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in Transition Economies:
Market vs. Policy in the Czech Republic and Slovakia***

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**CHANGES IN DISTRIBUTION AND WELFARE
IN TRANSITION ECONOMIES:
MARKET VS. POLICY IN THE CZECH REPUBLIC AND SLOVAKIA**

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1. Introduction

Under the Soviet system, the Central and East European (CEE) countries maintained the most equal distributions of income in the world. Even the Soviet Union, while less remarkable in this respect, registered a relatively egalitarian income distribution (Atkinson and Micklewright, 1992). Greater income inequality was therefore an expected outcome of a transition from a command to a market economy. Indeed, as prices were decontrolled and market forces unleashed, workers with scarce skills saw their incomes rise, while others suffered severe income declines or faced unemployment. Moreover, wage income became a significantly smaller proportion of total income (Vavrejnova and Moravcikova, 1995) and differences in non-wage income have been increasingly influencing the overall distribution of income in these economies.

In the process, two models of the transition have emerged within the former Soviet bloc. Russia and other new independent states (NISs) have suffered a profound and continuous decline in GDP as the centrally planned system disintegrated, government tax revenue plummeted and a weak social safety net was put in place. On the other hand, the CEE economies have experienced only a brief period of economic decline, followed by growth within a newly introduced market system. Moreover, governments in the Visegrad countries have managed to establish relatively strong social safety nets.¹

The important question that arises is whether the two models lead to different developments in the distribution of income. In its influential 1996 *World Development Report* (WDR), the World Bank reports a major increase of inequality in the NIS, a sizable increase in some CEE countries (Bulgaria and the Czech Republic), but a very small increase in other CEE countries (Hungary and Slovenia). Thus between 1987-88 and 1993, the Gini coefficients

¹ The Visegrad countries are Hungary, Poland, the Czech Republic, and Slovakia.

presented in the WDR for instance jumped from the 0.24-0.38 range to 0.48 in Russia and from 0.19 to 0.27 in the Czech Republic.² In contrast, the corresponding increase in Hungary was from the low 0.20 to a mere 0.23 and in Poland from 0.25 to 0.29. The World Bank calculations hence suggest that, while the NIS model generated a major increase in inequality, the CEE countries registered significant diversity of outcomes that make it hard to draw relatively uniform conclusions.

In this study we present detailed evidence that income inequality in the Czech Republic did not rise to the extent pictured in the WDR. (The WDR findings are not accurate for the Czech Republic because they were based on the comparison of two different data sets. Moreover, the 1993 data yield unreliable Gini coefficients because they are derived from a small nonrepresentative survey.) We also show that income inequality did not change significantly in Slovakia. As a result, we postulate that an important stylized fact in the transition process is that the Visegrad countries, unlike their NIS counterparts, have been able to create markets with relatively little increase in income inequality.³

In order to advance our understanding of why income distribution changed little in the Visegrad countries in the first phase of the transition, we survey the channels of redistribution and then analyze changes in the distribution of the principal components of income in the Czech and Slovak Republics, distinguishing between earned income (from labor and capital) and unearned income (government transfers). We also examine the distributive effects of taxes. The principal question we are interested in addressing is: to what extent is the persistent low overall inequality

² The WDR does not specify what the data sources are or which income units (i.e., per capita or income adjusted for adult equivalents) were used for the Gini calculations. Yet, differences in these units affect the size of the Gini coefficient. (See Coulter, Cowell and Jenkins, 1992 and Buhmann et al., 1992 for a discussion of the sensitivity of inequality measures to equivalence scales.)

brought about by the government's policies (e.g., method of privatizing assets, social safety net tax policy, incomes policy) vs. market forces on earned income.

In addition to focusing on two important CEE countries, our analysis of the Czech and Slovak Republics is important for two reasons. First, within the CEE model, the two countries represent polar cases of transition in terms of their labor markets. In 1990, both republics began with zero unemployment and with the transition, Slovakia, as most other CEEs, experienced unemployment rates in the double digit levels while in the Czech Republic the rate never moved much above 4 per cent. Second, the two republics constitute a unique laboratory. On January 1, 1993 the "Velvet Divorce" took place; after nearly 75 years of having the same laws, institutions and policies, each republic was free to pursue its own socio-economic development.

In earlier studies that focused on 1992, researchers found that the level of inequality in these two republics had hardly changed as compared to 1989. Using *Microcensus* data, drawn from a sample that covers almost 0.5% of the population of households in 1989 and 1992, Vecernik (1995) reports Gini coefficients for per capita after tax household monetary income of 0.20 for the Czech Republic in 1989 and 0.19 for Slovakia; by 1992 the coefficients were 0.22 and 0.20. Gini coefficients based on per capita after tax household income from the *Family Budget Survey* (FBS) taken annually (since 1950) but whose sampling frame covers a much smaller proportion of the population, are slightly lower than those based on the *Microcensus* but the overall findings are similar: in 1989 the coefficients were 0.18 for the Czech Republic and for Slovakia and 1992 they had not changed in the second digit.

In line with the WDR findings, we had expected to find a greater difference in income inequality within each republic over time because of different economic conditions and between the Czech and Slovak Republics in 1993, because of the "Velvet Divorce". Yet, income

inequality, as measured by the per capita Gini coefficient, rose only modestly within each republic from 1989 to 1993, although the increase was slightly greater in the Slovak Republic (0.009 points) than in the Czech Republic (0.004 points). Moreover, we find that the gap between the two countries' degree of inequality fell as the Gini coefficients in 1993 were 0.187 for the Czech Republic and 0.185 for Slovakia compared to 0.183 and 0.176, respectively for 1989.

What helps account for these outcomes? As our study demonstrates, market forces did broaden the distribution of earned income from 1989 to 1993 in the Czech and Slovak Republics through the widening of the wage distribution and the creation of private self-employment income that is highly skewed. Yet, government social and tax policies acted to narrow them. Concentration curves of government transfers indicate that they were better targeted to the poor in 1993 than in 1989. Lorenz curves of pre and post-tax income for each country and their Gini coefficients indicate that taxes marginally reduced income inequality in 1989 and they had a greater equalizing impact in 1993. Finally, the method of asset redistribution ("voucher privatization") did not contribute to increased inequality of income, as of 1993.

In presenting our results, we begin in Section 2 with a discussion of changes in the macroeconomic conditions and socioeconomic policies brought about by the transition in the Czech and Slovak Republics over the 1989-1993 period. The methodology and data we use for our analysis are described in Section 3. We present the findings with respect to change in inequality over time in Section 4 and the analysis of the level and share of components by deciles in Section 5. The conclusions are in Section 6.

2. The Transition

The “Velvet Revolution” in October, 1989 created radical changes in the economic and political environment of Czechoslovakia. In this section we briefly describe the evolution of the two economies from 1989 -- when the two republics were one federation -- to 1993, when they divorced (Section 2.1). We focus on the “channels of distribution” providing an overview of the market forces and government policies implemented over this period which should have impacted the distribution of income: privatization of state property (Section 2.2), incomes policies (Section 2.3), the social safety net (Sections 2.4 and 2.5) and the new tax system (Section 2.6).

2.1 Market Forces

The Czech and Slovak divorce in January, 1993 was brought about largely because Slovakia’s leaders (headed by Vladimir Meciar) believed the pace of the economic reform was too rapid for Slovakia. From the unemployment statistics, this would seem to be obvious. However, other macroeconomic statistics (i.e., the rates of change of GDP, inflation, employment, and real wages) do not show such a wide deviation in the evolution of the two economies until 1993, when there was a significant difference.⁴

As seen in Table 1, both the Slovak and Czech economies suffered a recession during 1990-1993, bottoming out in 1991, the year all prices were liberated. In that year GDP declined 14 percent and the rate of inflation was about 57 to 61 percent. The decline in the Slovak GDP was not exceedingly greater than that of the Czech until the year of the Velvet Divorce, when Slovak GDP fell by 4.7 percent while the Czech GDP declined by only 0.3 percent. By 1994 both economies were growing (and the Slovak GDP grew at a faster rate during 1994-1996). Whereas

⁴ It is often argued that with the decline in Soviet demand, the Slovaks had a more difficult time converting from military to civilian production since the majority of the arms production (largely heavy arms) was produced in Slovakia whereas the light weapons and military electronics was produced for the most part in the Czech Republic.

both republics experienced most of their decline in output in the industrial sector, the decline was somewhat larger for Slovakia and in 1993 the difference widened (-5.3 percent and -13.5 percent, respectively). Similarly, the decline in agricultural output was far greater for Slovakia in 1993 as compared with the Czech Republic: -8.0 percent vs. -2.3 percent.

The figures in Table 1 show that the level of total employment fell more rapidly in Slovakia, especially in the 1991-1993 period. However, the gap in the Czech-Slovak unemployment rates is much greater than that implied by the gap in the rates of decline of employment and/or output. Part of the missing story is that the statistics in Table 1 do not account for small firms (less than 25 workers from 1992 and less than 100 workers during 1989 to 1991). It is generally believed that the small private sector firms started to appear earlier in the Czech Republic and grew at a faster rate. If they would have been incorporated in the employment figures, they would have dampened the decline in the Czech Republic relative to the Slovak Republic. In sum, the significant differences between the Czech and Slovak unemployment rates reflect greater differences in the labor market than those implied by the official statistics on employment in large firms. The difference in these rates could contribute to a divergence in the distribution of income between these two countries.

Regarding wages, the most important component of income, their enormous decline over this period cannot be overlooked (see Table 1). As a result of the high inflation in 1991 and 1993 (when the VAT was introduced) and perhaps because of the incomes policies (described below), the real average wage in 1993 was below that in 1989 for each country, although the level has always been slightly higher in the Czech Republic. Data from the 1992 *Microcensus* indicate that the dispersion in wages may have increased slightly more in the Czech Republic than in Slovakia. In 1988 the ratio of the 90th percentile to the 10th percentile of earnings was 2.4 in both republics

and in 1992 it rose to 2.7 in the Czech Republic and only to 2.5 in Slovakia (OECD, 1996). However the ratio is still lower than in the other CEE and most OECD countries.⁵ Although not exactly comparable in terms of years and coverage, the evidence on Russia seems to indicate that the growth in wage dispersion was even greater. The decile ratio in the Russian manufacturing sector rose from 2.1 in 1990 to 4.9 in 1994 (Commander et al., 1997).

In sum, market forces may have contributed to the divergence of income distribution patterns in the two countries in different ways, by creating more unemployment in Slovakia and perhaps more rapid wage growth and wage dispersion in the Czech Republic.

2.2 Asset Redistribution -- Privatization⁶

The method of redistributing assets in the Czech and Slovak Republics was identical until the Velvet Divorce, at which time the Slovak government stopped the process and (later) changed the rules of the game. Privatization was divided into three programs, some of them started in 1990 and by 1993 most of them were finished in the Czech Republic. Slovakia delayed the last part of the biggest program until 1995. The programs were: i) restitution, ii) small-scale privatization and iii) large-scale privatization.

The first program – restitution -- legalized the return of certain property (mostly buildings and some agricultural land) to some of its previous owners (i.e., only Czechoslovak citizens with permanent residence).⁷ By the end of 1991, between \$2.5 and 4.5 billion of property had been restored to citizens. However, given that most of the properties were occupied with tenants whose rent-controlled leases had to be honored for five years, much of this property did not prove

⁵ The OECD (1996) study also reported increased dispersion in earnings the other CEE countries: In Poland the ratio of the 90th to the 10th percentile of earnings was 2.9 in 1992, compared to 2.6 in 1988. In Hungary it rose from 3.1 in 1988 to 3.6 in 1992. The 1992 ratio for selected west European countries was: 3.0 in France, 3.4 in Great Britain, and 3.5 in Austria.

⁶ This section draws from Kotrba and Svejnar (1994) and Kotrba (1995).

to be very profitable. Moreover, it is argued that restitution did not create large inequalities since the distribution of these properties was not greatly unequal in the first place.

Small scale privatization consisted of the public auction of small businesses primarily in retail trade, catering and services (and usually did not include real estate). A total of 22,212 units were auctioned for a value of \$1,073 million by the end of 1993 (with over two-thirds sold in 1991). Essentially, this program was the first step in creating the small scale private sector.

Large-scale privatization applied to most state-owned assets in industry, agriculture and services and was the most important part of the program in terms of the value of assets: In the Czech Republic, the 1990 book value of the 4,800 enterprises planned for privatization was \$43.9 billion which amounted to 47 percent of all capital. What is important about the privatization of these assets is that over half (54 percent) of the face value of these companies were distributed to the Czechs and Slovaks through the "voucher privatization" scheme. Each citizen over the age of 18 years was entitled to buy a book of vouchers for \$35 which was worth 1,000 investment points. The points were used to bid for shares in the companies. There were two rounds of bidding one took place between May and December 1992 ("first wave") and the other began at the end of 1993 in the Czech Republic but was postponed in Slovakia. For the purposes of this study, it is important to note that it was only in 1993 (first half for Slovaks and second half for Czechs) that the people received their shares from the first wave of large scale privatization. Hence, we do not expect to see large amounts of income from "stocks and bonds" in 1993. However, it is also important to stress that the voucher method essentially distributed an enormous amount of wealth in fairly even fashion to the majority of the population in each of these republics.

⁷ The residency requirement was declared unconstitutional in July 1994.

The rapid privatization of businesses (small and large) also meant that by 1993 a significant part of the labor force was working in the private sector. However, the proportion of workers employed in the private sector was considerably higher in the Czech Republic (53.5 percent) than in the Slovak Republic (32.0 percent).

2.3 Incomes Policies

2.3.1 Wage Controls

The extent to which wage controls played a role in compressing wages and or moderating wage growth in these two republics has not been formally analyzed, but the general belief is that they did not have much of an effect.⁸ Wage controls were first put into effect in 1991 and then intermittently in the ensuing years, with several changes in design. They were removed the first half of 1992 and then reinstated in the second half of 1992. Although they continued to be in place to the end of 1993, they changed their coverage and scope during that year.

Essentially wage controls took the form of limiting wage bill growth to be equal to the total number of employees at the beginning of the year times the economy-wide average wage. This form allowed for some adjustment of relative wage levels within the enterprise; moreover, fines were not imposed until the enterprise exceeded the norm by five percent and since bonuses were not included in the guideline, it was possible to raise wages more than five percent above the indicated norm. In 1992 allowances were made for more profitable firms to raise their wage bill at a higher rate than the norm.

As for coverage, in 1991-1992 the policy only applied to the large-scale state sector. In the first half of 1993, the government decided to focus only on the "private entrepreneurial sector" and in the second half it extended coverage to all enterprises with more than 25

⁸ For a more detailed discussion of the incomes policy, see Flek and Buchtikova (1993).

employees. Hence, the policy's targeted population and goals changed often in a short time period. Moreover, monitoring and enforcement were considered to be weak, all-in-all suggesting it was unlikely that the incomes policy had much of an effect on wage growth or wage dispersion.

2.3.2 Minimum Wages

A minimum wage was established in 1991 for the two republics (i.e., one wage which did not vary by region). The floor is relatively low (about 40 percent of the average wage) and it is not clear to what extent it has affected wages levels of those at the lower end of the distribution. However, the minimum wage is used as a benchmark for social benefits (as will be discussed in Sections 2.4 and 2.5). When the Slovak government gained complete sovereignty in 1993, it felt it could help cushion the negative effects of the market on the Slovak people by raising the minimum wage in October, 1993 above the level that existed in the Czech Republic. This may have mitigated the widening of the income distribution over time and relative to the Czech Republic .

2.4. Social Insurance

2.4.1 Unemployment Compensation System

The unemployment compensation system (UCS) did not exist in 1989 but it clearly played a role in the distribution of income in 1993 (especially in Slovakia with its higher unemployment rate) by replacing income at a reduced rate for six months. The eligibility criteria, entitlement and replacement rates were still the same for the two nations in 1993. However, as just mentioned, the level of benefits rose for some in Slovakia when the minimum wage was raised in October of that year.

The eligibility criteria were fairly encompassing: anyone who was registered as unemployed by the district Labor Office *and* who had worked a minimum of twelve months

within the previous three years was eligible for unemployment benefits.⁹ In addition full time students who graduated from high school or university were also eligible to receive unemployment benefits. People were entitled to six months of benefits.

The replacement rate during the first three months of the entitlement period was 60 percent of the previous net average wage (net of tax). The rate fell to 50 percent for the next three months. Those in training programs received 70 percent of their previous net average wage while participating in the program. Self-employed persons who quit their activity could receive benefits as long as they had paid sickness and pension insurance contributions. The maximum level of benefits was set at 1.5 times the minimum wage for all unemployed persons not receiving training and 1.8 times the minimum wage for those receiving training. The benefit for the graduating students was equal to 60 percent of the minimum wage for the first half of the entitlement period and 50 percent of the minimum wage in the second half.

It should also be noted that benefits were not taxed by either government. However, neither were they indexed for inflation and hence their value eroded over the unemployment spell.

2.4.2 Pension System and Early Retirement

In both 1989 and 1993, men could retire with full pensions at the age of 60. For women the retirement age was between 53 and 57, depending on the number of children raised. Whereas in 1989, people could draw their pension and work simultaneously and they could easily retire early with full pension, these options were no longer possible for the Czechs with the passage of a comprehensive law on pensions in 1993. The law introduced a “work or retire” system and limited early retirement to a maximum of three year before the legal retirement age. Early retirement was discouraged by a) requiring registration as unemployed in the district Labor Office

⁹ People who had quit and those who had received their entitlement of unemployment benefits were eligible after a

for at least 180 days before early retirement and b) reducing the benefit level during the early pension years.¹⁰

Since pensions were indexed for inflation, the average pension rose substantially over the 1989-1993 period. However, pensions did not grow as rapidly as the average wage. By 1993 the average old-age pension of 1,984 SKK (2,010 CZK) per month was 37.7 (36.8) percent of the average economy-wide wage in the Slovak (Czech) Republic when in 1990 the average pension was approximately 50 percent of the average wage

2.5. Social Assistance System¹¹

Unlike the UCS, the social assistance system existed in 1989, however, several legal changes were made in 1991-1993, resulting in a complicated cobweb of legal norms and a wide variety of benefits. One important thrust of these changes is that the number of means-tested benefits increased in 1993 as compared to 1989.¹² In general terms, transfers in 1993 can be grouped as means tested social assistance and non means tested social aid to families with children (family benefits).

2.5.1 Minimum Living Standard

In 1991 the right for everyone to have “assistance as is essential for ensuring the basic living conditions” was established and *minimum living standards* (MLS) were set for different household types. The MLS for each household is computed as a sum of two parts: 1) the personal minimum, which is a function of age and 2) the household minimum, which is a function

six-month waiting period.

¹⁰ For those retiring 4p to two years before the legal retirement age, the pension was reduced by 1.0 percent of the base for each 90 days left to the official retirement age, after which the pension was calculated on the normal basis. For those who elected to retire between two and three years prior to the official retirement age, their pension was lowered by 0.6 percent of the base for the remainder of their retirement years.

¹¹ In this section, only new parts of the social safety net are discussed in order limit the scope of the paper.

¹² By 1994 (1996) most of social assistance was means tested in Slovakia (the Czech Republic).

of the number of individuals considered to be living together as a household. Any household whose average income in the previous six months is below the MLS for its household type is eligible for social assistance benefits equal to the difference between the household's income and the level of the MLS. A household has to re-apply every six months and in principle is entitled to these benefits as long as its income falls short of the MLS and any unemployed member of the household is registered at the district Labor Office. The MLSs are indexed on a regular basis.¹³ Until October 1993, the two republics had the same MLS levels. In that month Slovak Republic raised the MLS levels, as a result of the increase in the minimum wage.

In order to assess the level of the social safety net, we compare the level of social assistance (for three household types) and unemployment benefits (average and maximum) to the minimum wage and the average economy-wide "net" wage in 1993.¹⁴ Since no benefits are taxed, we should compare them to net (after-tax) wages. (Moreover, benefits are calculated on the basis of net wages.) Using data from the Czech and Slovak FBS, we calculate the ratio of the average household before tax income to the after tax income -- 0.867 for the Czech Republic and 0.888 for Slovakia -- and apply this to the gross wage to get our best estimate of the net wage.¹⁵

The benefit-wage ratios, presented in Table 2, indicate that in both countries the MLS is relatively high compared to the average unemployment benefit. In the first part of 1993, the average person living alone could receive 1,700 SKK (or 1,960 CZK) as social assistance or if unemployed 1,360 SKK (or 1,585 CZK) as an unemployment benefit.¹⁶ On the other hand, those

¹³ They are indexed when inflation exceeds 10 percent since the last time they were changed (but not less than three months since the last change).

¹⁴ Since these do not exist in 1989, we cannot include this year in the table.

¹⁵ Obviously any adjustment will have its problems since income tax is based on household income, but we are relying on the law of averages.

¹⁶ In practice, the person would receive his/her unemployment benefit (from the district labor office) and then receive the difference between the MLS and the unemployment benefit as a social assistance benefit from the social assistance office).

receiving the maximum unemployment benefit were receiving approximately 70 percent the average net wage in each country (in the first part of 1993). The level of social assistance for large families is higher. A family of four in Slovakia could receive benefits equal to between 109 and 132 percent of the average “net” wage and in the Czech Republic this family could receive 130 percent of the average “net” wage. For low wage workers, this is a substantial benefit.

Finally, it would appear from Table 2 that the relative levels of the safety net (judging from the levels of the MLS) were for most of the year marginally lower in Slovakia as compared to the Czech Republic until October of 1993. Hence, while the MLS and unemployment benefits may appear adequate (if not generous) in 1993, an important point not shown in Table 2 is that both the unemployment benefit and social assistance benefit have fallen as a proportion of the average wage since 1991 (see Terrell et al. 1995 for more detail). Hence the level of the social safety net has fallen on average over time. However, examining means is only part of the story. We will learn below that the change in the distribution, targeting, is a more important part of the story.

2.5.2 Social Aid to Families with Children

Before 1994 (1996) households in Slovakia (Czech Republic) were able to receive a package of family benefits irrespective of their level of income. The most important of these benefits are described below with amounts provided.

- i) *Child Allowances* are provided from birth to the end of the child’s education. The amount of the benefit was a function of the age of the child, ranging from 340 CZK (for a child less than six years of age) to 490 CZK (for a child over 15 years of age) in 1993. These amounts represent between 6 and 9 percent of the average gross wage in that year. Whereas each is quite low, a family with four children could be receiving as much as one-quarter to one-third of the average gross wage as an allowance. Additional allowances per paid to children of men performing their military service.

