The European Journal of Comparative Economics
Vol. 6, n. 2, pp. 177-206
ISSN 1722-4667

Pay Inequality in Turkey in the Neo-Liberal Era, 1980-2001

Adem Y. Elveren[1]
James K. Galbraith[2]

Abstract

This paper examines pay inequality in Turkish manufacturing annually from 1980 to 2001. Using the between-group component of Theil's T statistic, we decompose the evolution of inequality by geographic region, province, sub-sector and by East-West distinction both for private and public sectors. The decompositions show that while inequality remains approximately the same between regions, it increases in the late 1980s in the private sector between provinces, between East and West, and as well as between manufacturing sub-sectors.

JEL Classification: C32, D39, D63, J31

Keywords: Turkey, Inequality, Provinces, Sectors

1. Introduction

This paper analyzes pay inequality in the manufacturing sector of Turkey between 1980 and 2001. By doing so, we attempt to sketch a general picture of Turkish income distribution, for the dispersion of manufacturing pay has been shown to be a broadly effective instrument for the movements of inequality writ large. The Turkish economy can be associated with a persistently unequal income distribution and a true dichotomy between the wealthier West and the poorer East. With the adoption of the neo-liberal model in 1980, inequality rose substantially, particularly in the 1990s.

In international comparisons, indicators of inequality for Turkey are generally high when compared with other upper-middle income countries (World Bank, 2000; Gürsel et al., 2000). While inequality appears to have declined through the 1970s, by the 1980s this was no longer the case, and in the 1990s inequality rose. Cited causes for this deterioration (World Bank, 2000) include the negative trend of real wages, a change in tax policies benefiting the rich, a failure of redistributive tax policy, high real interest rates, unequal education (Köse and Güven, 2007; Duygan and Guner, 2006), and excessive migration to urban areas due to both economic and political pressure.

This study makes two contributions to the study of economic inequality in Turkey. First, rather than dealing with micro-level data for a very limited number of years, we focus on pay in the manufacturing sector so as to develop annual measures between 1980 and 2001. Second, we exploit the decomposition properties of Theil's T statistic to provide a detailed picture of the evolution of pay inequality in the manufacturing sector by sub-sectors, geographical regions, provinces, and the East-West divide.

1 Department of Economics, Kahramanmaras Sutcu Imam University, Turkey
2 Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin

Following this section we provide a brief history of the Turkish economy under neo-liberalism. In section three, we review the literature on economic inequality in Turkey. The methodology and data are presented in section four. Our detailed analysis of pay inequality is provided in section five. We summarize our findings in the concluding section.

2. Overview of the Turkish Economy under the Neo-Liberal Paradigm

The modern history of the Turkish economy can be divided into two main periods. Before 1980 the country adopted economic liberalism, *étatism*, and import substitution industrialization policies, in that order. The post-1980 period is associated with an export-led regime in conjunction with the emerging dominance of the neo-liberal paradigm.

The military coup of 1980 initiated the onset of neo-liberal economic policies. By repressing the voice of civil society, the military was able to push through a neo-liberal agenda without any resistance. The civilian successor of the military government, which was elected in 1983, then followed the neo-liberal model, as was made evident by the government's complete commitment to the IMF and World Bank's programs. The creation of a "peaceful" labor environment through anti-labor legislation and the 1982 constitution benefited corporations by shutting down the country's largest labor union. As a result of such conditions, the main characteristic of the post-1980 period in Turkey (i.e. the export-led regime) was massive shrinkage in real wages.

The major reform process started with liberalization of foreign trade and the financial sector, and it culminated in the liberalization of the capital account during the latter half of 1989. More specifically, Turkey began by removing price ceilings on goods and services and other "distortions" in product markets, and by deregulating the financial sector. The initial outcome of the reform process was promising and was accepted as an impressive development both by domestic authorities and by the international financial institutions (Ekinci, 1990; Akyüz and Boratav, 2003).

Despite these movements toward a more open market, the degree of privatization remained limited. Toward the end of the 1980s, the new export-led regime -- powered by suppressed wages, depreciation of domestic currency, and extremely generous export subsidies -- reached its economic and political limits (Boratav and Yeldan, 2006). Public sector deficits and inflation had come back with full force. The policy response in 1989 was to liberalize fully the capital account. This decision was ill-timed (Rodrik, 1990; Cizre and Yeldan, 2002; Alper and Öniş, 2002), and it changed the policymaking environment radically.

