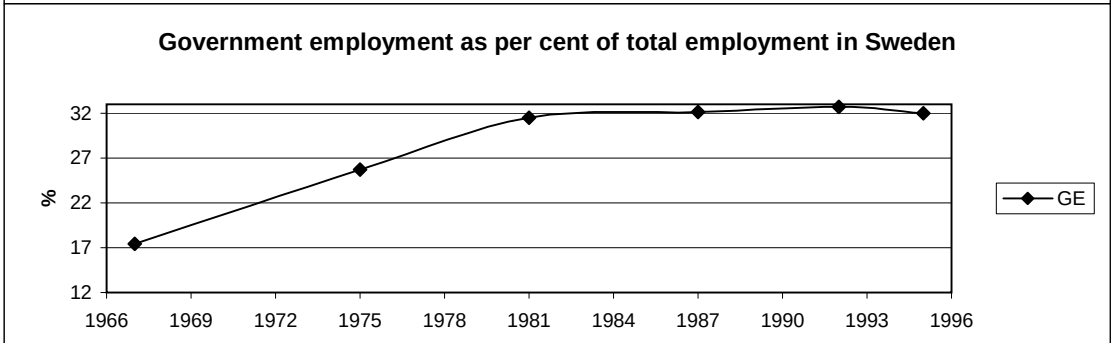


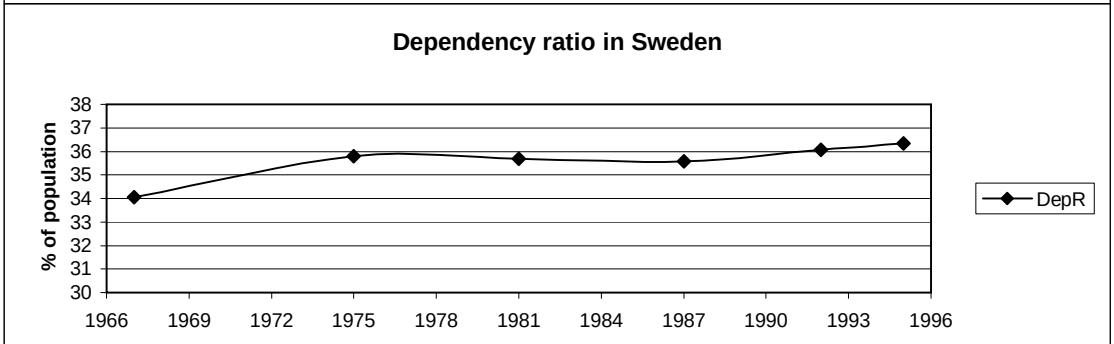


	MI	MI+P	DPI	RD	RD+P
min	39.5	34.4	25.5	14.0	8.3
max	44.3	43.2	28.5	17.6	14.7
diff	4.8	8.8	3.0	3.6	6.4
aver	42.2	38.4	26.7	15.5	11.7
stdev	2.09	3.82	1.30	1.56	3.13
diff/stdevs	2.30	2.30	2.31	2.31	2.04