- ii) *Parental Allowance* is a payment to a parent personally caring full-time for a child up to three years of age (or up to seven if the child is handicapped). This benefit was only provided to a non-working parent (except in cases when the net income earned by the parent was less or equal to his/her personal minimum living standard). In 1994 the maximum benefit defined as a lump sum was approximately 79 percent of the minimum wage, 26 percent of the average economy-wide wage.
- iii) *Maternity Leave*: Women were eligible for 28 weeks of maternity leave from their work. The level of the benefit was a function of the woman's previous wage with some maximum level. The replacement ratio was reduced from 90 percent in 1991 to 69 percent in 1994 but the maximum level rose substantially to 1.8 times the minimum wage, or 73 percent of the average wage.
- iv) *Maternity and Pregnancy Compensation Benefit* was provided to women in pregnancy or maternity who had to be moved to less paid job due to pregnancy.
- v) *Child Birth Grant* was provided as a one-time benefit upon the birth of a child. The size of the benefit was: 4.0*MLS when one child was born; 5.0*MLS per child when two children were born; 9.0*MLS per child when three or more children were born.

All of the social support benefits are non-taxable but are included in the income of a household applying for the income support from the system of Social Assistance.

2.6. Taxes

Changes in the tax system have been introduced throughout the period but in 1993 a new comprehensive tax law came into effect which introduced the following:

- A more progressive income tax beginning at 15% of taxable incomes up to 60,000 crowns per annum and rising to a maximum of 47%. Dividends and other categories of income were to be taxed at 25%. Taxable income included employment and self-employment income, rental income, interest and dividends. A taxpayer allowance of 20,4000 crowns per annum could be deducted in computing taxable income and there were also allowances for a spouse and children. Social insurance contributions also became deductible.

- A value added tax (VAT) levied at standard rate of 23% in the Czech Republic and 25% in Slovakia, with a reduced rate of 5% and 6% in the Czech and Slovak Republics, respectively, for basic foods, medicines, fuel, books newspapers and some services, including repairs.
- Specific excise duties on alcoholic drinks, tobacco products and mineral oils.
- Payroll-based social insurance levies, paid partly by employees and partly by employers, for pensions, sickness benefits and unemployment insurance, at combined (employee plus employer) rates of 27.2%, 4.8% and 4.0% of gross wages, respectively.
- Corporate profits taxation, based on legislation closely conforming to practices in some western European countries, with a rate of 45% on taxable profits.

In their study of the tax system in the two countries, Heady and Smith (1995, p. 12)

conclude that:

“The new income tax plus the payroll taxes paid by employees is more progressive than the old wage tax but [the new income tax] provides smaller child tax allowances. The increased progressivity is a rational response to an expected increase in the degree of pre-tax income inequality, and the reduction in child tax allowances represents a reduction in a level of state support for children that had been very generous by western standards.”:

3. Methods and Data

3.1 Inequality Measurement

Our analysis of overall inequality uses Lorenz curves and inequality indices based on rankings of the weighted population samples. The indices include the standard Gini coefficient and three generalized entropy measures: one half the square of the coefficient of variation, the Theil coefficient, and the mean logarithmic deviation (for definitions see Coulter et al. 1992). Each of the overall measures differs in its sensitivity to income variations at different levels of the

distribution. For equi-distant transfers, the Gini index is considered to be more sensitive to transfers around the mode, while the Theil measure and one-half the square of the coefficient of variation are more sensitive to transfers at the top of the distribution. The mean logarithmic deviation is relatively more responsive to transfers at the lower end of the distribution.

If the values in all these indices are higher in year X (or country A) than their corresponding values in year Y (or country B), then it can be said that the distribution of income is more unequal in year X (or country A). In such a case there is clear Lorenz dominance (one Lorenz curve lies above another at one or more points and does not lie below it at any point). If both distributions have the same means or if the Lorenz-dominating distribution has the same or higher mean, then it can also be said that the *welfare* of the population is higher in year X or country A (Atkinson theorem). However if one Lorenz curve crosses the other or if the dominating curve has the lower mean income, no conclusions can be drawn regarding relative inequality or welfare superiority. In those cases, the *generalized Lorenz curve*, which is simply the Lorenz curve ($L_F(\rho)$) times the mean (μ_F) of the distribution $F(x)$ or

$$\rho = F(y) \implies GL_F(\rho) = \int_0^y x(f(x))dx = \mu_F L_F(\rho) \quad (1)$$

can aid our understanding since generalized Lorenz curve dominance is the criterion that is necessary for robust welfare approval.¹⁷ However, if they cross, no statement can be made about relative welfare.

In this study we compare the change in the distributions of income in each country between 1989 and 1993 with the use of inequality indices and Lorenz curve analysis. We also

¹⁷ This is assuming a convex utility function.

compare the Czech difference with the Slovak difference to learn if one became more unequal than the other over this period.

In order to further understand what is driving the level and changes in inequality in each republic, we decompose income by its sources and calculate *concentration* curves for these components as well as. Concentration curves are similar to Lorenz curves however, they plot shares of X (a components of income) against deciles in the distribution of Y (total income). Similarly, *generalized* concentration curves, which are concentration curves multiplied by the mean of the distribution, can be plotted to gain a better understanding about welfare.

Finally, we also compare the relative levels of the components household adjusted income for deciles of persons in each country. Through this analysis we can make statements about changes in the relative importance of different components of income for each decile over time and between the two republics.

Prior to 1993, the Czech Republic and Slovakia shared the same currency unit. However in 1993, the Slovak crown was devalued. In order to compare the generalized Lorenz curves and the mean values of income components by decile between the two countries and over time within each country, we converted the Czech and Slovak crowns to 1993 US\$ using final consumption purchasing power parities (PPPs).¹⁸ Since PPPs for Czech and Slovak currencies are based on Austrian shillings, we first converted Czech and Slovak crowns to Austrian shillings by dividing the Czech crown by 0.6663 and dividing the Slovak crown by 0.7288. We then multiplied the PPP exchange rate for Austrian shillings to U.S. dollars which was 0.0728 in 1993. To obtain

¹⁸ Final consumption PPPs were used instead of those based on GDP since the focus of this study is households and not the entire economy. The value of agricultural home production is accounted for in the PPPs for the Czech and Slovak Republics and Austria

1989 incomes in 1993 prices, we inflated the 1989 incomes with the CPI, which was 231.1 for the Czech Republic and 241.6 for Slovakia (1989=100).

3.2. Caveats with the Data

The analysis in this paper is based on data from the 1993 *Family Budget Survey* (FBS) of the Czech and Slovak Republics, collected annually by the Central Statistical Offices in each country for over three decades. For an analysis of income inequality in the two republics in 1989 and 1993, these are the only comparable data sets available. The other data base used for income distribution studies in the Czech and Slovak Republics is the aforementioned *Microcensus*, which was only carried out in 1989 and 1992. Each data base has its strengths and weaknesses.

For our purposes, the basic strength of the FBS is its detailed and highly reliable income data. This is the only data set that enables researchers to tease apart income by the sources we are interested in (earned income vs. types of government transfers and taxes). Moreover, the FBS data allow researchers to analyze in-kind consumption in addition to monetary income.¹⁹ Finally, unlike the *Microcensus*, annual income data is drawn from monthly records kept by the household, rather than from questions asked of the respondent at one point in time.²⁰ This clearly improves the reliability of the income data.

A shortcoming of the FBS data is that the sample is much smaller than the *Microcensus* and (unlike the *Microcensus*) it is not representative of the population. For example, the 1992 *Microcensus* was drawn from a random sample of approximately 0.5% of the households and had usable data for 15,700 households in the Czech Republic compared to approximately 3,500 in the

¹⁹ As shown below, in-kind income is between 5 and 6 percent of total household income and it could contribute to differences in Czech and Slovak inequality since it is higher proportion of Slovak income.

²⁰ In the 1993 data, the average number of months that households maintained diaries was 11.3 in the Czech Republic and 11.1 in Slovakia. For our analysis, we annualized the incomes when less than 12 months of data were reported.

FBS. In 1989, the FBS only sampled four specific subgroups.²¹ Whereas, these four groups were fairly representative of the population prior to the transition, when (in 1989) they represented about 95 percent of all households in the Czech Republic and 94 percent in Slovakia, they are less representative today. In 1992 two subgroups were added to the primary sample: households whose head were self-employed in agriculture and those whose head were unemployed for more than three months of the year. (Prior to 1992, households with unemployed heads were dropped from the sample.) In 1992, these five social groups represented 90 percent of Czech households and 84 percent of Slovak households. In 1993, another subgroup was added to the primary sample: households headed by individuals who were self-employed in the non-agricultural sector. With the addition of this subgroup, the FBS sample represented 95 percent of the population in the Czech Republic and only 87 percent in Slovakia in 1993.²² Groups not found in the primary FBS design include: a) pensioner headed households with economically active members which are especially important in Slovakia (representing about 4.2 percent of all households in the Czech Republic in 1992 and 8.2 percent in Slovakia) and b) households headed by students and non-working persons not receiving a pension or wage (representing about 1.8 percent of all households in the Czech Republic in 1992 and 3.9 percent in Slovakia).²³

In addition to the primary sample, the 1993 FBS also includes a “supplementary” sample of households of pensioners and families with children living just at the subsistence level. According to the Czech Statistical Office the primary sample contains a representative number of households in these categories. However, since their numbers were small, these categories were

²¹ These four groups were: workers (similar to blue collar workers), employees (similar to white collar workers), persons working in agriculture, and pensioners without economically active members.

²² This is based on the adjustment of the FBS data with sampling weights created by Garner and Fratantoni (forthcoming 1997) described in the text below.

“over-sampled” in order to allow for separate analysis of these people. The Statistical Offices do not use these data to produce the total population statistics for the countries. Hence, we too rely on the primary files for our analysis in this paper.

Because sampling weights do not exist in the FBS file, these were created by Garner and Fratantoni (forthcoming 1997). The FBS sample design is based on the following characteristics of the household: region of residence, social group of the head of household,²⁴ household size, number of children, and household monetary income per capita. Using the quota design, within a region, households are included in the sample based on these characteristics. Thus, if a household does not fit into one of the quota categories, other households are visited until the quota is met within a region.²⁵ Using the *Microcensus* data, weights were calculated for each country from the distribution of households over the matrix defined by region, social group, and family size.²⁶ (Income per capita was not used for weighting since income is the focus of our analysis.) Based on statistical principles, a five household minimum was imposed for the creation of weights by type of household. When the five household minimum was not met, households were regrouped at the family size level to meet this requirement.

3.3 Observation Unit and Treatment of Household Size

The aggregation unit of the *FBS* is the household, defined as a group of individuals who live together and share expenditures for food, housekeeping, home maintenance, and other

²³Whether the omission of these groups from the FBS are likely to contribute to greater equality can be examined using data from the *Microcensus* and will be done in the future.

²⁴The five social groups are defined as: workers, employees, persons working in agriculture, the non-agricultural self-employed, and pensioners without economically active members.

²⁵ There is no adjustment to account for refusals to participate in the survey. Because of the quota design, response rates are not computed.

²⁶ Since in the Slovak household *Microcensus* file, the social group variable combines pensioners with and without economically active members, it was necessary to exclude pensioners with economically active members (who are not represented in the FBS). This was done using data from the *Microcensus* individual file, kindly provided the Luxembourg Income Study with permission from the Slovak CSO.

commodities. Since the focus of this research is on the inequality of income across the population, we allocate adjusted household income to each household member. This weighting results in the individual distribution rather than household distribution of income. The amount of adjusted (or “equivalent”) income per person in each household unit is calculated by making a correction for the number of persons who live together and are presumed to share income. We examine the robustness of our results using four different equivalence scales:

- the *OECD equivalence scale*
first adult gets a weight of 1, each additional adult gets a weight of 0.7, and each child a weight of 0.5
- the *European Union equivalence scale*
weights of 1 for the first adult, 0.5 for each additional adult, and 0.3 for each child
- *per capita adjustment*
each person receives a weight of one
- a *two parameter scale adjustment* recommend by the *U.S. National Academy of Sciences* (Citro and Michael 1995)
allows for separate adjustment for age (children vs. adults) and for economies of scale (due to living in larger household). The National Academy recommends a weight of 0.7 be assigned to each child and an economies of scale parameter between 0.65 and 0.75 be used. We selected 0.7 as our economies of scale parameter.

Let A = the number of adults, K = the number of children, then the OECD and European Union equivalence scales are calculated as:

$$s(A,K) = 1 + b(A-1) + cK \quad (2)$$

where b = the scale factor for the second and each other adult in the household
 c = scale factor for children.

The National Academy scale, is calculated as:

$$s(A,K) = (A + pK)^f \quad (3)$$

where p = scale parameter factor for children
 f = parameter for economies of scale.

In many studies using the National Academy scale, (e.g., Buhmann et al. 1992) the number of equivalent adults is defined with a single parameter i.e., as family size to some power. This power represents both the differences in household demographic composition and economies of scale and is derived as the scale elasticity. We did not follow this approach because the single parameters used are primarily based on households composed of one adult, two adults, and two adults with all other members being children. Since multigenerational households are not atypical in the Czech Republic and Slovakia, we decided to allow for differences in family composition with respect to adults explicitly.

3.4 Variables of Interest

Total household income is defined as the sum of monetary income net of taxes (wage and other taxes and fees) plus the cash value of in-kind consumption.²⁷ For the decile analysis, the following major components of income are examined in 1989 and 1993 (unless otherwise indicated):

- **Earned Income**
 1. Earnings from any type of work except private non-agricultural self-employment²⁸. (in 1993 this includes private sector wages as well.
 2. Earnings from entrepreneurial non-agricultural self-employment (only in 1993).
 3. Earnings from mostly private sector activities: Other cash money incomes and private transfers (including monetary gifts from relatives and support of a social character from private organizations).
- **Transfers**
 4. Pensions
 5. Other government transfers which includes:
 - *Sickness Related Benefits* (which include income from health insurance and financial support while taking care of a family member);
 - *Family Benefits*: financial maternity aid, child care money (aid for dependent children), and parental allowances

²⁷ The service flow value from owner occupancy is not included in the income definition for this analysis, unlike in earlier FBS studies by Garner, Lubyova and Terrell, 1995 and Garner, 1997.

²⁸ This includes income from the self-employed in the agricultural sector. We would have liked to analyze this income as part of the self-employed but this was not possible given the construction of the data set.

- *Unemployment Benefits* (in 1993 only)
 - *Social Assistance and Other Social transfers*
- **Other**
 - 6. In-kind consumption²⁹
- **Taxes** are broken down into the following categories:
 - 7. Wage taxes (i.e., income tax)
 - 8. Mandatory social taxes (employment related)
 - 9. Other taxes (including real estate taxes, fees, and fines).

3.5 Descriptive Statistics

The data are based on approximately 3,500 households with roughly 9,000 persons (significantly more in 1993) in the Czech Republic and about 1,700 households with roughly 5,000 people in Slovakia. The largest "social group" is households headed by laborer (equivalent to 'blue collar worker') -- about 40 percent -- and the next largest is households headed by employees (similar to 'white collar workers') -- about 29 percent of the persons in each republic. The proportion of the weighted sample of persons living in households headed by agricultural workers is quite small in both republics and somewhat higher in Slovakia (10 percent) than in the Czech Republic (8 percent). Persons living in households headed by a private non-agricultural entrepreneur (henceforth called "self-employed") account for 8 percent of the Czech weighted sample and about 5 percent of the Slovak weighted sample. Persons living in pensioner headed households with no economically active members account for 18 percent of the Czech sample and 15 percent of the Slovak sample in 1993.

The average household size in the Czech Republic is slightly smaller than in Slovakia in both 1989 and 1993 (about 2.6 versus 2.9 persons). This difference is not accounted for by the number of economically active members as this is about the same in the two republics (1.2). What

²⁹ In-kind consumption is valued by the Statistical Offices at current prices in the area in which the household lives. It includes food and beverages, rent-in-kind, and other products and services. These goods and services

accounts for the discrepancy in household size is the different number of children, an average of 0.63 (0.68) per household in the Czech Republic and 0.80 (0.84) in Slovakia in 1993(1989).

4. Changes in Income Inequality and Welfare Over Time

4.1 Total Disposable Income

Four indices of inequality for adjusted after tax household income using five different equivalence scales are presented in Table 3. Whereas the level of the indices changes with the equivalence scale (e.g., always higher for per capita), the underlying story is the same: inequality rose in the two republics over time.³⁰ The OECD and per capita equivalence scales show a slightly larger increase (between 0.001 and 0.005) in the indices for the Slovak Republic. If significant, this would mean a closing of the gap between the Czech and Slovak Republics since every index and equivalence scale combination points to slightly higher inequality in the Czech Republic as compared to Slovakia in both 1989 and 1993.

For tractability, the remainder of the analysis in this paper is based on only one equivalence scale -- the OECD scale. The Lorenz and concentration curves are plotted based on deciles of persons ranked by their adjusted total after-tax household income. Chart 1 contains the plots of the 1989 and 1993 Lorenz curves for the Czech and Slovak Republics. Although the inequality indices all point to an increase in inequality, the 1989 and 1993 Lorenz curves cross for each country, albeit only in the first decile for Slovakia and in the first two deciles in the Czech Republic and not by much. The data for these curves (presented in appendix Table A1) indicate

could have been received as gifts, as payment in-kind, or they could have been produced by the household. Home production is primarily limited to agricultural production for home consumption.

³⁰ Regarding the relative values of the indices across scale adjustments within a country, we note that the OECD and the National Academy scale adjustments produce almost identical results. The per capita adjustment results in are the highest, which is consistent with the findings of Coulter and colleagues (1992).

that the cumulative share of the income is 0.2 (0.1) and 0.05 of a percentage point higher in the first and second deciles of the Czech (Slovak) Republic in 1993 as compared to 1989, and lower in 1993 for all other deciles except the top. Hence, the lowest decile commanded 5.9 percent of disposable income in each republic in 1993, up from 5.7 percent in the Czech Republic and 5.8 percent in Slovakia in 1989. The gain was larger for the top two deciles whose share rose from 29.3 percent to 30.4 percent in the Czech Republic and from 28.9 percent to 30.0 percent in the Slovak Republic.

The two generalized Lorenz curves for each country are plotted in Chart 2. They clearly indicate that the Czech and Slovak people were better off in 1989 than in 1993 and that the welfare of the Czechs is higher than the Slovaks in both years. The results derive from the 34 percent (34.4 percent in Slovakia) decline in adult-equivalent real disposable income (measured in USPPP\$) over this period (see Table A1). Whereas there was undoubtedly a decline in real income due largely to the two years of high inflation and partially to the decline in productivity over the years, caution must be taken in using Laspeyeres CPI as a measure of inflation in a transitional economy. By having a fixed basket of goods from 1989, this index does not take into account the availability of new goods and services and the disappearance of others in the market. This is clearly an important phenomenon in transitional economies which should be taken into account.

4.2 Earned Income

In the remainder of the paper, we are loosely labeling “earnings from any type of work except private entrepreneurial non-agricultural self-employment” as *wage income* for reasons of tractability. As noted in footnote 28, this category is not strictly wage income because it contains agricultural self-employment income. Since the latter is not identified, we cannot tease it apart.

However, it is undoubtedly a very small proportion of the total.³¹ Similarly, we refer to “earnings from private entrepreneurial non-agricultural self-employment” simply as *self-employment income*, although it is missing the agricultural component.

The 1989 and 1993 concentration curves for wage income are plotted in Chart 3 for the Czech and Slovak Republics. They clearly show that in the first four years of the transition, the distribution of wages has widened to a much greater extent than the distribution of total income in each republic. However, as with total income, the lowest two (one) deciles in the Slovak (Czech) Republic had a higher share of total wages in 1993 than they did in 1989. The lowest decile earned 2.2 (2.7) percent of total wage income in 1989 (1993) in the Czech Republic and 2.3 (3.3) percent in Slovakia. The share for the highest two deciles grew from 31.8 percent to 36.2 percent in the Czech Republic and 32.0 to 35.4 percent in Slovakia.

The plots of the generalized concentration curves for wages (Chart 4) again show that the welfare of the Czechs and Slovaks fell and the Slovaks continue to be worse off than the Czechs in 1995. The mean adult equivalent annual wage income in 1993 USPPP\$ fell from 6,649 in 1989 to 4,179 in 1993 for the Czech Republic and from 5,944 to 3,610 in Slovakia (see Table A2). Again, although the decline in wage income was significant, a welfare interpretation should also take into account that the higher income in 1989 did not buy much given the shortages and cues at the time.

The concentration curves for 1993 self-employment income in each republic (Chart 5) demonstrate how unequally distributed this income. Unlike in other regions of the world, such as Latin America, this income is being generated by the wealthiest segment of the population: the top twenty (ten) percent generate 41.2 (24.7) percent of total self-employment income in the Czech

³¹ We do know that agricultural income is approximate 5.5% (4.4%) of total per capita income in 1989 (1992) in

republic and 55.0 (41.6) percent in Slovakia. The bottom decile only earns 5.4 (3.2) percent of total self-employment income in the Czech (Slovak) Republics. The data for the generalized concentration curve in Table A3 (chart not plotted) indicates that the mean (adult-equivalent) income (in USPPP\$) from self-employment is relatively low and lower in Slovakia (180) than in the Czech Republic (281).

4.3 Pension Income

Pensions account for the lion's share of government transfers. The concentration curves in Chart 6 clearly indicate that pensioner income became more skewed to the right in 1993 as compared with 1989, but that it is concentrated in the lower half of the distribution. Hence, there is a smaller share of total pension income in the lowest three to four deciles in 1993 than there was pre-transition. As is shown by the plots in Chart 7, pensioners are worse off in 1993 than they were prior to the transition. [Need a table in appendix here.] However, the gap between the 1989-1993 adult-equivalent pension income is largest in the bottom two deciles in both republics. (In the Czech Republic, the gap is equally large for those in the ninth and tenth deciles.) This implies that either the number of pensioners and/or the level of pensions fell for these two deciles more than for the other deciles. It is clear from Chart 8 that the number of pensioner households declined in the first decile for both republics over time but it rose in the second to the seventh deciles in both republics (with a mixed story in deciles 8-10). Given that that number of pensioners did not decline in the second decile, this implies that the method of setting pensions in 1993 must have had a lower relative base than in 1989.³² We also note that Chart 8 indicates that

the Czech Republic (Garner, 1997) and hence self-employment agricultural income must be less than this.

³² In the next revision we will calculate pensions per pensioner and see to what extent the level changed over the deciles.

there were more pensioners in 1993 than in 1989 (especially in the Czech Republic). Since retirement was one form of reducing labor redundancy in the transition, this is not surprising.

4.4 Other Government Transfer Income

Chart 9 tells a very interesting story regarding changes in the distribution of transfer income within each republic over time. In 1989, in both republics, and to a greater extent in the Czech Republic, the lowest deciles were receiving *less* than their “fair” share of the transfers whereas the upper deciles received a greater than equally proportional share. By 1993 the distribution of transfers had shifted somewhat toward the lower end and we expect that, with the recent changes in social policy, 1996 data will show still more change in that direction. For example, the data in Table A4 indicate that the share of transfers received by the bottom decile rose in the Czech (Slovak) Republic from 5.6 (6.3) percent in 1989 to 10.4 (9.2) percent in 1993. In the Czech Republic all but the top twenty percent of the population gained, although the gains were progressively smaller, In Slovakia the bottom twenty percent gained and all others (except the top decile of the distribution) lost, producing a more equal distribution of transfers than in the Czech Republic in 1993.

The generalized concentration curves plotted in Chart 10 add especially interesting information. Whereas both republics had a very similar distribution and level of transfers in 1989 (with the Slovak mean slightly higher than the Czech), by 1993 the level of transfers (in real terms) had fallen dramatically in Slovakia (mean of 731 in 1989 vs. 541 in 1993), far more than in the Czech Republic (mean of 713 in 1989 vs. 681 in 1993). The data in Table A 4 also show that only the top 40 percent of the Czech population saw losses in the level of their transfers whereas all in Slovakia all but the bottom decile lost. Hence, welfare transfers helped the welfare of more people in the Czech Republic.

The better targeting of transfer income in 1993 did not arise from the ‘family benefits’ portion of the transfers. As shown in Chart 11, the plot of the average annual family benefit by deciles has an inverted-u shaped distribution, reflecting the distribution of children, presented in Chart 12. However, another principal component of government transfers -- other social benefits – which became more targeted to the lower end of the distribution in 1993, had an equalizing effect (Chart 13) on the overall distribution of income, by offsetting the increasing wage inequality at the top. Unemployment benefits are not an important component of annual income in either country since benefits last for at most six months and since a small percentage of the households are affected by unemployment – especially in the Czech Republic. However, what is interesting from Charts 14 and 15 is that the level of these transfers per adult equivalent and the number unemployed are relatively constant across the deciles.³³ However, it is clear that Slovakia relies more on unemployment benefits as a transfer than the Czech Republic.

4.5 Taxes

In order to measure the effect of taxes on income distribution, we plotted Lorenz curves for before- and after-tax income in 1989 and 1993 in Charts 16 and 17 for the Czech Republic and Slovakia, respectively. The plots indicated that the distributions of after-tax income are more equal than the distributions of before tax income, albeit not by much. The Gini coefficients for the after-tax income ($G_{y,t}$) is smaller than that for the before-tax income (G_y) in both years, and much smaller in 1993, indicating that the changes to the tax system in 1993 contributed to the equalization of income over time in each country. The differences (of the 1989-1993 differences) between the Czech and Slovak Gini coefficients also imply that the Czech tax system had a bigger equalizing impact. This is corroborated by the concentration curves for taxes plotted in the first

³³ The jerky line in Slovakia is probably due to the smaller sample size.

half of Chart 18. Whereas the curves for the two republics are nearly identical in 1989, the Czech curve lies below the Slovak curve for the first to the sixth deciles and above from the ninth to the tenth decile. The data for this chart, in Table A5, confirm that in 1993 Slovaks in the lowest six deciles paid higher cumulative shares of total taxes than Czechs in that category but the Czechs in the upper three deciles paid a higher cumulative share than the Slovaks in the top thirty percent.

In the second part of Chart 18, we plot the average tax rate for each decile, i.e., the percentage share of the average tax paid by each decile of the average total before-tax income in that decile (again, these are in OECD adult equivalent units valued in 1993 USPPP\$). The plots show that whereas in 1989 the average rates were very similar for the two republics over the ten deciles, in 1993 they diverge significantly. In 1989 the rate rose steeply from 4 percent in the first decile to about 10 percent in the third decile and then flattened to between 11 and 13 percent in the higher deciles (see Table 4 for the percentages). In 1993, there was a steeper rate of increase in the rates across the ten deciles, and starting from a higher rate for the first decile (about 6 percent) as the highest income groups now paid 17 percent of their income in taxes. Comparing the two republics: in 1993 in the first three deciles the Czechs pay a lower average rate than the Slovaks; however in the higher deciles the Czechs pay larger percentages than the Slovaks (until the tenth decile).

The components of the total tax (in Table 4) indicate that the increment in the overall tax rate was not due to changes in the income tax, which actually resulted in lower rates for every decile in each republic over time. The increment was driven by the introduction of social taxes (whose average rate rises with income); the percentage paid as "other taxes" did not change much over time.

5. Decomposition of Income by Source and Deciles

Having established relative changes in the Czech and Slovak welfare and distribution of income, wages, transfers and taxes, we now examine the *average level* and *percent distribution* of the components income listed in Section 3.4. As in all the analysis, the income is adjusted with the OECD indicator scale and expressed in 1993 U.S.PPP dollars. The averages of each income source includes zeros for persons in families where the source was not reported. Thus, our results are for the average person in the FBS sample who lives in a household unit in a particular decile and give us an understanding of what are the most important sources of income for people in different parts of the distribution.

Charts 19 and 20 contain plots of the average levels of six components of income for each decile. The components are: 1) wages; 2) self-employment income; 3) other monetary income (which includes income from capital and private transfers); 4) other income (in-kind, including both home production and gifts); 5) pension income; and 6) other government transfers. Table 6 contains the same information by shares (percentages) in each decile rather than levels. The principal findings from these two charts and table are:

- The rise in *total average adult-equivalent before-tax income* was steepest in the tenth decile. In 1989 the average total income in the tenth decile was 26.3 (29.5) percent higher than that in the ninth decile in the Czech (Slovak) Republic. In 1993 the tenth decile's average was 34.3 (34.7) percent higher in the respective republics. Otherwise the slope of the level of income across the deciles is rather flat in each country. Hence, we focus on the components of income at the top and bottom deciles.

- **Wage income** as a share of total income rises over the deciles. In the tenth decile wages represent over three quarters of the source of income each year (slightly more in Slovakia than in the Czech Republic). In the first decile wages only represent 30 to 40 percent of the share of total income. This is partially due to the fact that there are more wage earners per household in the higher income deciles than in the first decile in each country in each year. Looking over time we note that the wage share of total income in the lowest decile rose substantially in Slovakia -- from 32 to 40 percent (1989 to 1993) when there was only a slight rise in its share in the Czech Republic -- from 30 to 32 percent.

- In 1993, **self employment income** is a higher share of income of the top decile in both republics, but in the Czech Republic, self-employment income is almost just as important of a share of total income in all the other deciles, whereas in Slovakia, the share drops precipitously from the top decile to the ninth decile. The share is higher for the first to the ninth deciles in the Czech Republic (around 4 percent on average) than in Slovakia (around 2 percent on average) .

- Not surprisingly, **other monetary income** (including profits from bonds and stocks in 1993) is a high percentage of the income in the tenth decile and a low constant percentage across the other nine deciles. It fell significantly from 1989 to 1993 as a percent of the average income in the tenth decile for Slovakia (from about 6 to 3 percent) whereas it remained constant at about 7 percent for the Czech Republic over time.

- **Pension income** is the most important income source for the lowest decile in the Czech Republic over time and in Slovakia in 1989. However, its share in the first decile falls significantly from 54(49) percent in 1989 to 40 (34) percent in 1993 in the Czech (Slovak) Republic. At the same time, its share of total income in the second and third deciles rises from 1989 to 1993. This reflects the change in the concentration curves shown in Chart 6.

•*Other government transfers* have risen as a share of the income of *all* ten deciles in the Czech (Slovak) Republic from 1989 to 1993, however, the increase was greatest for the lowest decile from 8 to 17 percent in the Czech Republic and from 11 to 17 percent in Slovakia.

6. Summary and Conclusions

Our study has found that in the first four years of the transition income inequality in the Czech and Slovak Republics rose by much less than claimed in the *World Development Report*. On the basis of our results, we suggest that an important stylized fact in the transition process is that the Visegrad countries have been able to create markets with a smaller increase in income inequality, less macroeconomic instability, and a shorter and less pronounced output fall than the NIS countries. The finding that Slovakia's inequality has increased more than that of the Czech Republic is consistent with the pattern that countries that stabilized faster and experienced less of an output fall have been able to keep their income distribution more even.

Our second finding is that the level of welfare, as measured by the generalized Lorenz curves, fell considerably for both countries over the 1989-1993 period. However, it must be born in mind that this welfare comparison does not take into account the welfare effect of shifting from a shortage to a non-shortage economy.

In accounting for the increases in inequality over time, we conclude that: The creation of labor markets clearly widened the distribution of labor earnings in each country; they widened to a greater extent than the distributions of disposable income over these four years. The creation of a private entrepreneurial (self-employed) population also introduced more inequality in labor income, especially in Slovakia where self-employment income is more skewed.

The transfer system assisted in reducing inequality: The distribution of the most important transfers -- pension income -- shifted to the right (falling in the lowest decile and rising in the next two deciles). The changes in the distribution and level of 'other government transfers' were dramatic over this period. Since transfers became better targeted to the lower deciles (who increased their share in 1993 relative to 1989), they had an equalizing impact on the distribution of income over time. However, the level of transfers fell in real terms in 1993 compared to 1989 and the extent of the decline was far greater in Slovakia than in the Czech Republic. Since the fall in real incomes was also greater in Slovakia, transfers as a percent of real income were higher for the lowest deciles in Slovakia as compared to the Czech Republic. The transfers that help explain the better targeting to the poor are "other social transfers." Family benefits, the main component of transfers, were still being targeted to the middle income groups in both countries in 1993. Whereas Slovakia relied more on unemployment compensation than the Czech Republic, the relative importance of this component is quite small even in Slovakia.

The tax system equalized the distribution of the income in each country in each year. The new system had a greater equalizing impact in 1993 and the Czech system seems to have equalized incomes more than the Slovak system.

Hence the Czech and Slovak governments seem to have countered the dis-equalizing effects of the market on labor income by improving the targeting of transfers and the progressiveness of the tax system over time. The slightly greater increase in inequality for Slovakia is derived from a greater inequality in self-employment income, a tax system which was not as effective in equalizing incomes as in the Czech Republic and macroeconomic conditions which worsened relative to the Czech Republic in 1993.

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Table 1. Selected Macroeconomic Statistics for the Czech and Slovak Republics

Annual Percent Change in:	1989	1990	1991	1992	1993
Real GDP^a					
Czech Republic	4.5	-1.2	-14.2	-6.6	-0.3
Slovak Republic	1.1	-2.4	-14.0	-7.0	-4.7
Real Industrial Production^a					
Czech Republic	-0.2	-3.3	-24.3	-13.8	-5.3
Slovak Republic	-1.5	-3.8	-25.6	-13.9	-13.5
Real Agricultural Production^a					
Czech Republic	2.3	-2.3	-8.9	-12.1	-2.3
Slovak Republic	0.6	-7.2	-7.4	-13.9	-8.0
Total Employment (avg. annual)^a					
Czech Republic	0.6	-1.0	-5.5	-2.6	-1.6
Slovak Republic	-0.2	-0.8	-7.9	-5.3	-4.3
Industrial Empl. (avg. annual)^a					
Czech Republic	0.4	-4.2	-4.1	-7.7	-4.8
Slovak Republic	-0.8	-2.0	-7.8	-6.0	-9.2
Consumer Price Index (CPI)					
Czech Republic	1.4	9.7	56.7	11.1	20.8
Slovak Republic	1.3	10.4	61.2	10.1	23.2
Average Real Wage^a					
Czech Republic	0.8	-5.6	-25.5	10.8	-0.4
Slovak Republic	1.0	-5.7	-27.7	9.5	0.6
Unemployment Rate (level in percent)					
Czech Republic	0.0	0.7	4.1	2.6	3.5
Slovak Republic	0.0	1.5	11.8	10.3	14.4

Source: Dyba and Svejnar (1995, pp. 23-39) and Czech and Slovak Statistical Offices, *Statistical Yearbooks*, 1993-1995.

^aFor firms with more than 100 employees 1989-1991 and more than 25 employees 1992-1993.

**Table 2. A Comparison of Monthly Social Transfers
with the Average Monthly Net Wage
in the Czech and Slovak Republics, 1993**

	Slovak Republic				Czech Republic	
	1/93-9/39		10/93-12/93		1/93-12/93	
	SKK	Index	SKK	Index	CZK	Index
Economy wide Wage ¹	5,264	-	5,264	-	5,459	-
Economy wide "net" Wage ²	4,674	100.0	4,674	100.0	4,733	100.0
Minimum Wage	2,200	47.1	2,450	52.4	2,200	46.5
Unemployment Benefit						
Average ³	1,360	29.1	1,360	29.1	1,585	23.4
Maximum ⁴	3,300	70.6	3,675	78.6	3,300	69.7
Minimum Living Standard for:						
One member HH	1,700	36.4	1,980	42.4	1,960	41.4
Two member HH ⁵	2,900	62.0	3,510	75.1	3,500	73.9
Four member HH ⁶	5,100	109.1	6,180	132.2	6,170	130.4

Sources: Slovak and Czech Republics Ministries of Labor and Statistical Offices (taken from Terrell and Munich, 1995 and Terrell, Lubyova and Strapec, 1995).

¹Excludes small firms of less than 25 employees--annual average.

²Based on calculations, using the 1993 Family Budget Survey, of the ratio of average household before tax income to after tax income (.888 in Slovakia and .867 in the Czech Republic).

³Calculated as: (total amount of benefits paid out in the year/12)/average number of unemployed and receiving benefits in a month.

⁴Maximum for those unemployed who were not taking a retraining course.

⁵Household of two adults.

⁶Household of two adults and two children aged 6 to 9 years and 10 to 15 years.

Table 3. Indices of Inequality for Household Equivalent Disposable Tax Income in 1989 and 1993 for the Czech Republic and Slovakia

Scale and Index	Czech Republic		Slovakia	
	1989	1993	1989	1993
OECD indicator scale				
Gini	0.162	0.173	0.156	0.168
Mean log-deviation	0.043	0.048	0.040	0.046
(Sq CV)/2	0.047	0.058	0.044	0.056
Theil entropy	0.043	0.051	0.041	0.049
EU indicator scale				
Gini	0.161	0.177	0.154	0.170
Mean log-deviation	0.045	0.051	0.042	0.048
(Sq CV)/2	0.045	0.058	0.042	0.056
Theil entropy	0.044	0.052	0.041	0.049
Per capita				
Gini	0.183	0.187	0.176	0.185
Mean log-deviation	0.053	0.056	0.049	0.055
(Sq CV)/2	0.063	0.072	0.060	0.069
Theil entropy	0.056	0.061	0.053	0.059
National Academy				
Gini	0.159	0.174	0.152	0.167
Mean log-deviation	0.043	0.049	0.040	0.046
(Sq CV)/2	0.044	0.057	0.041	0.054
Theil entropy	0.043	0.051	0.039	0.049

Table 4: Components of Taxes by Decile, 1989 and 1993

Czech Republic

year decile	1989				1993			
	SOC.TAX	INC.TAX	OTH. TAX	TOT. T.	SOC.TAX	INC.TAX	OTH. TAX	TOT. T.
1	0.00%	3.90%	0.27%	4.17%	3.83%	1.87%	0.33%	6.03%
2	0.00%	8.29%	0.30%	8.59%	4.82%	2.42%	0.18%	7.43%
3	0.00%	9.66%	0.25%	9.92%	5.74%	3.00%	0.27%	9.01%
4	0.00%	11.13%	0.24%	11.37%	7.09%	3.86%	0.27%	11.23%
5	0.00%	11.23%	0.23%	11.46%	8.04%	4.76%	0.24%	13.04%
6	0.00%	12.28%	0.25%	12.53%	8.57%	5.52%	0.27%	14.35%
7	0.00%	12.23%	0.26%	12.49%	8.88%	6.00%	0.37%	15.26%
8	0.00%	12.73%	0.28%	13.01%	9.52%	6.84%	0.25%	16.62%
9	0.00%	13.53%	0.29%	13.82%	9.56%	7.20%	0.29%	17.05%
10	0.00%	12.72%	0.39%	13.11%	8.81%	7.89%	0.25%	16.95%

Slovak Republic

year decile	1989				1993			
	SOC.TAX	INC.TAX	OTH. TAX	TOT. T.	SOC.TAX	INC.TAX	OTH. TAX	TOT. T.
1	0.00%	4.16%	0.25%	4.41%	4.10%	2.17%	0.30%	6.56%
2	0.00%	8.27%	0.11%	8.38%	5.27%	2.87%	0.28%	8.42%
3	0.00%	10.17%	0.17%	10.35%	5.69%	3.07%	0.22%	8.98%
4	0.00%	11.43%	0.15%	11.58%	6.45%	3.68%	0.21%	10.35%
5	0.00%	11.47%	0.05%	11.52%	6.12%	3.82%	0.19%	10.12%
6	0.00%	11.29%	0.10%	11.39%	7.16%	5.01%	0.14%	12.31%
7	0.00%	12.37%	0.11%	12.48%	7.73%	5.72%	0.16%	13.61%
8	0.00%	12.54%	0.17%	12.71%	7.96%	6.10%	0.17%	14.24%
9	0.00%	12.85%	0.13%	12.99%	8.39%	6.62%	0.16%	15.18%
10	0.00%	12.83%	0.18%	13.01%	8.37%	8.12%	0.15%	16.63%

Table 5: Component of Income by Decile in the Czech Republic, 1989 and 1993
(rows sum to 100%)

year decile	1989					
	WAGE	SELF-EMP	OTHER	MON.INC	PENSION	GOVT.TR.
1	30.05%	0.00%	6.36%	1.55%	53.81%	8.23%
2	57.11%	0.00%	6.60%	2.20%	22.27%	11.81%
3	66.16%	0.00%	6.87%	2.16%	12.97%	11.84%
4	72.18%	0.00%	6.40%	2.08%	8.05%	11.28%
5	74.48%	0.00%	6.70%	1.98%	6.55%	10.29%
6	77.65%	0.00%	6.81%	1.58%	4.48%	9.47%
7	78.15%	0.00%	6.59%	2.30%	5.41%	7.54%
8	78.32%	0.00%	7.20%	3.48%	4.61%	6.40%
9	79.91%	0.00%	6.54%	3.83%	5.06%	4.66%
10	74.60%	0.00%	9.00%	7.06%	6.27%	3.06%

year decile	1993					
	WAGE	SELF-EMP	OTHER	MON.INC	PENSION	GOVT.TR.
1	32.87%	4.52%	5.29%	0.93%	39.59%	16.79%
2	39.76%	3.98%	5.18%	1.54%	35.77%	13.77%
3	48.95%	1.90%	6.42%	1.75%	27.13%	13.86%
4	57.79%	3.87%	6.96%	1.68%	16.82%	12.88%
5	66.10%	3.65%	6.11%	2.30%	10.08%	11.77%
6	70.41%	4.86%	6.17%	2.18%	6.55%	9.83%
7	74.63%	3.18%	5.84%	2.64%	4.98%	8.73%
8	79.00%	4.70%	5.72%	2.24%	2.10%	6.24%
9	78.47%	5.52%	5.73%	2.84%	2.52%	4.92%
10	75.36%	6.14%	6.42%	6.69%	2.19%	3.20%

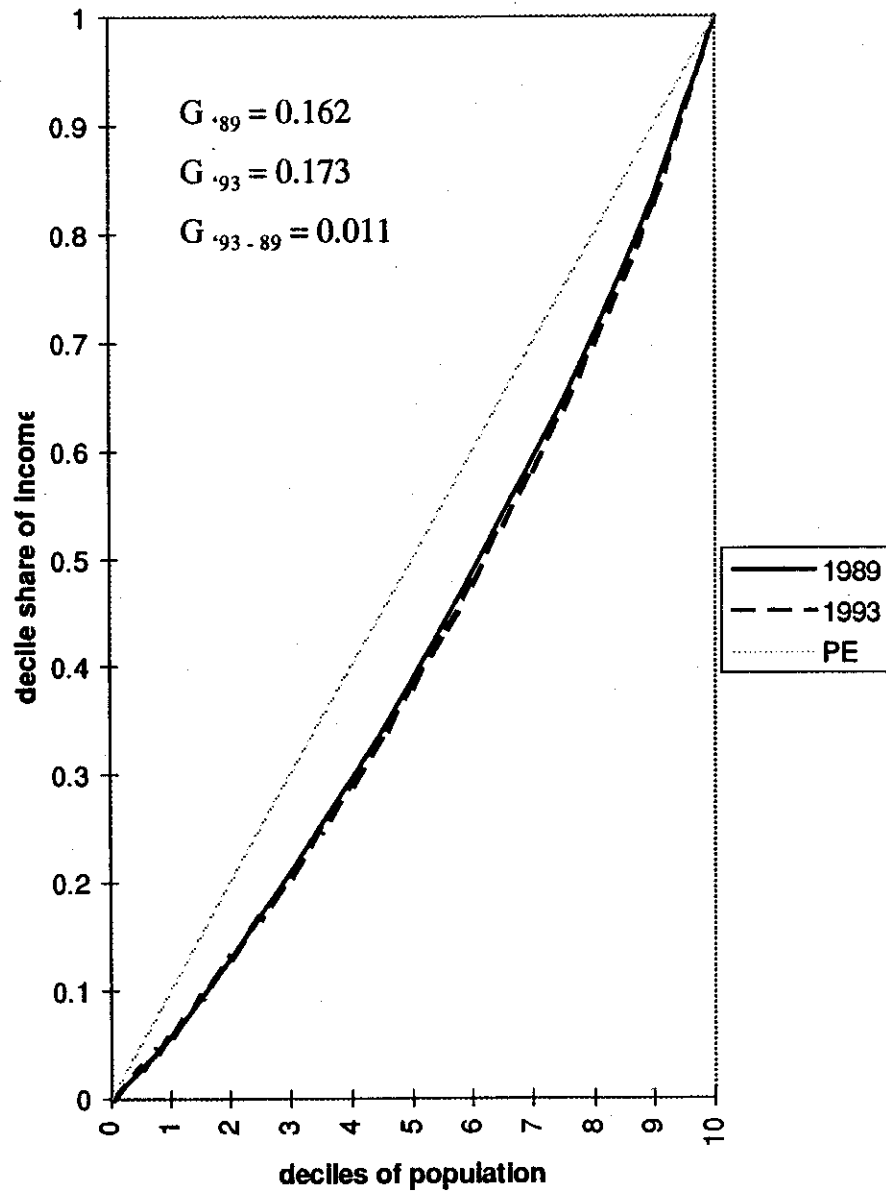
Table 6: Component of Income by Decile in the Slovak Republic, 1989 and 1993
(rows sum to 100%)

year decile	1989					
	WAGE	SELF-EMP	OTHER	MON.INC	PENSION	GOVT.TR.
1	31.77%	0.00%	6.18%	2.08%	49.32%	10.65%
2	57.75%	0.00%	6.80%	2.67%	15.53%	17.25%
3	70.14%	0.00%	6.03%	1.67%	8.28%	13.88%
4	72.09%	0.00%	5.81%	1.58%	8.04%	12.47%
5	76.13%	0.00%	4.99%	2.10%	5.07%	11.71%
6	77.36%	0.00%	5.77%	1.55%	4.61%	10.72%
7	80.09%	0.00%	5.28%	1.69%	4.25%	8.69%
8	81.47%	0.00%	6.50%	2.03%	2.73%	7.28%
9	82.72%	0.00%	6.68%	2.01%	3.33%	5.26%
10	78.58%	0.00%	9.58%	5.82%	2.89%	3.13%