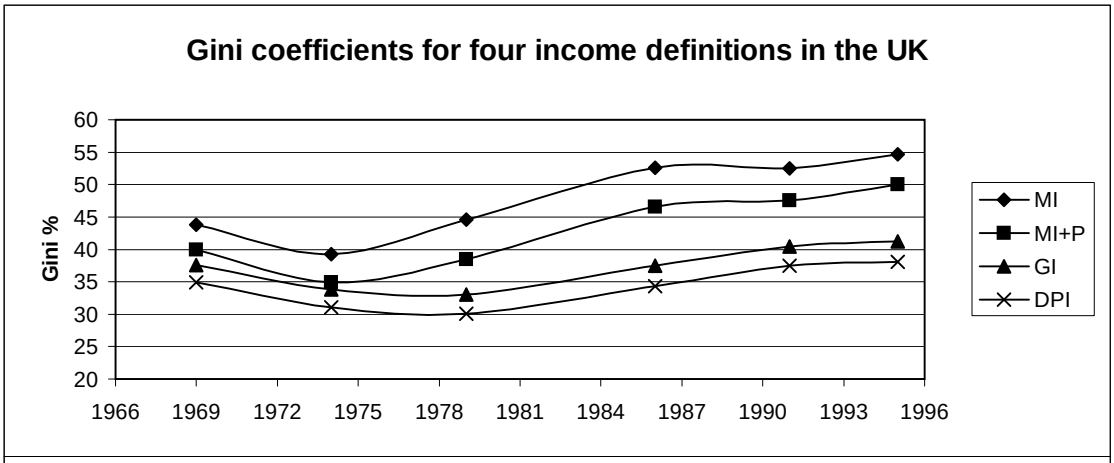


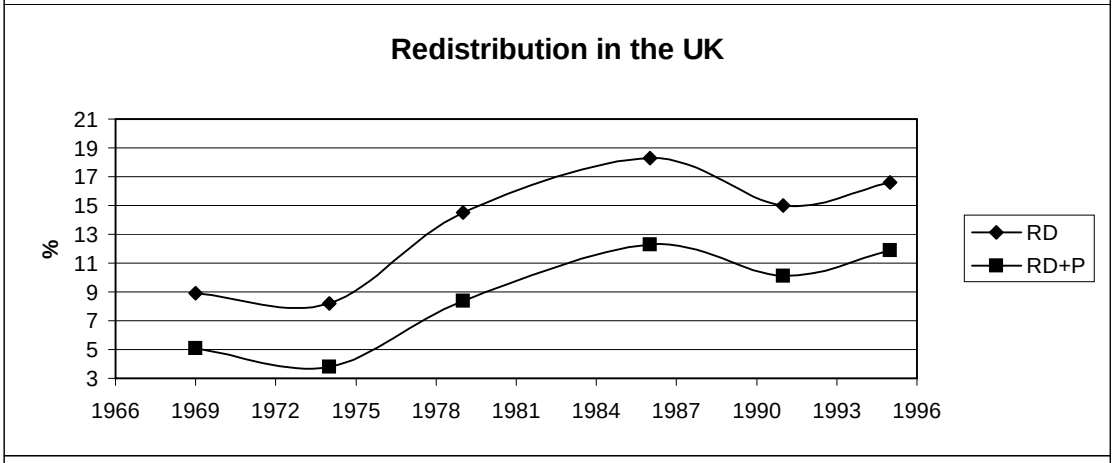


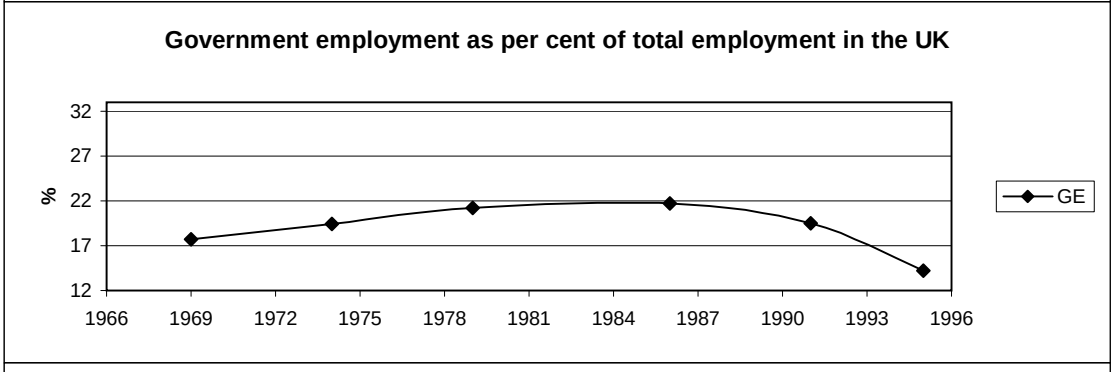


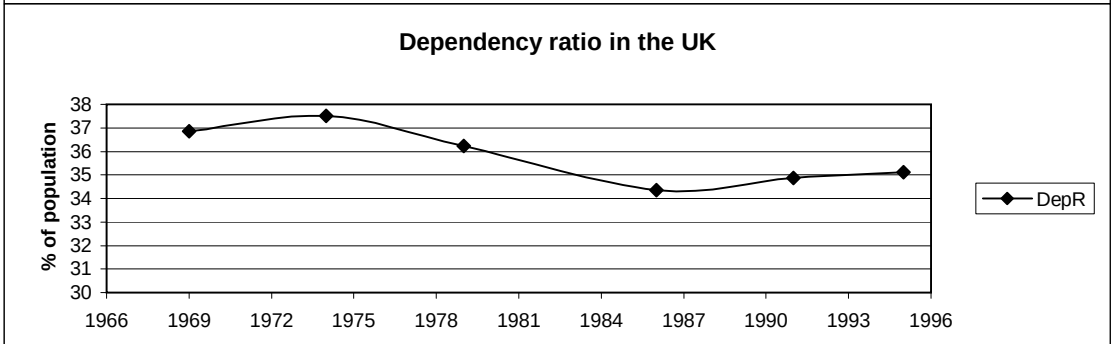


	MI	MI+P	DPI	RD	RD+P
min	45.6	33.7	24.2	12.5	7.1
max	51.3	42.5	35.4	24.9	14.3
diff	5.7	8.8	11.2	12.4	7.2
aver	48.2	37.4	27.2	21.0	10.2
stdev	2.25	3.58	4.09	4.49	2.53
diff/stdevs	2.53	2.46	2.74	2.76	2.84