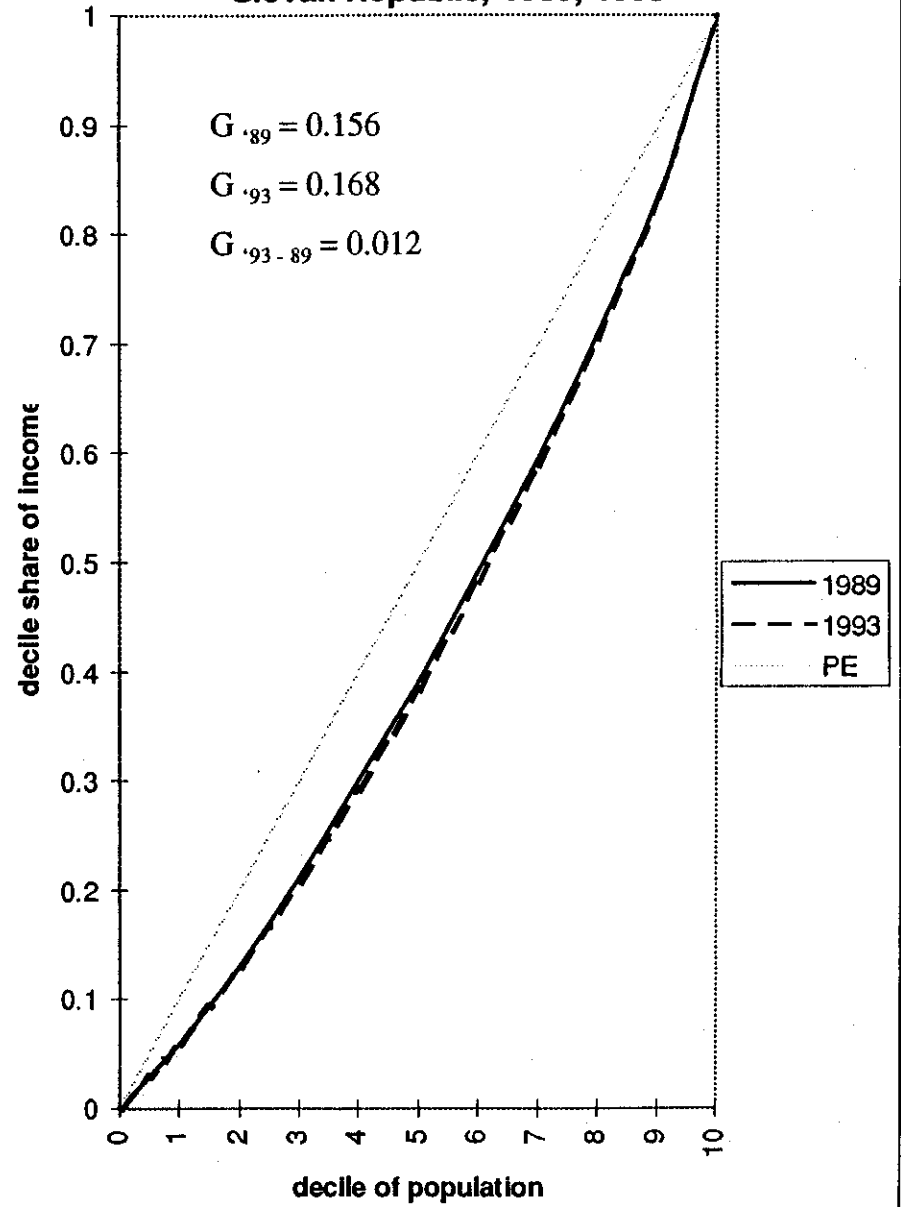
year decile	1993					
	WAGE	SELF-EMP	OTHER	MON.INC	PENSION	GOVT.TR.
1	40.40%	1.95%	5.06%	1.11%	34.40%	17.07%
2	51.24%	1.15%	6.59%	1.30%	21.93%	17.80%
3	54.51%	1.11%	7.08%	1.17%	21.81%	14.32%
4	60.06%	3.73%	7.50%	1.60%	13.13%	13.97%
5	60.10%	1.00%	8.40%	1.79%	15.60%	13.12%
6	69.18%	2.13%	8.51%	2.38%	5.88%	11.92%
7	74.94%	1.49%	7.65%	1.62%	4.86%	9.44%
8	74.74%	4.13%	6.99%	1.73%	4.06%	8.34%
9	78.36%	3.41%	7.05%	2.18%	3.08%	5.91%
10	76.71%	7.93%	7.64%	3.06%	0.98%	3.69%

Chart 1

Lorenz Curves for Disposable Income in the Czech Republic, 1989, 1993



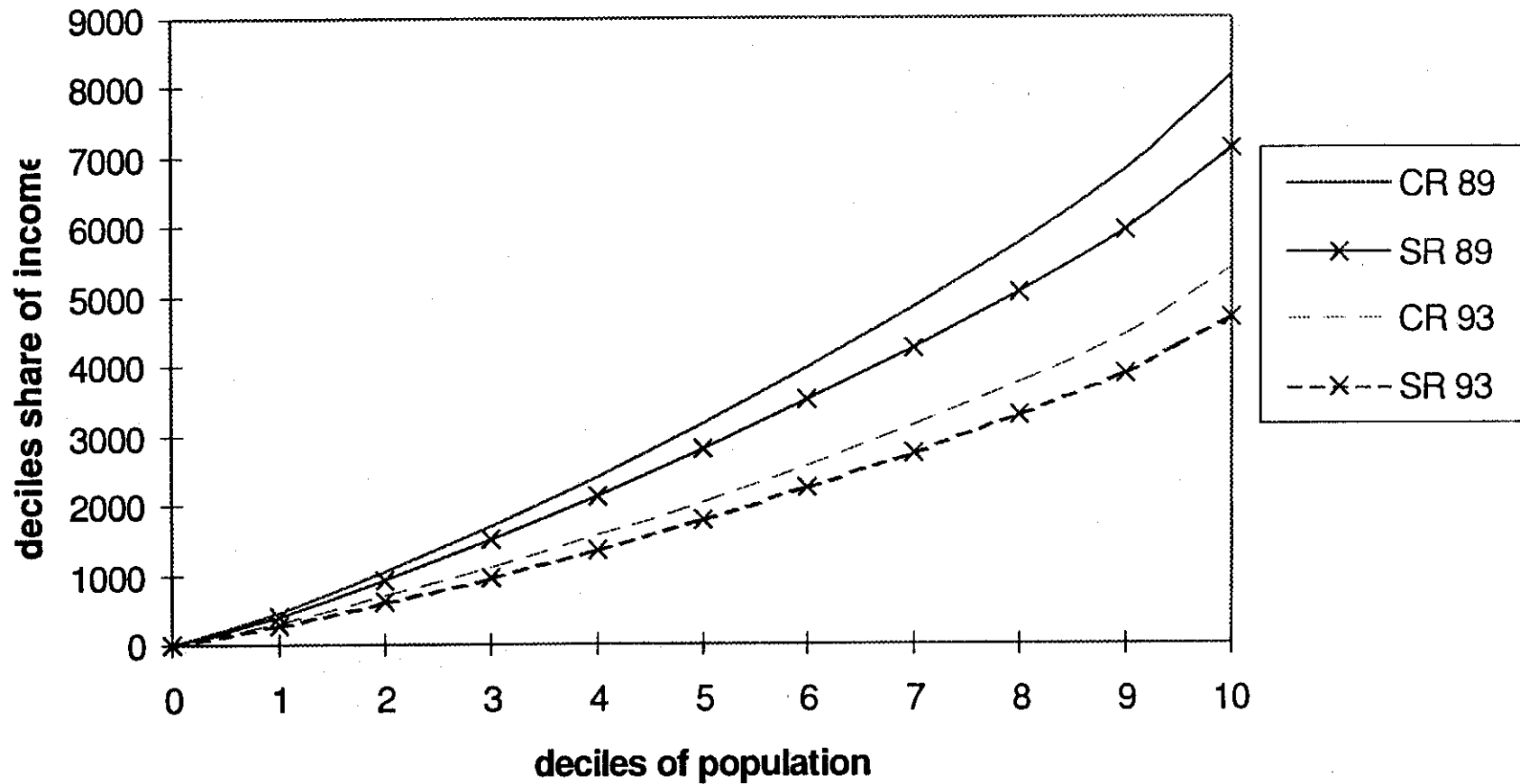
Lorenz Curves for Disposable Income in the Slovak Republic, 1989, 1993



47

Chart 2

Generalized Lorenz Curves for Disposable Income, Czech and Slovak Republic, 1989, 1993



45

Chart 3

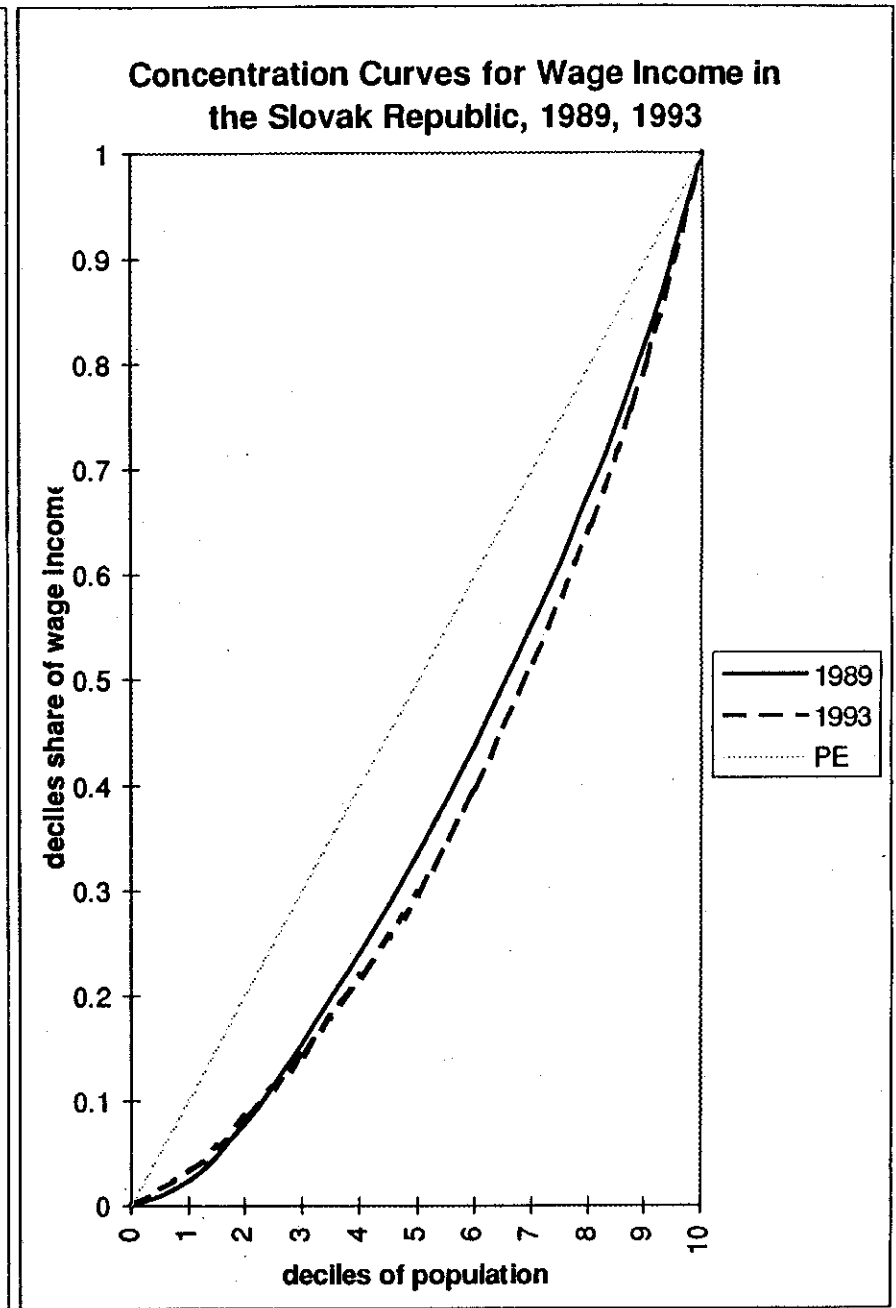
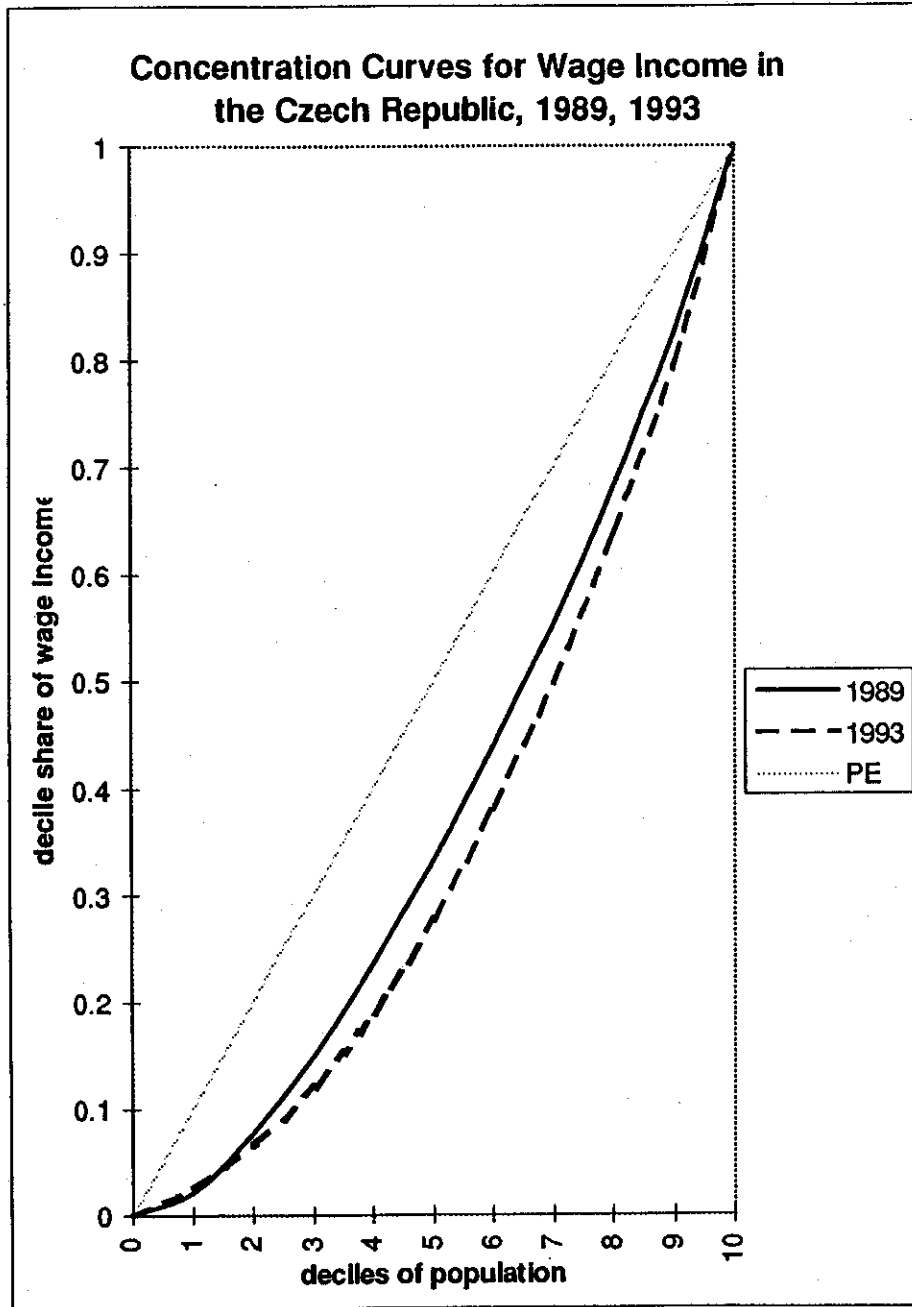
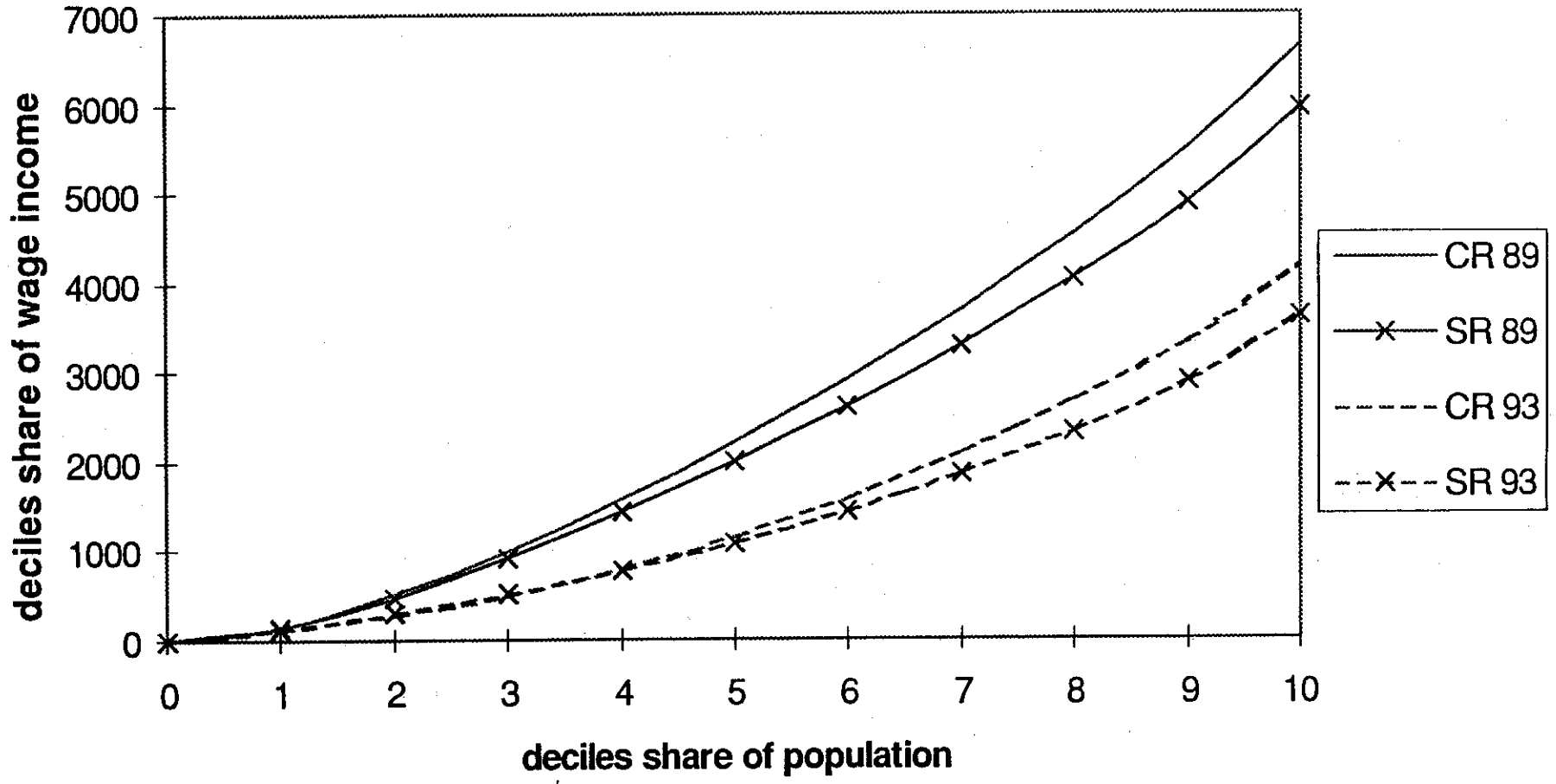


Chart 4

Generalized Concentration Curves for Wage Income, Czech and Slovak Republic, 1989, 1993



47

Chart 5

Concentration Curves for the Self-Employed Income, Czech and Slovak Republics, 1993

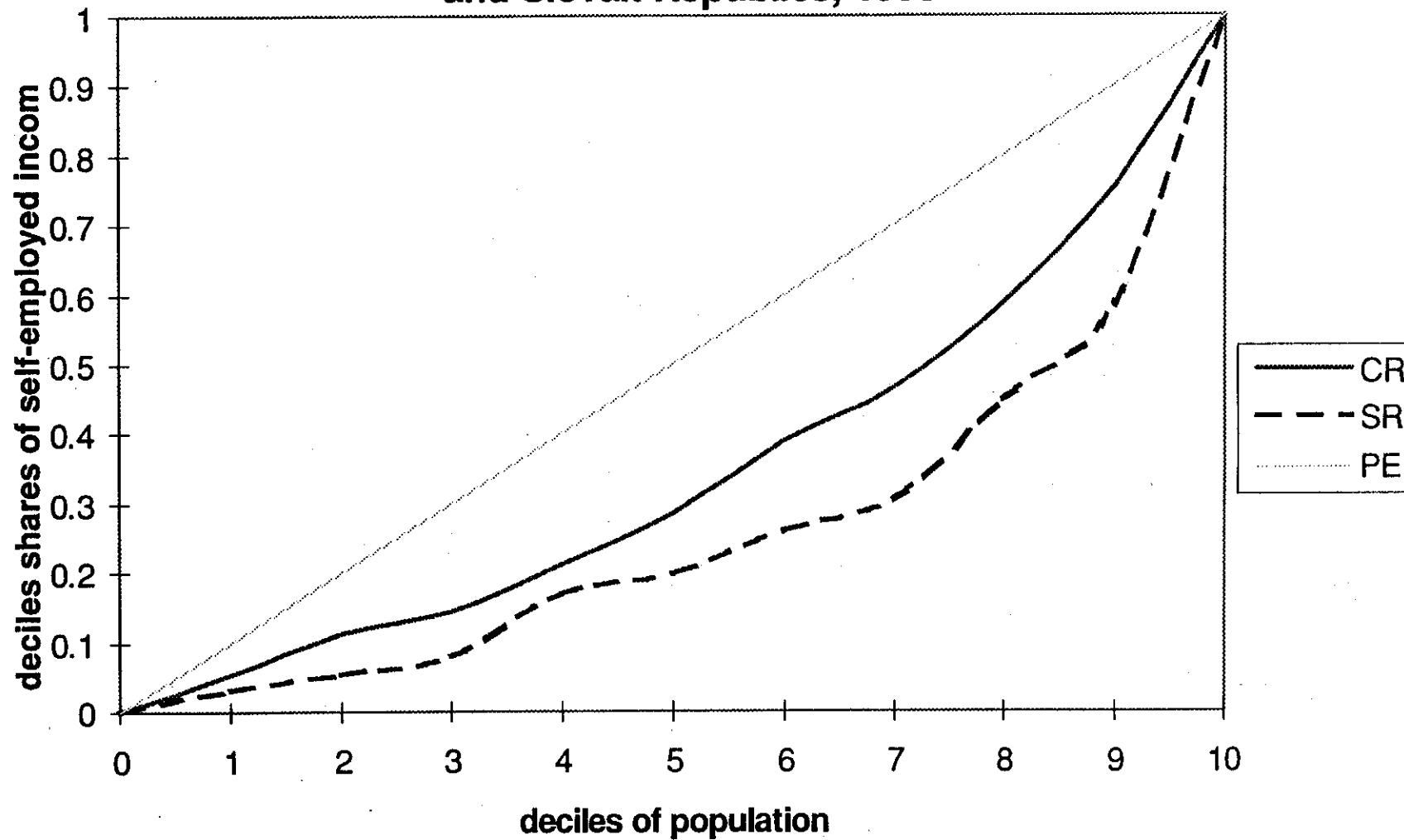
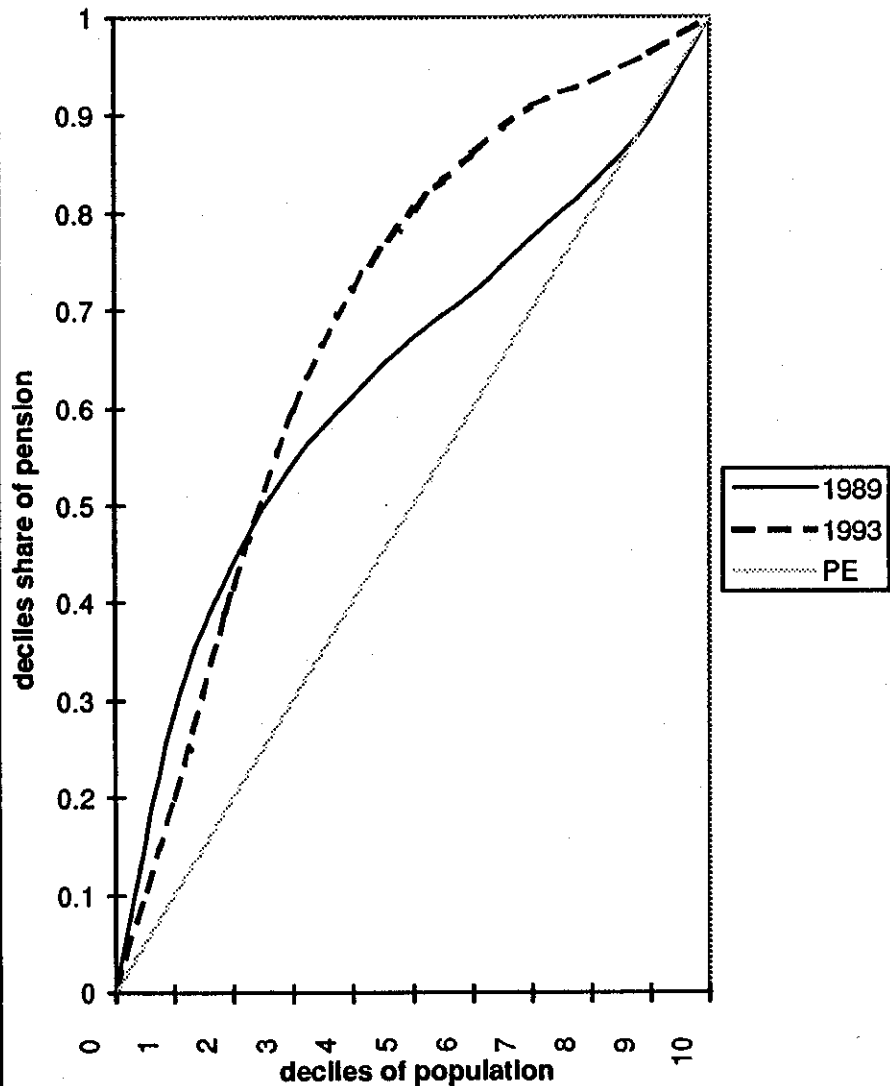
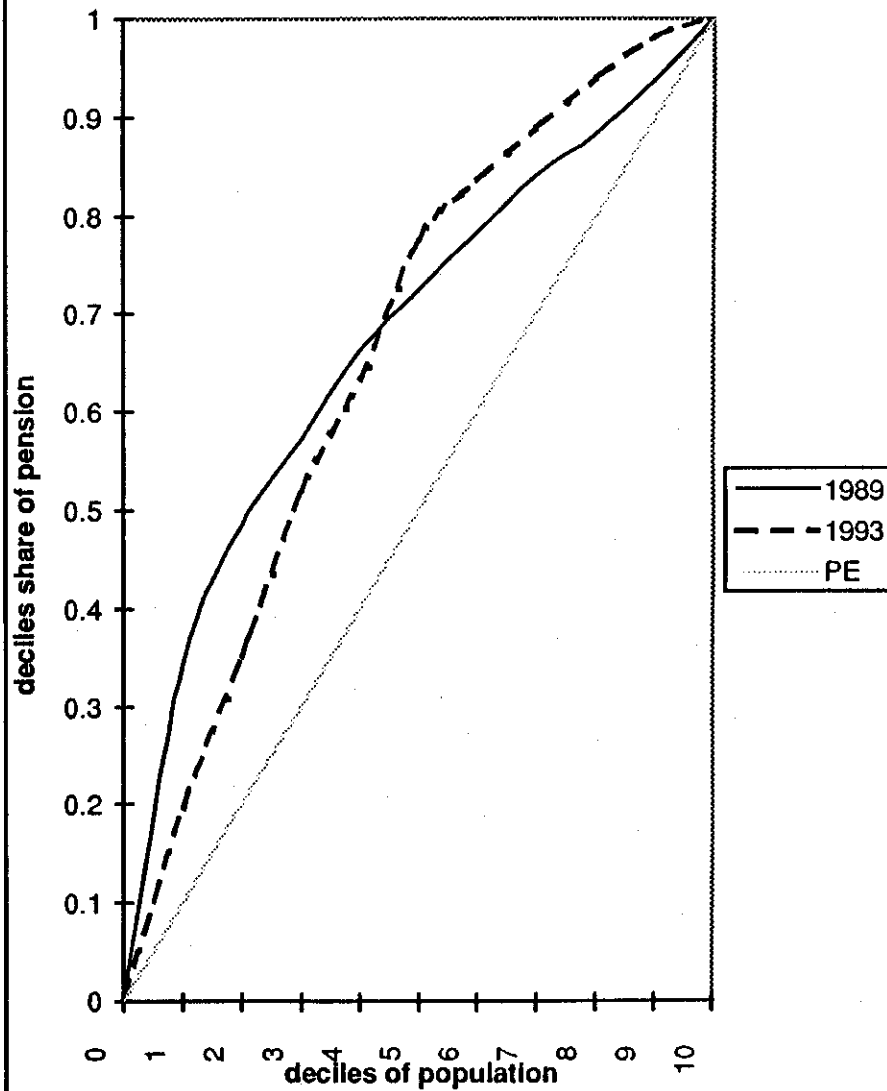


Chart 6

Concentration Curve for Pensions, Czech Republic, 1989 and 1993



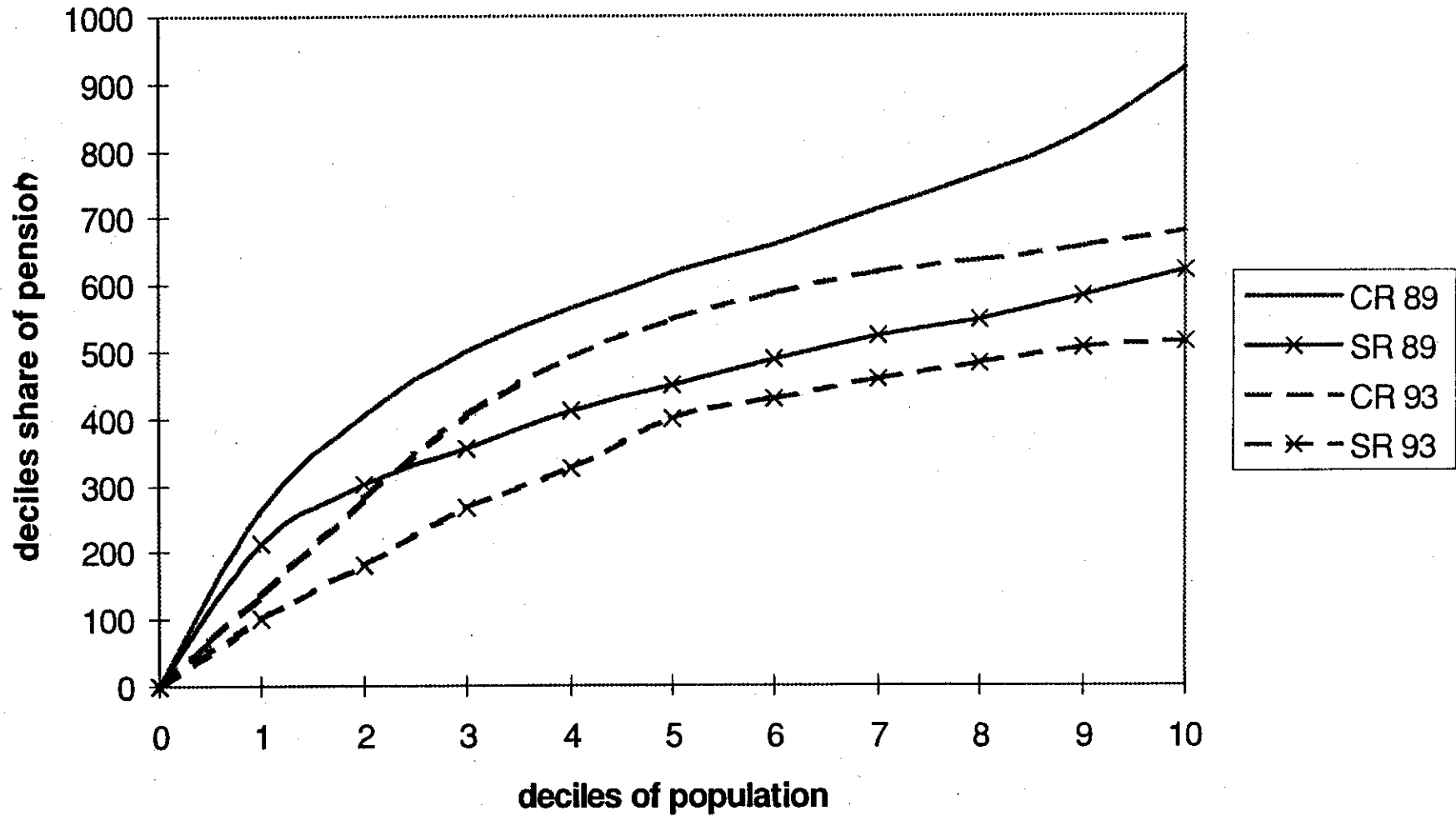
Concentration Curve for Pensions, Slovak Republic, 1989 and 1993



49

Chart 7

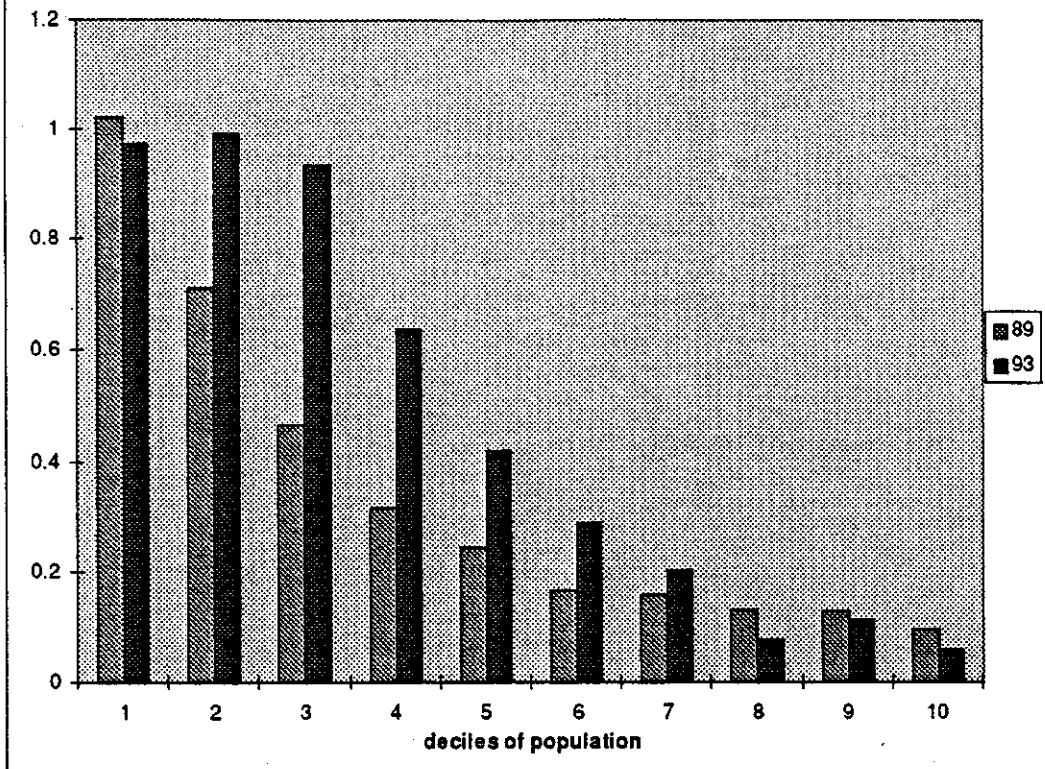
Generalized Concentration Curve for Pension, Czech and Slovak Republics, 1989 and 1993



50

Chart 8

Average Number of Pensioners in Household, Czech Republic, 1989 and 1993



Average Number of Pensioners in Household *Slovak Republic, 1989 and 1993*

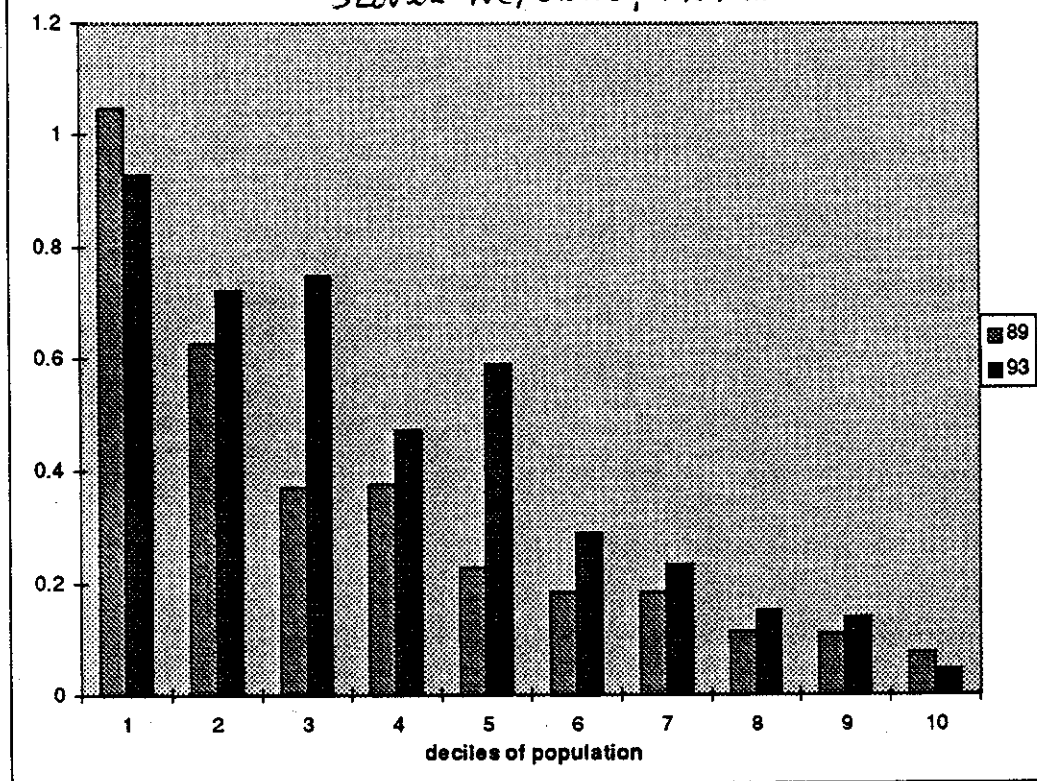
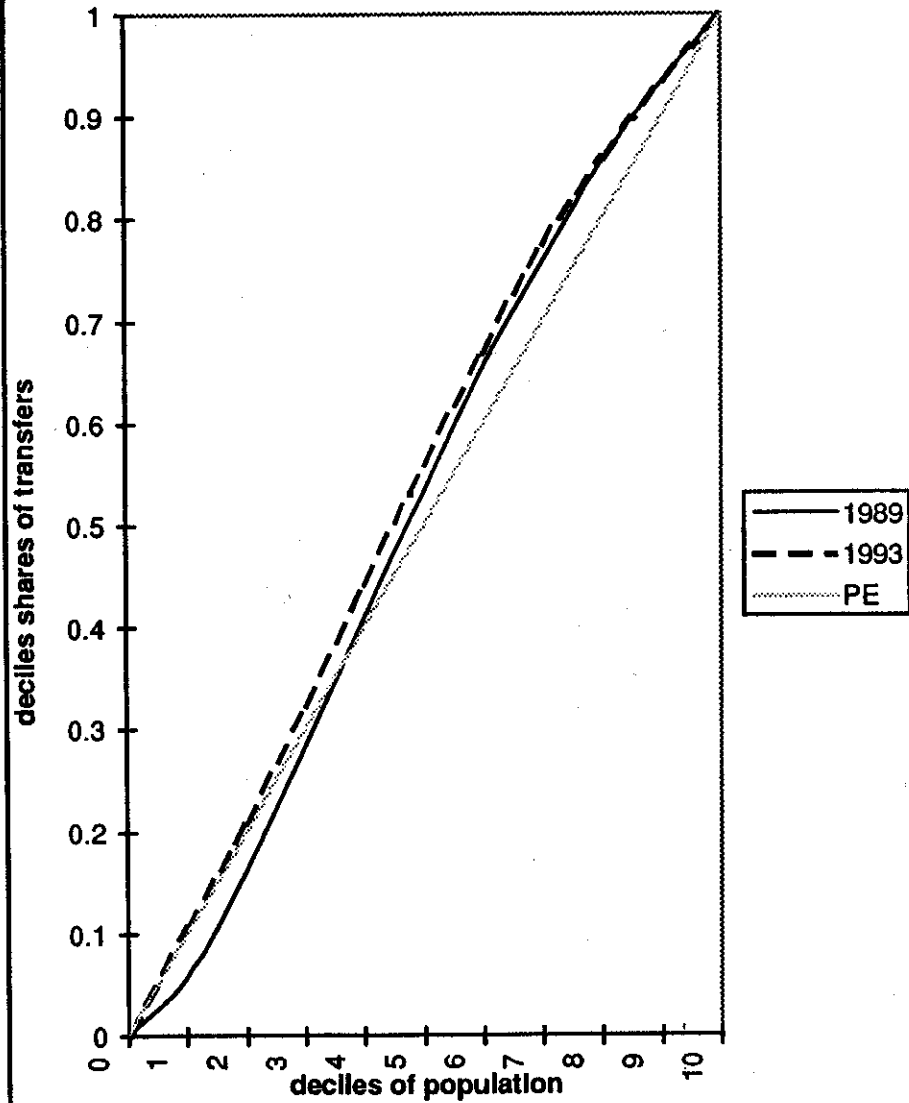
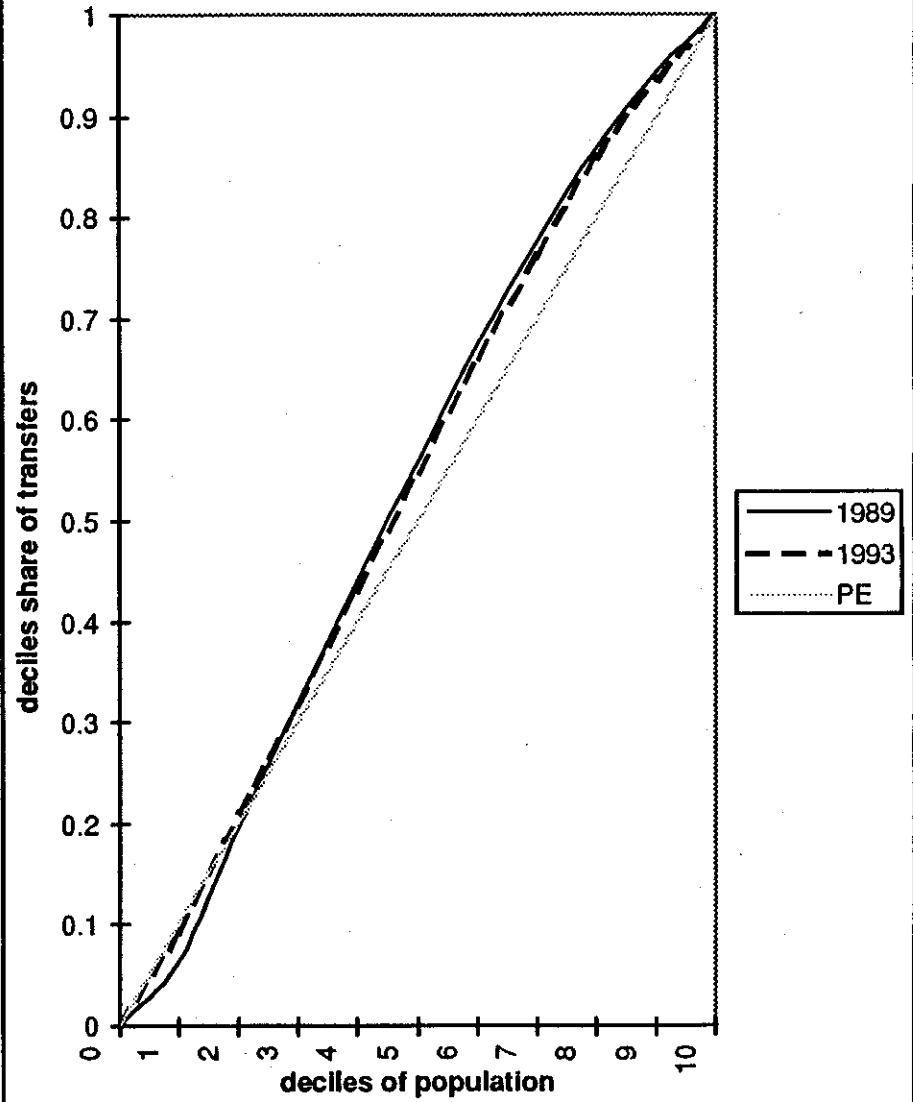