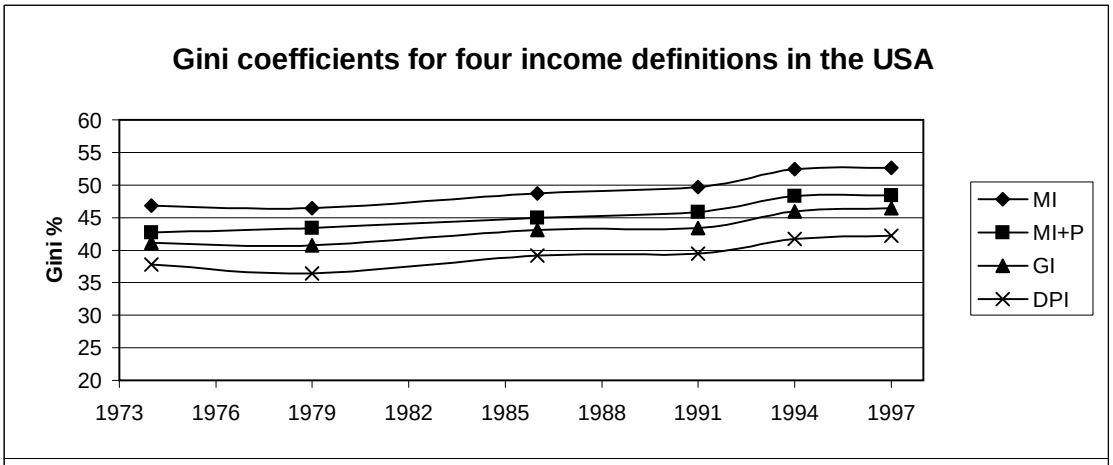


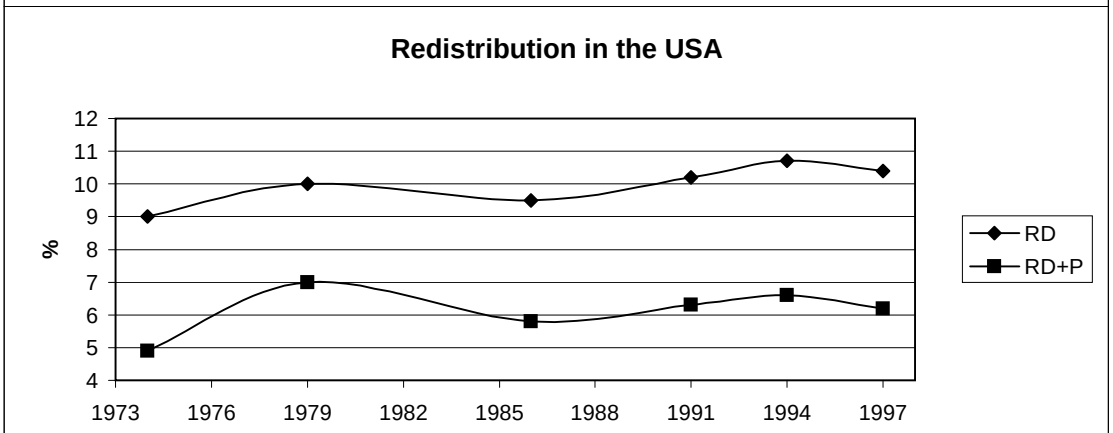


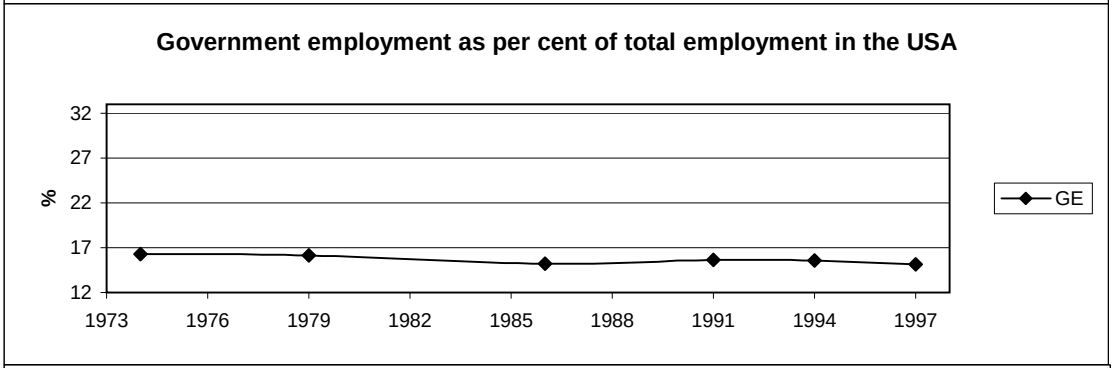


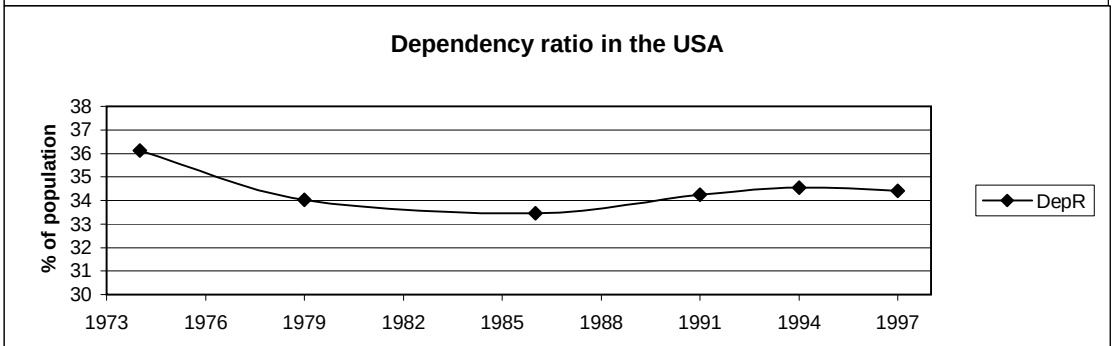


	MI	MI+P	DPI	RD	RD+P
min	39.3	34.9	30.1	8.2	3.8
max	54.7	50.0	38.1	18.3	12.3
diff	15.4	15.1	8.0	10.1	8.5
aver	47.9	42.9	34.3	13.6	8.6
stdev	6.18	5.97	3.25	4.13	3.53
diff/stdevs	2.49	2.53	2.46	2.45	2.41









	MI	MI+P	DPI	RD	RD+P
min	46.4	42.7	36.4	9.0	4.9
max	52.6	48.4	42.2	10.7	7.0
diff	6.2	5.7	5.8	1.7	2.1
aver	49.4	45.6	39.5	10.0	6.1
stdev	2.67	2.40	2.22	0.62	0.73
diff/stdevs	2.32	2.38	2.61	2.73	2.89