Chart 9

Concentration Curves for Government Transfers, Czech Republic, 1989, 1993



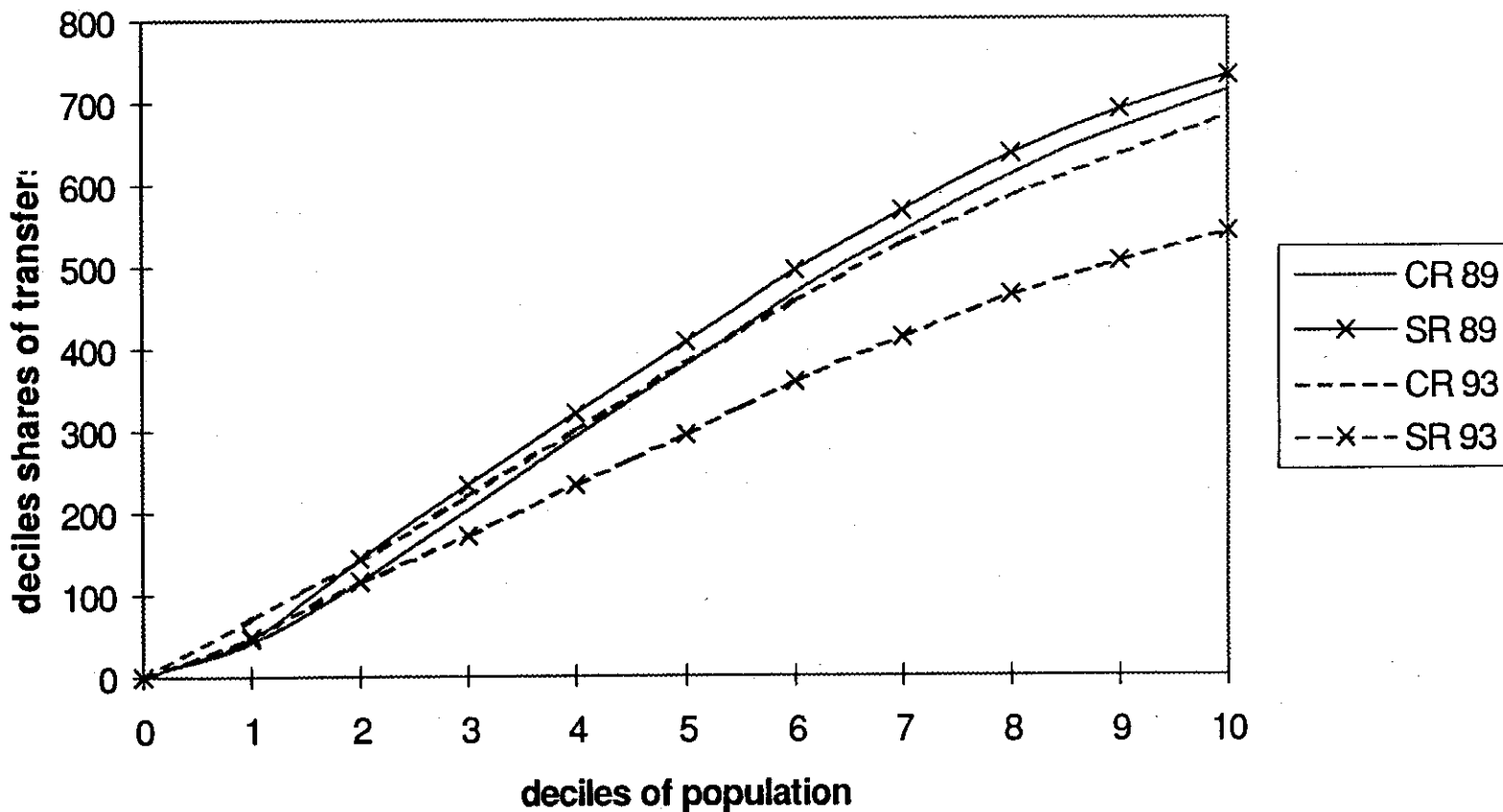
Concentration Curves for Government Transfers, Slovak Republic, 1989, 1993



15

Chart 10

Generalized Concentration Curves for Government Transfers,
Czech and Slovak Republic, 1989 and 1993



53

Chart 11. Family Benefits, 1993
(Average Annual Adult-Equivalent in PPP U.S. Dollars)

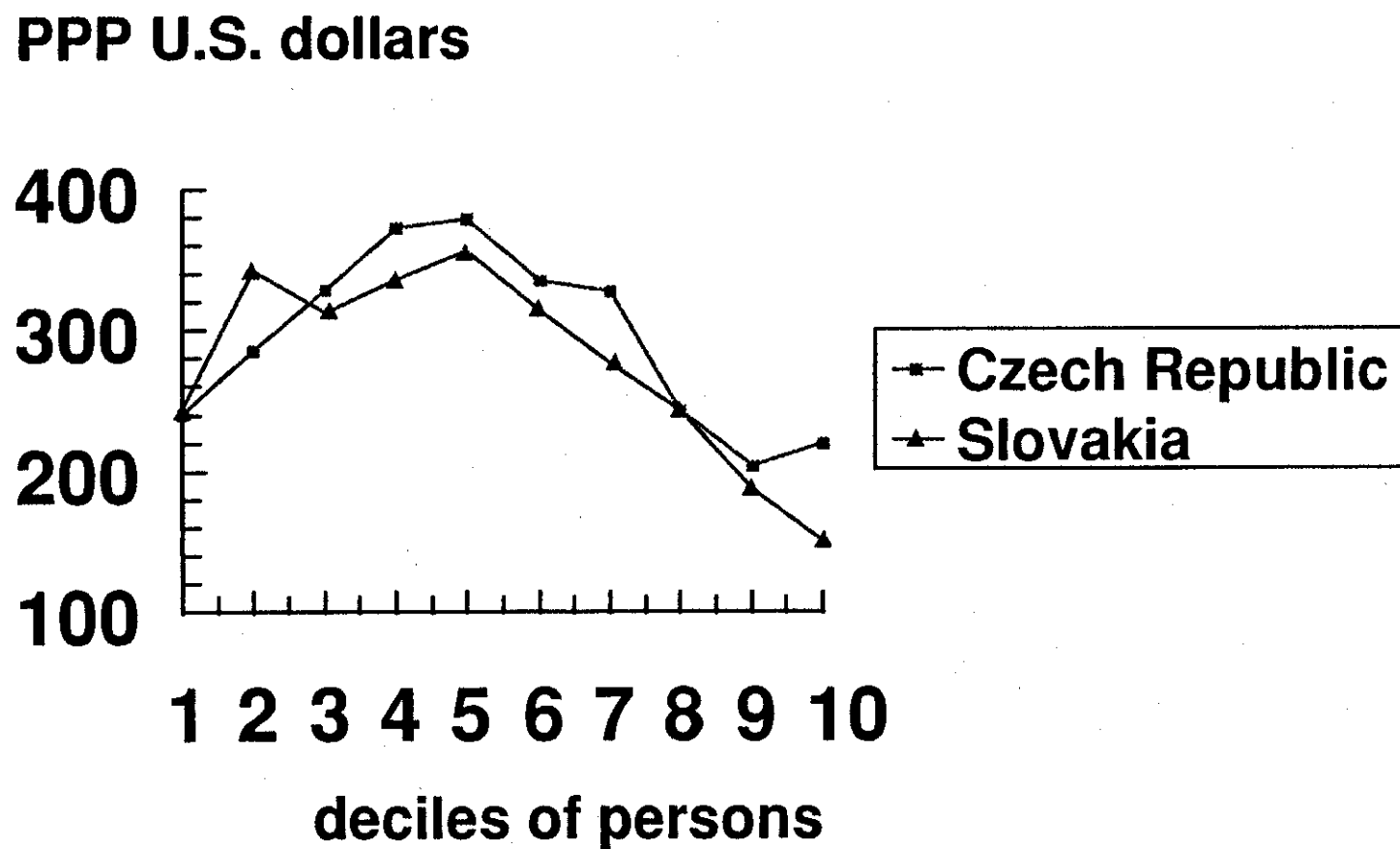
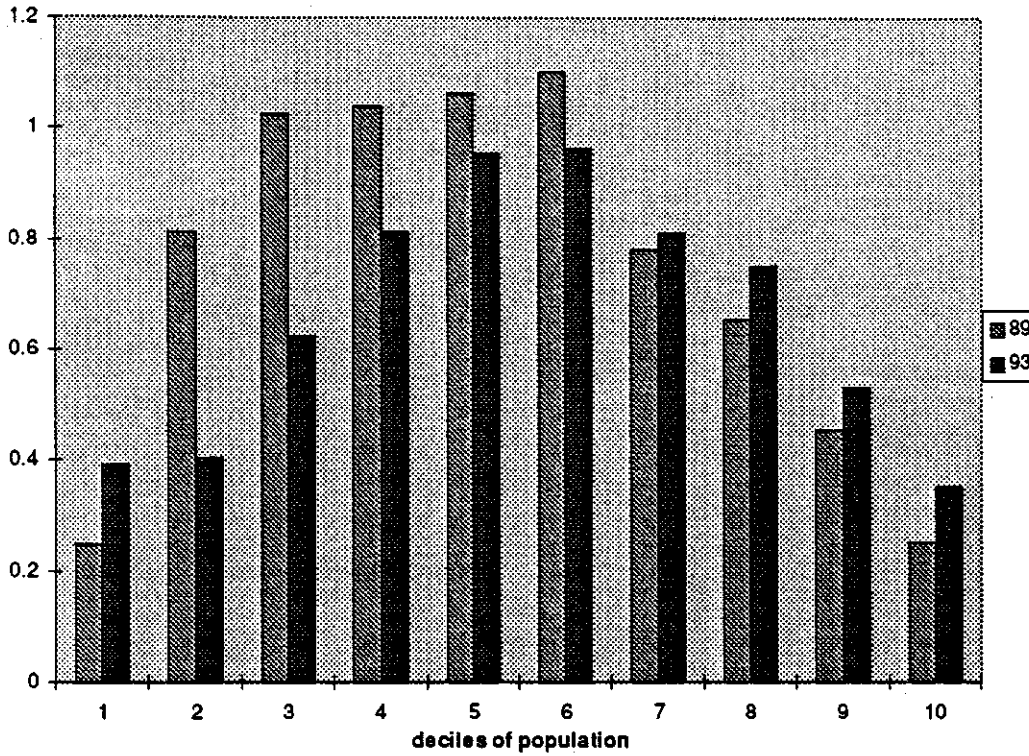


Chart 12

Average Number of Children in Household, Czech Republic, 1989 and 1993



Average Number of Children in Household, Slovak Republic, 1989 and 1993

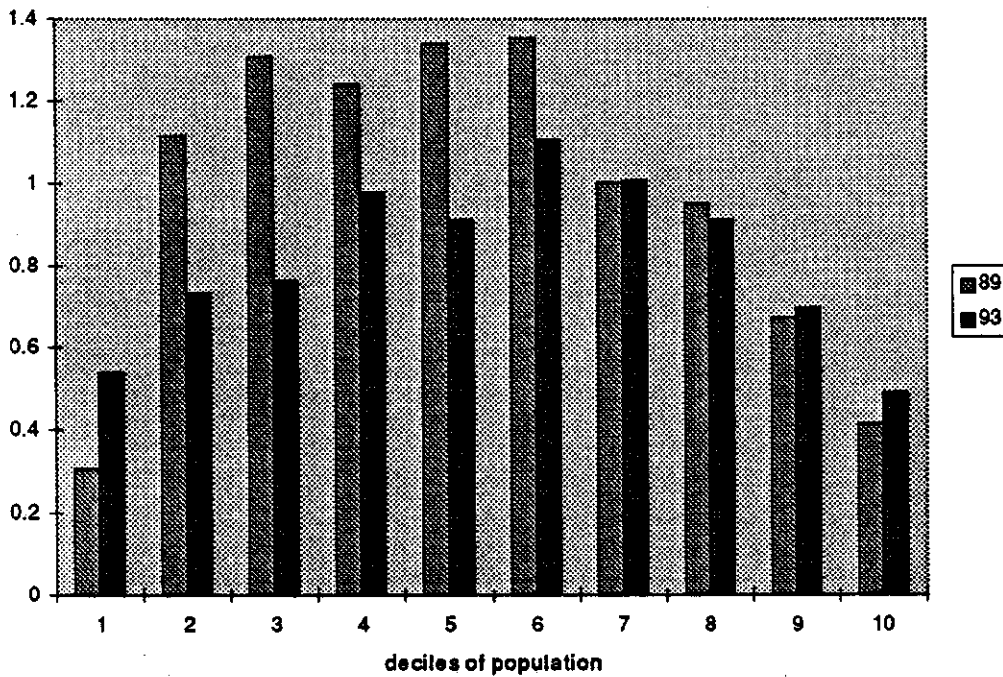


Chart 13. Other Social Benefits, 1993
(Average Annual Adult-Equivalent in PPP U.S. Dollars)

U.S. dollars

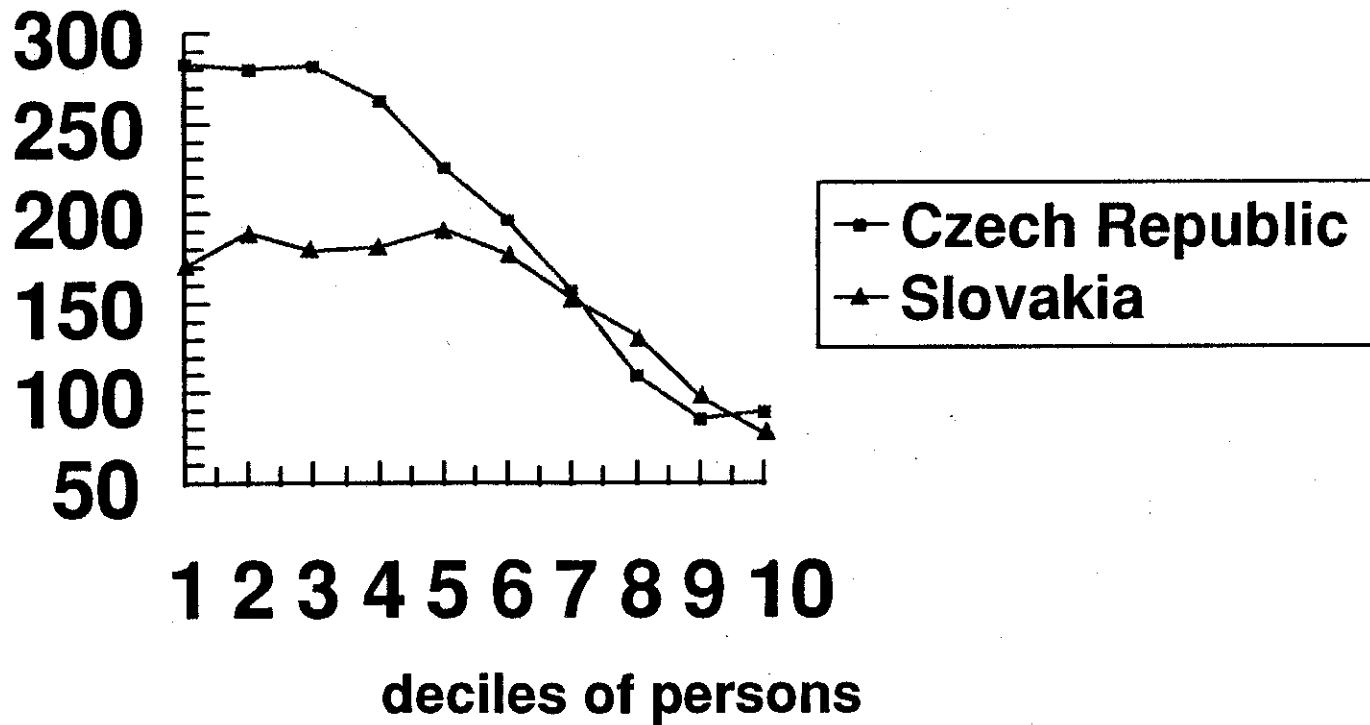
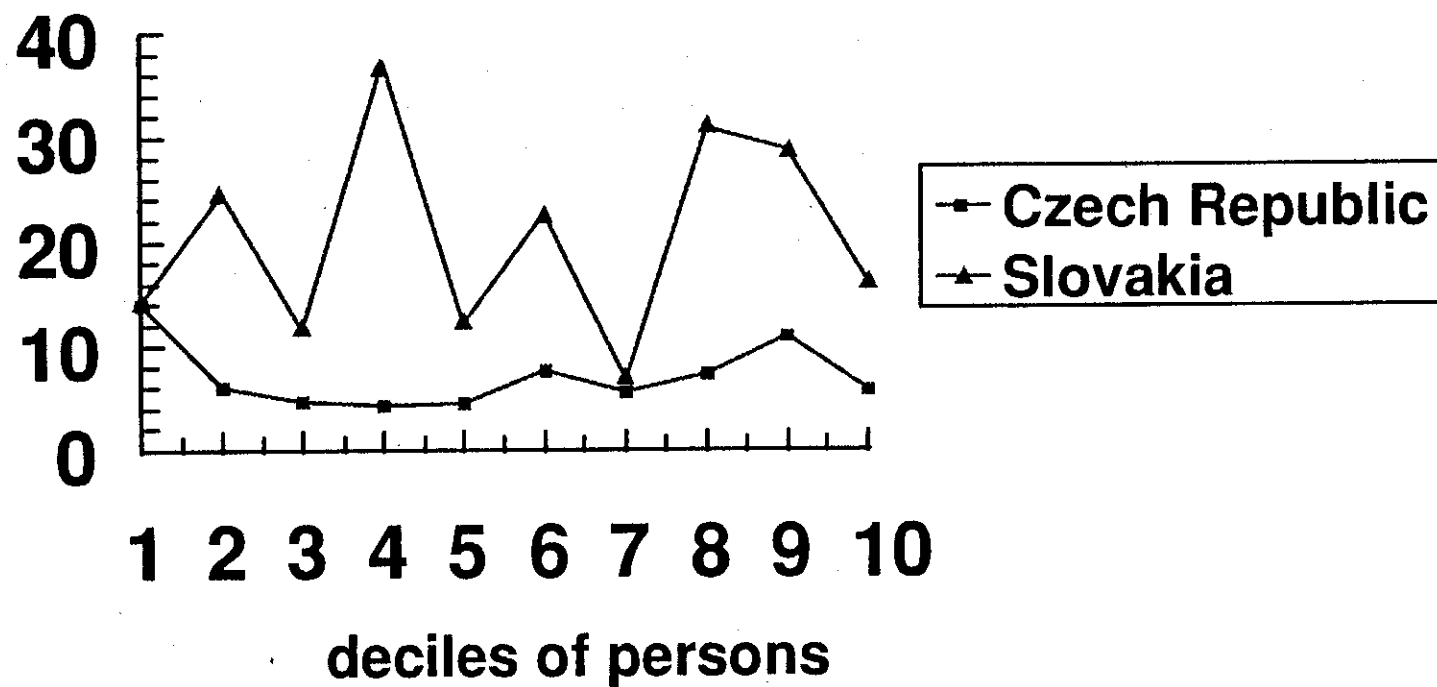


Chart 14. Unemployment Benefits, 1993
(Average Annual Adult-Equivalent in PPP U.S. Dollars)

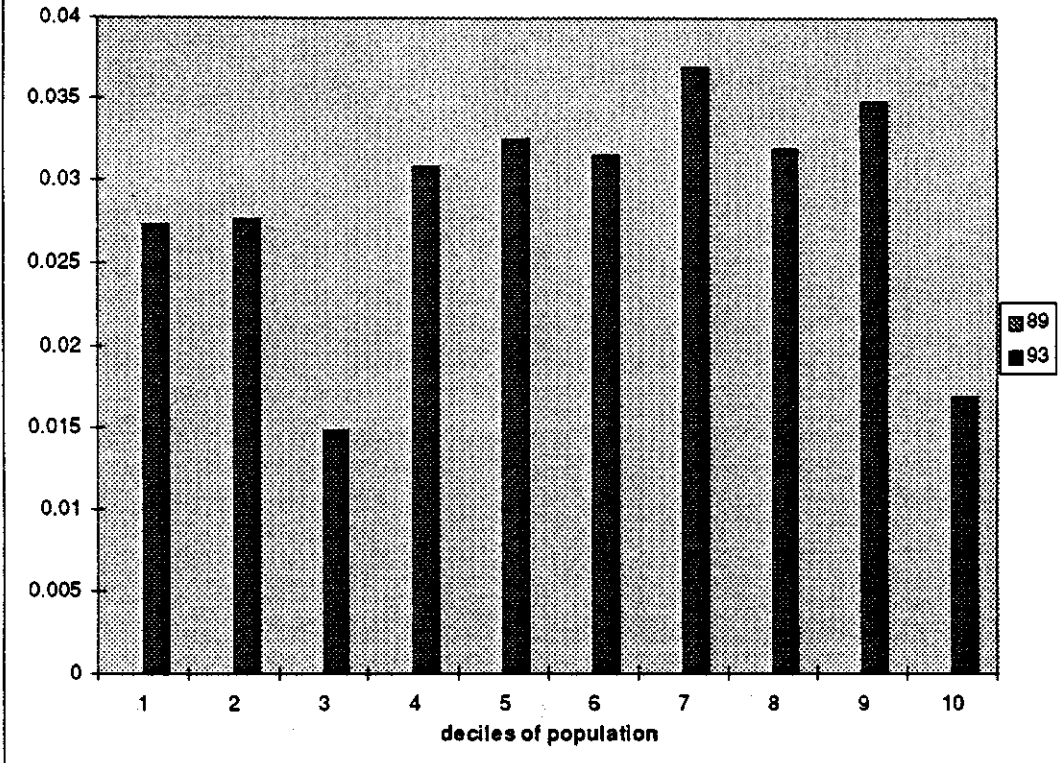
PPP U.S. dollars



56

Chart 15

Average Number of Unemployed in Household, Czech Republic, 1993



Average Number of Unemployed in Household, Slovak Republic

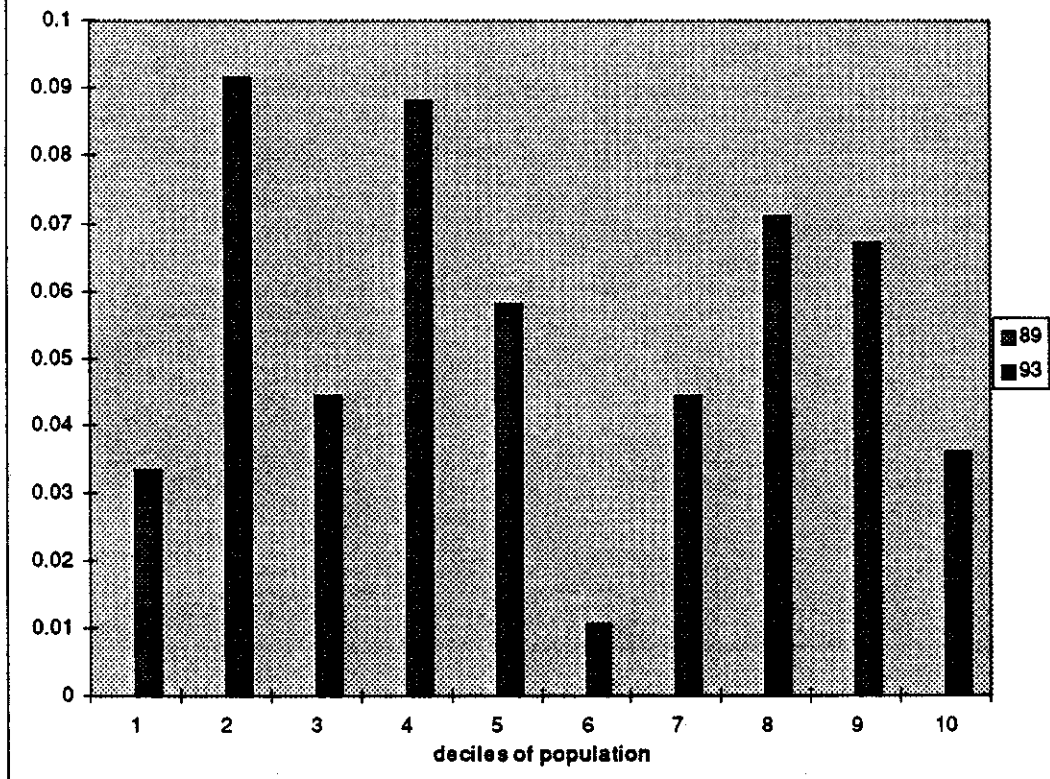


Chart 16

54

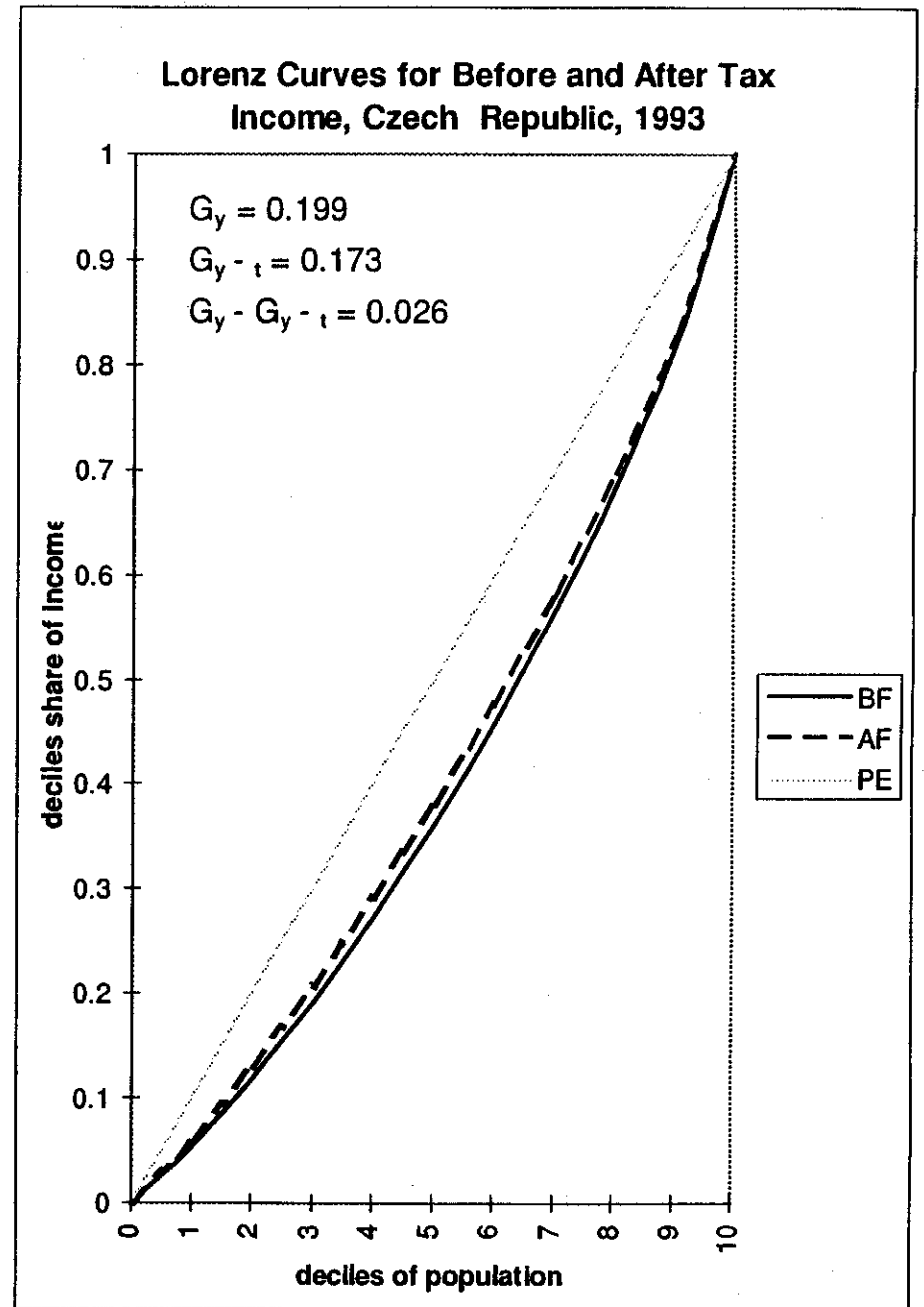
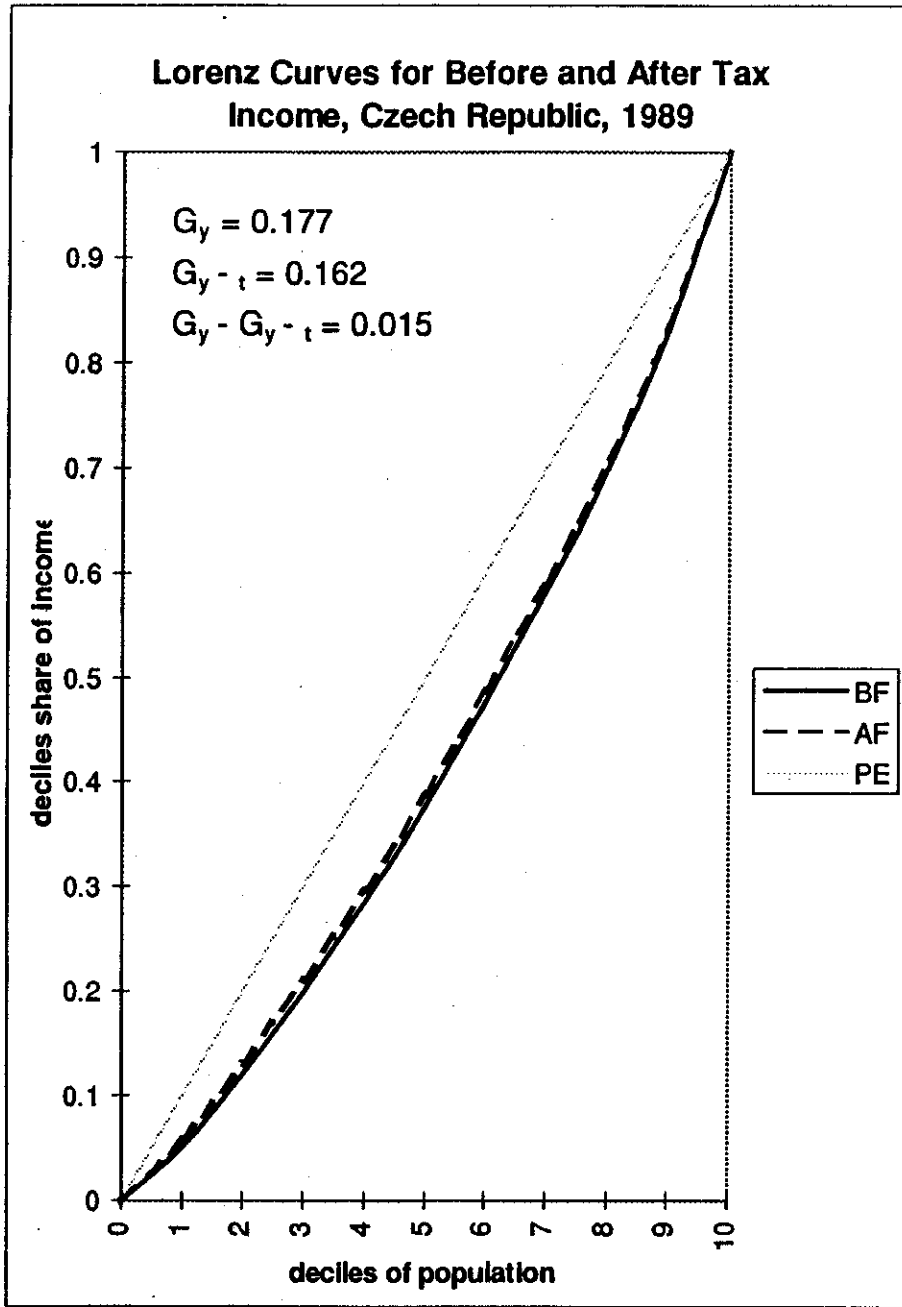
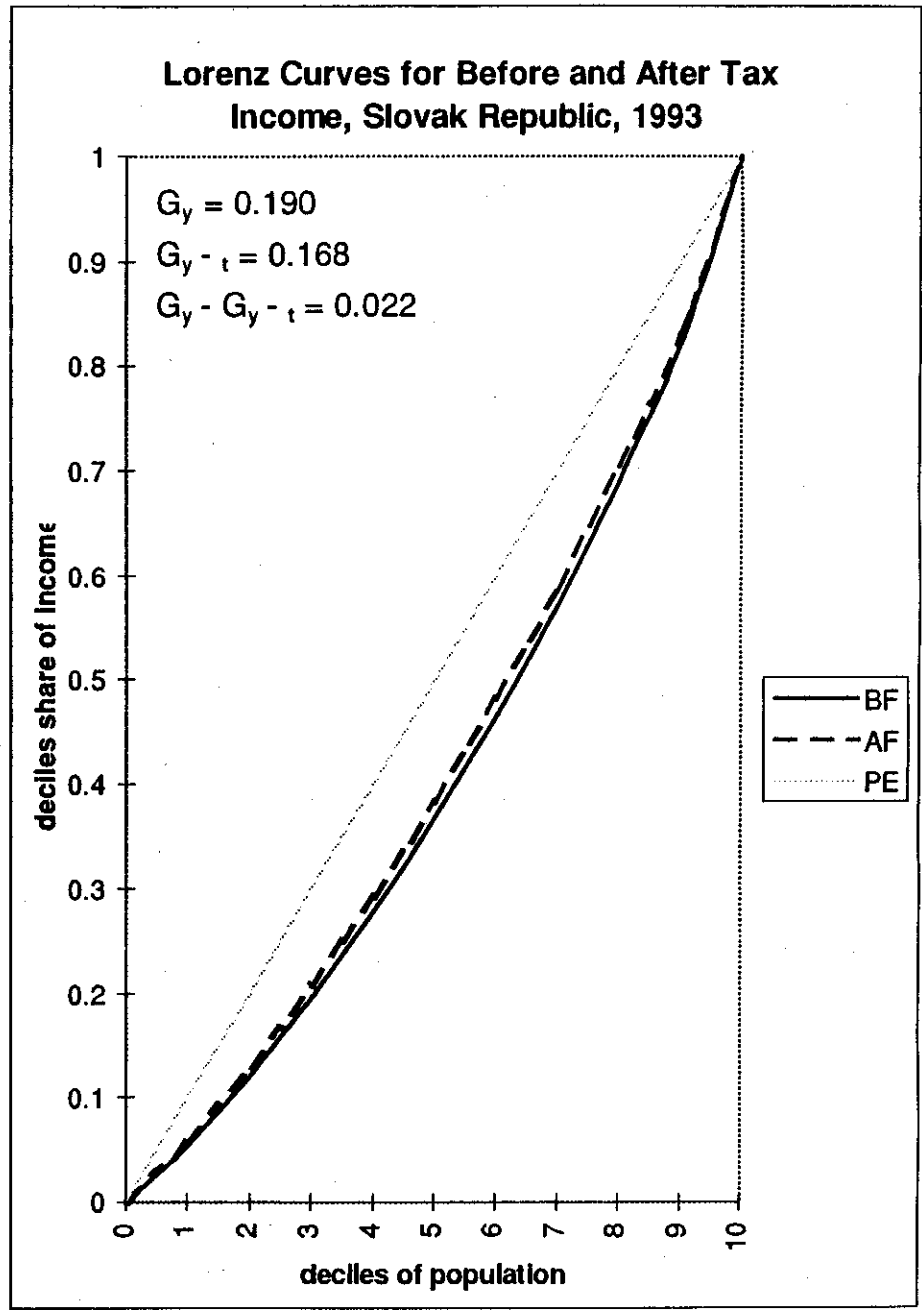
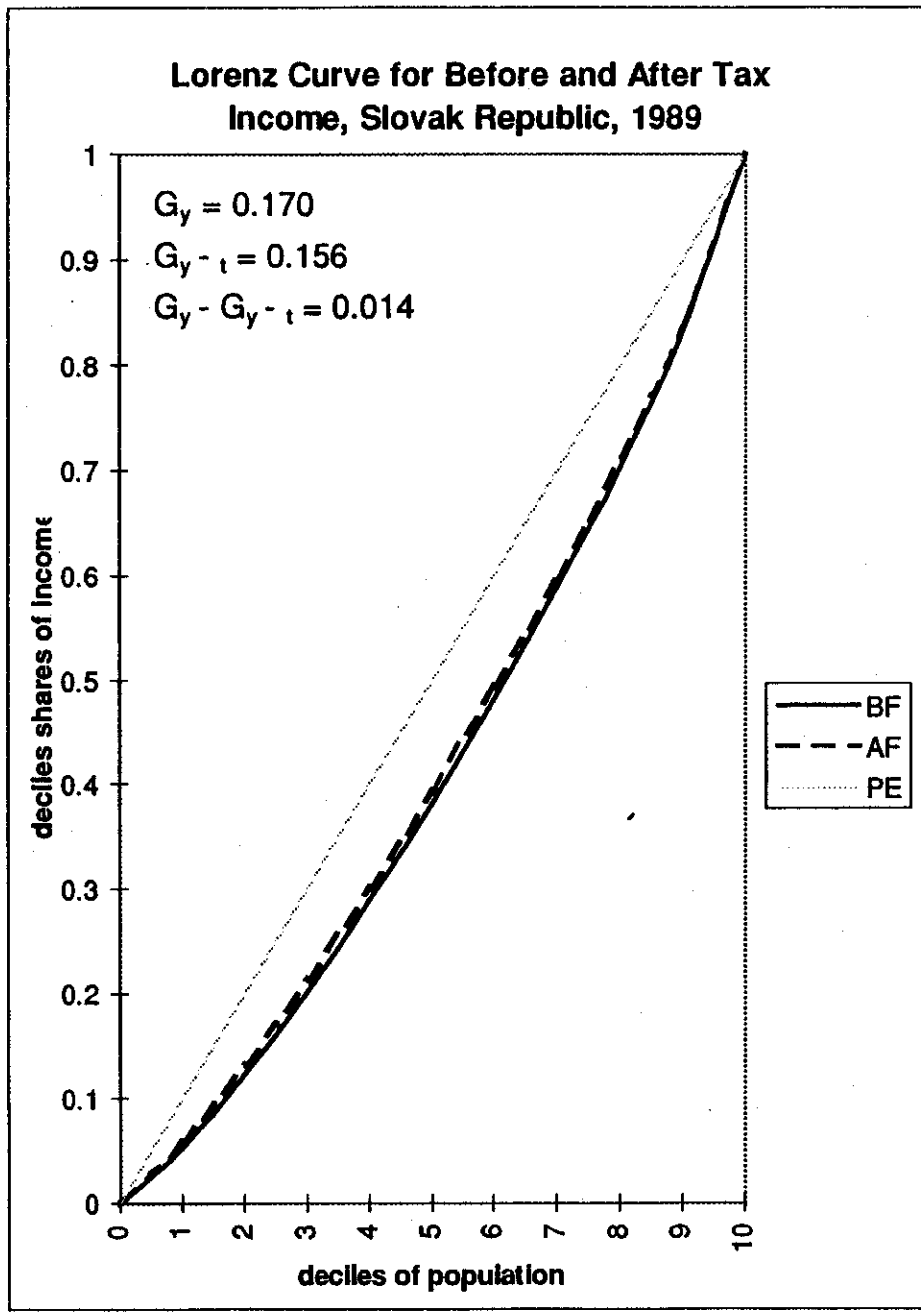


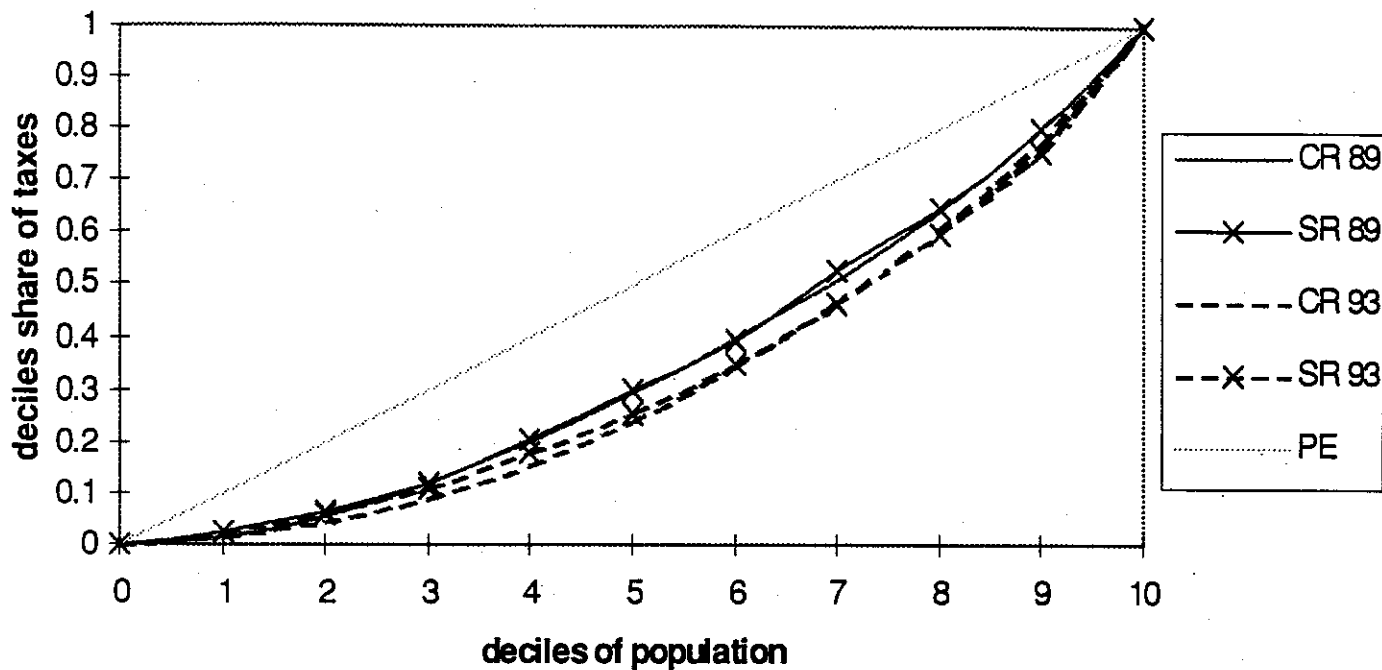
Chart 17



09

Chart 18

Concentration Curve for Taxes, Czech and Slovak Republic,
1989, 1993



Tax as a Percentage of Income Before Tax, Czech and Slovak Republic, 1989, 1993

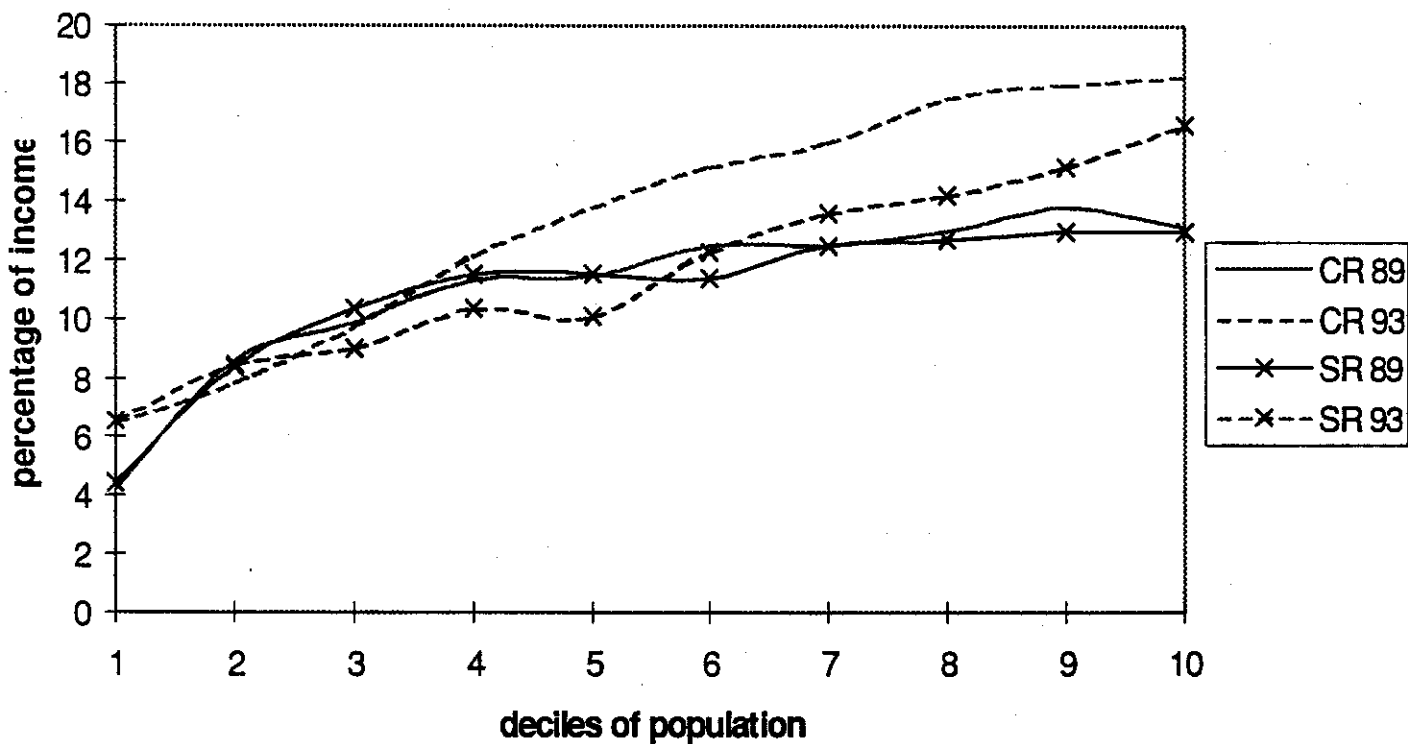


Chart 19

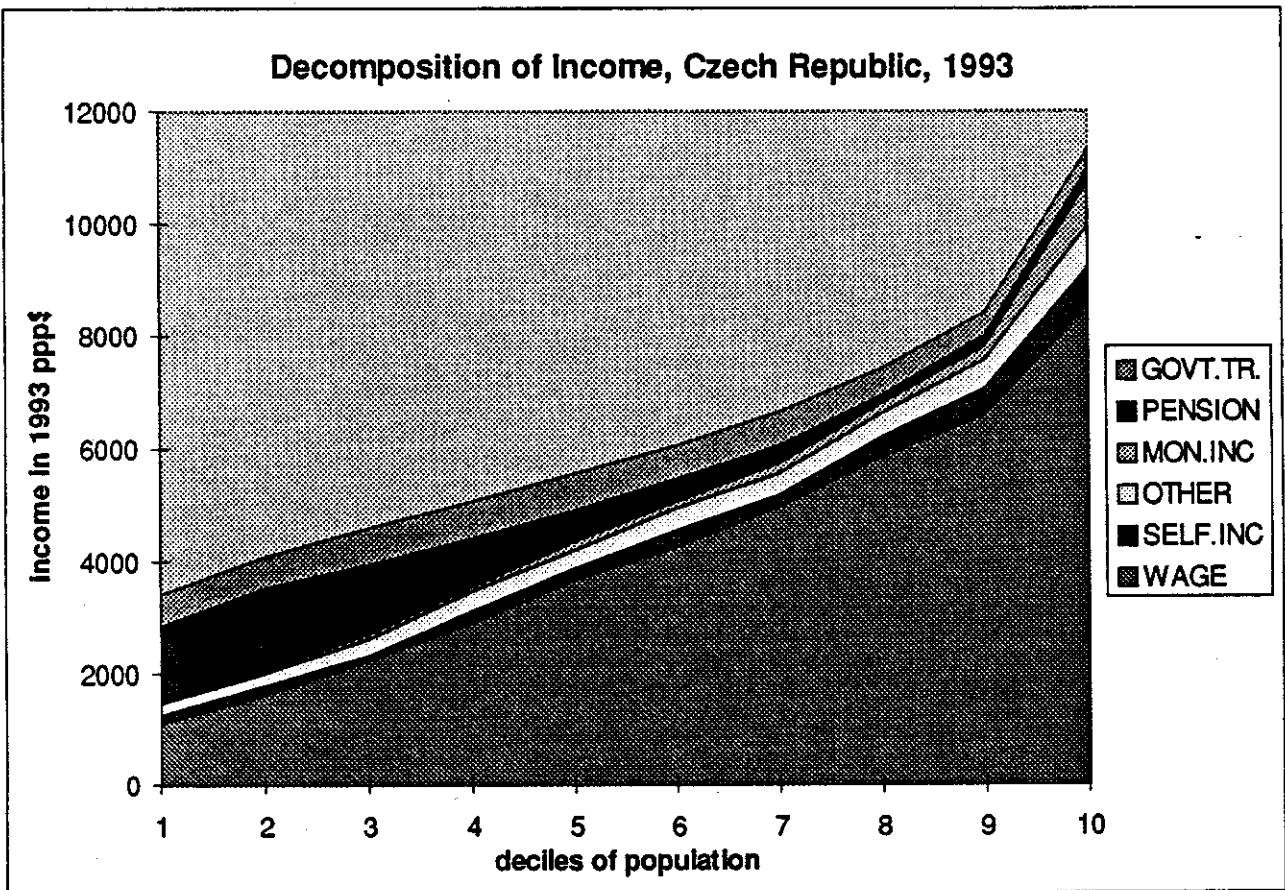
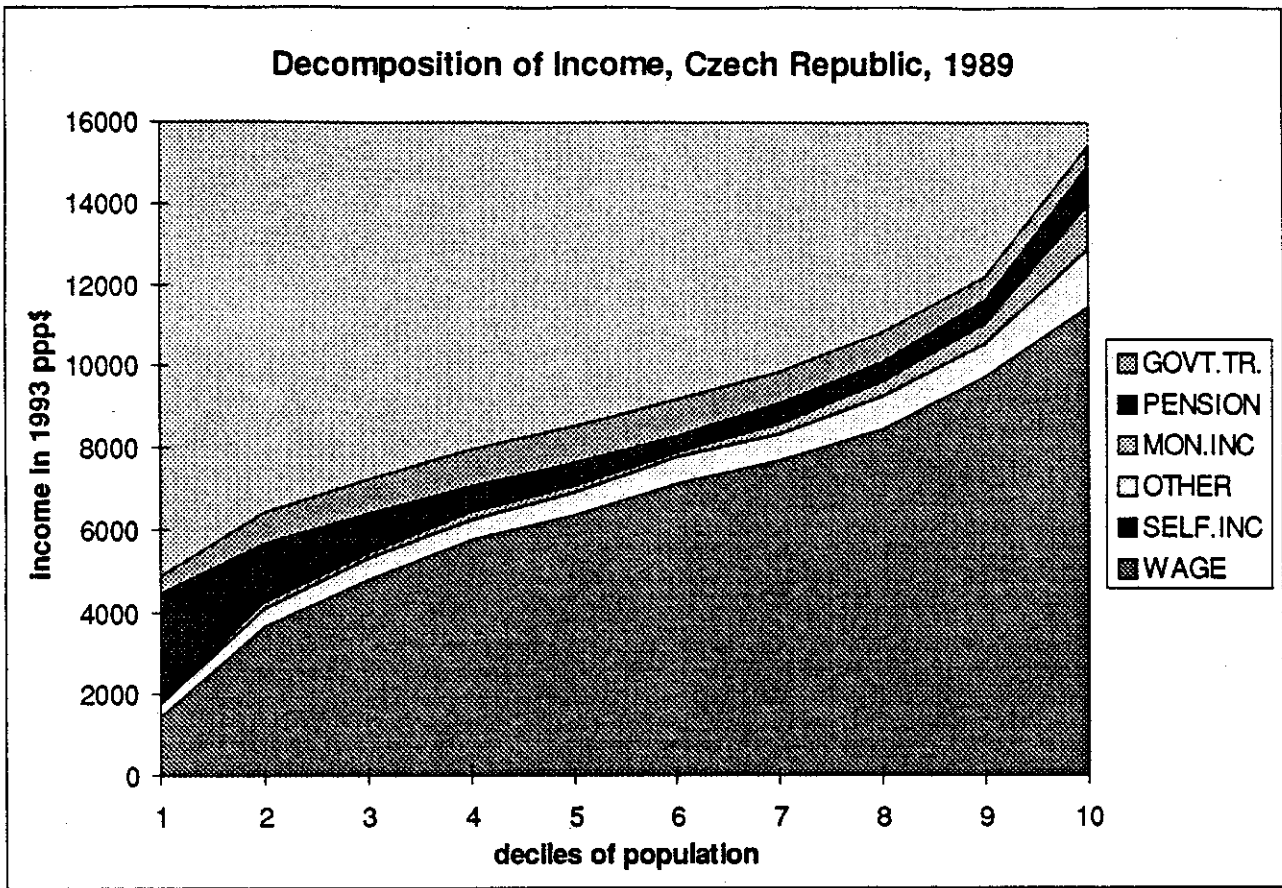
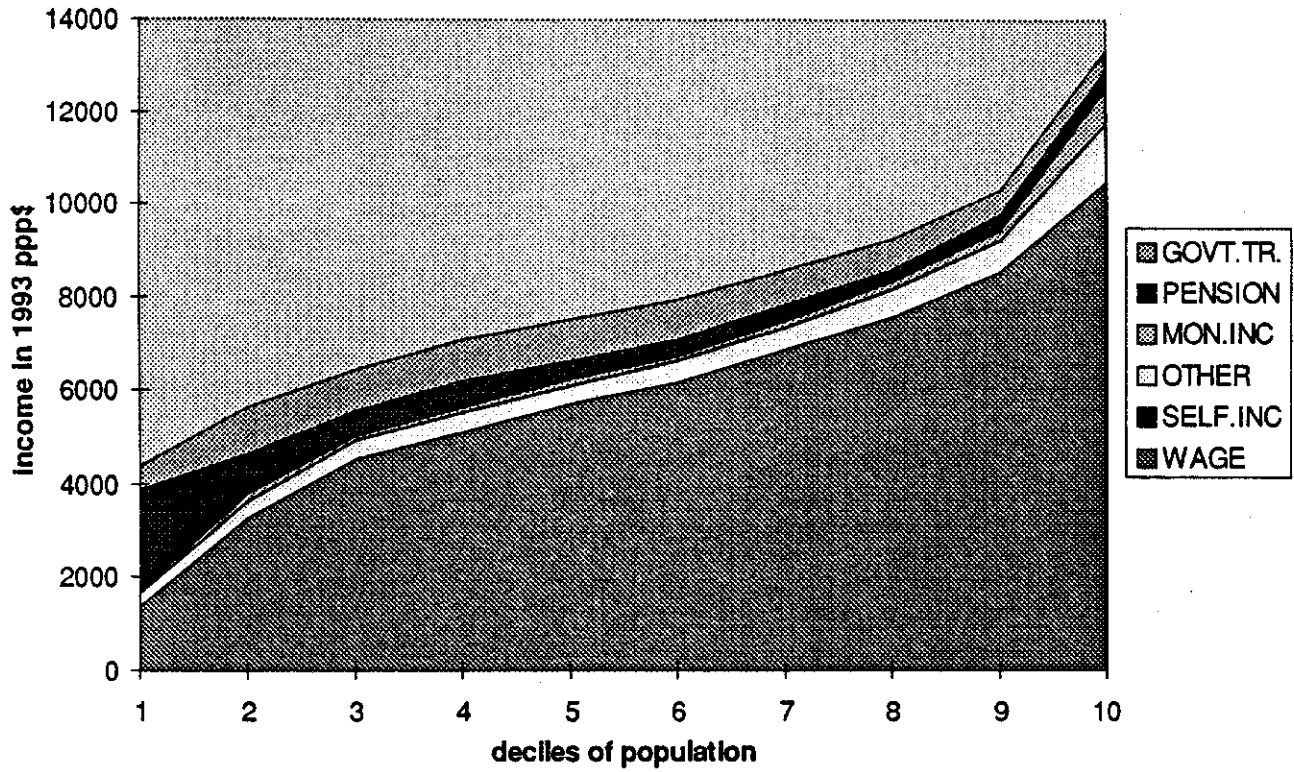


Chart 20

Decomposition of Income, Slovak Republic, 1989



Decomposition of Income, Slovak Republic, 1993

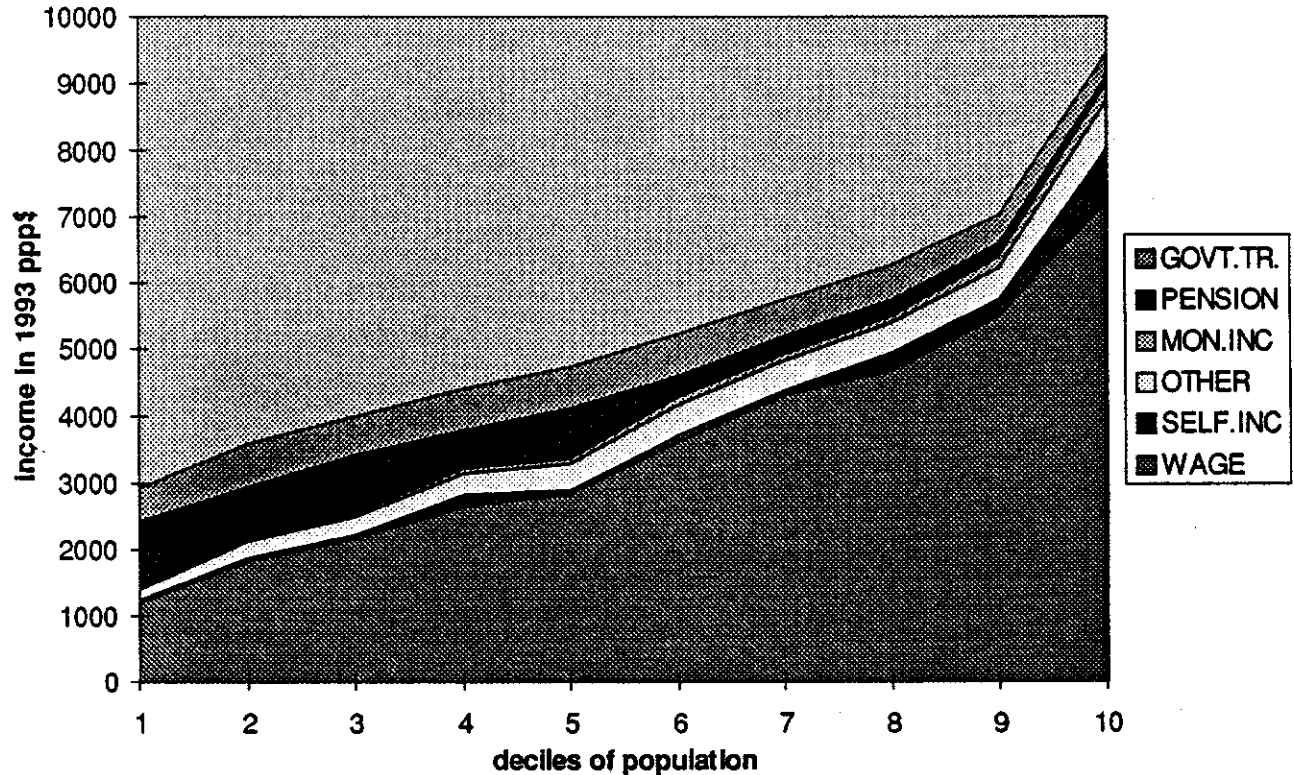


Table A1: Lorenz Curve Data for Disposable Income

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	0.057	0.059	0.002	0.058	0.059	0.001	0.002
2	0.129	0.130	0.000	0.131	0.129	-0.002	0.002
3	0.209	0.207	-0.003	0.212	0.207	-0.005	0.003
4	0.296	0.290	-0.005	0.300	0.292	-0.008	0.003
5	0.388	0.380	-0.008	0.392	0.383	-0.009	0.001
6	0.487	0.477	-0.010	0.492	0.482	-0.011	0.001
7	0.592	0.581	-0.011	0.597	0.588	-0.009	-0.002
8	0.707	0.696	-0.012	0.711	0.703	-0.007	-0.004
9	0.836	0.826	-0.010	0.836	0.831	-0.005	-0.005
10	1.000	1.000	0.000	1.000	1.000	0.000	0.000

Generalized Lorenz Curve Data for Disposable Income

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	466.43	320.30	-146.14	411.52	273.53	-138.00	-8.14
2	1055.90	699.86	-356.04	931.03	604.04	-327.00	-29.04
3	1708.58	1114.45	-594.14	1509.74	967.17	-542.57	-51.56
4	2412.26	1564.28	-847.98	2132.78	1363.48	-769.30	-78.68
5	3167.92	2047.35	-1120.58	2790.42	1790.30	-1000.12	-120.45
6	3969.04	2566.24	-1402.81	3500.71	2248.88	-1251.84	-150.97
7	4828.96	3129.85	-1699.11	4241.60	2743.58	-1498.01	-201.10
8	5769.88	3747.87	-2022.01	5052.08	3283.66	-1768.43	-253.59
9	6816.66	4446.37	-2370.29	5944.20	3881.07	-2063.13	-307.16
10	8156.19	5385.53	-2770.66	7109.80	4669.90	-2439.90	-330.76

Table A2: Concentration Curve Data for Wage Income

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	0.022	0.027	0.005	0.023	0.033	0.010	-0.005
2	0.077	0.066	-0.012	0.078	0.084	0.006	-0.017
3	0.149	0.119	-0.030	0.154	0.144	-0.010	-0.020
4	0.236	0.189	-0.046	0.240	0.218	-0.022	-0.025
5	0.331	0.277	-0.054	0.335	0.297	-0.038	-0.016
6	0.438	0.379	-0.059	0.439	0.397	-0.042	-0.017
7	0.554	0.498	-0.056	0.553	0.516	-0.037	-0.018
8	0.681	0.638	-0.043	0.680	0.646	-0.034	-0.009
9	0.827	0.796	-0.031	0.823	0.799	-0.024	-0.007
10	1.000	1.000	0.000	1.000	1.000	0.000	0.000

Generalized Concentration Curve Data for Wage Income

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	146.27	112.02	-34.25	136.73	118.26	-18.47	-15.78
2	514.54	275.00	-239.54	464.06	303.16	-160.90	-78.64
3	993.85	497.97	-495.88	916.66	520.61	-396.05	-99.83
4	1566.91	790.78	-776.13	1424.43	786.09	-638.33	-137.80
5	2202.53	1157.89	-1044.64	1990.10	1071.46	-918.64	-126.01
6	2913.68	1584.43	-1329.25	2610.03	1433.18	-1176.86	-152.39
7	3681.63	2080.74	-1600.89	3287.80	1862.26	-1425.54	-175.35
8	4528.68	2666.17	-1862.50	4043.93	2332.90	-1711.04	-151.47
9	5499.33	3326.89	-2172.44	4891.76	2884.78	-2006.99	-165.45
10	6649.35	4178.93	-2470.42	5944.35	3610.53	-2333.82	-136.60

**Table A3: Concentration and Generalized Concentration Curve
Data for Self-Employed Income,
Czech and Slovak Republics, 1993**

Decile	Concentration Curve			Generalized Concentration		
	CR	SR	diff	CR	SR	diff
1	0.055	0.032	0.023	15.42	5.70	9.720
2	0.113	0.055	0.058	31.75	9.84	21.904
3	0.143	0.079	0.064	40.39	14.25	26.137
4	0.213	0.171	0.042	59.98	30.73	29.246
5	0.285	0.197	0.088	80.22	35.46	44.763
6	0.390	0.259	0.131	109.66	46.60	63.057
7	0.465	0.306	0.159	130.81	55.11	75.697
8	0.588	0.450	0.138	165.61	81.11	84.498
9	0.753	0.584	0.170	212.04	105.13	106.906
10	1.000	1.000	0.000	281.48	180.15	101.332

Table A4: Concentration Curve Data for Government Transfers

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	0.056	0.104	0.048	0.063	0.092	0.030	0.018
2	0.163	0.207	0.044	0.197	0.211	0.015	0.029
3	0.283	0.322	0.039	0.319	0.317	-0.002	0.041
4	0.409	0.441	0.032	0.439	0.431	-0.008	0.040
5	0.532	0.560	0.028	0.558	0.546	-0.012	0.040
6	0.654	0.669	0.015	0.676	0.661	-0.014	0.030
7	0.758	0.774	0.017	0.776	0.761	-0.015	0.032
8	0.855	0.859	0.004	0.869	0.859	-0.010	0.014
9	0.934	0.934	0.000	0.943	0.935	-0.007	0.007
10	1.000	1.000	0.000	1.000	1.000	0.000	0.000

Generalized Concentration Curve Data for Government Transfers

Decile	CR			SR			CRdiff-SRdiff
	1989	1993	diff	1989	1993	diff	
1	40.08	71.03	30.95	45.84	49.99	4.15	26.80
2	116.25	141.08	24.83	143.67	114.23	-29.44	54.27
3	202.08	219.44	17.36	233.29	171.36	-61.93	79.29
4	291.63	300.42	8.79	321.18	233.15	-88.03	96.82
5	379.46	381.53	2.07	408.25	295.46	-112.79	114.86
6	466.20	455.45	-10.74	494.16	357.79	-136.36	125.62
7	540.33	527.47	-12.86	567.68	411.86	-155.82	142.96
8	609.55	584.88	-24.67	635.24	464.40	-170.83	146.16
9	666.12	636.30	-29.83	689.17	506.04	-183.13	153.31
10	713.27	681.15	-32.12	731.11	540.95	-190.16	158.04