In the wake of capital market liberalization, the Turkish economy witnessed a major crisis in early 1994. In response, the government launched a broad stabilization and reform program focused on fiscal adjustments. It also provided for a range of public sector reforms, notably divestiture of the state-owned enterprises. With the EU Customs Union Agreement in 1995 the import

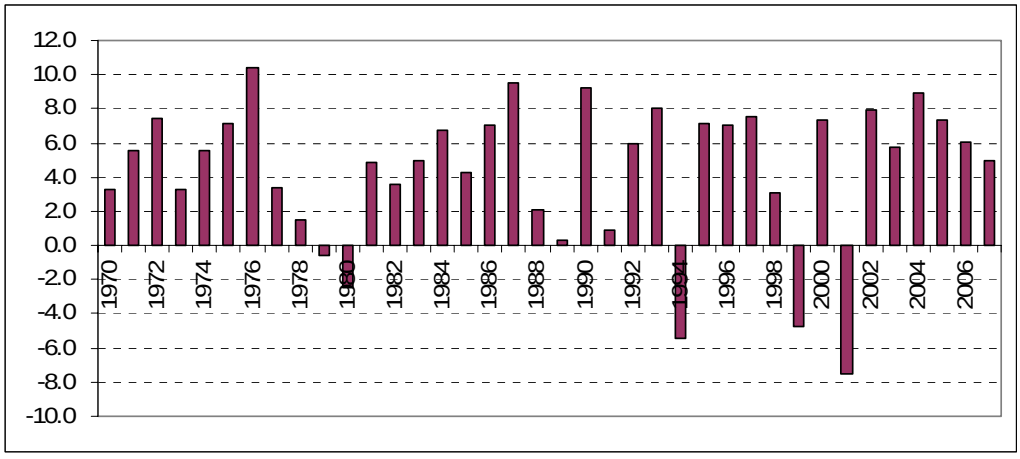
liberalization that started in 1984 was carried up to a higher stage (Elveren and Kar, 2008).

In July 1998, under the guidance of the IMF, the Turkish government started to implement another disinflation program, which achieved some reduction of the inflation rate and fiscal imbalances. However, the program could not relieve the pressure on interest rates. The fiscal balance of the public sector was further damaged by the Russian crisis in 1998, the general election in April 1999 and by two devastating earthquakes in August and October, 1999.

In December 1999 the government started to implement an ambitious three-year exchange rate-based stabilization program, aimed at achieving single-digit inflation by 2002, supported by an IMF stand-by agreement. The program produced significant progress in 2000, but a severe banking crisis blew up in late November, provoking massive capital outflows. In early 2001, a second wave of the banking crisis caused the collapse of the program, only 14 months after it had been launched (Cizre and Yeldan, 2002; Akyüz and Boratav, 2003).

A new program was presented in May 2001 and was further elaborated and redefined during the course of the year and into 2002. Although the economic program seems to have made some progress in recent years in strengthening public finance, lowering inflation, and reviving growth, it was severely criticized on several grounds (Yeldan, 2004). In 2004 period the government made another standby agreement with IMF. With this agreement the government – taking advantage of its single-party status and unprecented support in the international arena- started to implement the boldest neo-liberal agenda in the history of the Turkish economy. A high growth rate (see Figure 1) and lower inflation (below 10% in the last three years) are two indicators of success for this period. However, growth came by means of the inflow of hot money and with unemployment increasing to over 10%. Simply stated, it was jobless growth (Pamukcu and Yeldan, 2005).

Figure 1: Growth Rate: 1970-2007



Source: The Turkish Statistical Institute, www.tuik.gov.tr.

3. Income and Pay Inequality in the Neo-Liberal Era: A Brief Literature Review

In general, the distribution of income has deteriorated worldwide in the neo-liberal era (Galbraith 2007). According to the UTIP-UNIDO measures of pay inequality, while in 1960s there is no evident global trend, in the 1970s inequality tended to decline in commodity-exporting economies while rising in the industrialized commodity importers. The global neoliberal era begins with the debt crisis of the early 1980s, which set off rising inequality in all the affected countries as financial crisis and political upheaval moved from one region to another: first in Latin America and Africa, then in central and Eastern Europe, and finally in Asia. The exceptions were those few countries that were insulated from the global financial system: notably China, India, and Iran. A general exception to sharply rising inequality during the whole period occurred in Scandinavia, where Denmark, notably, observed a substantial reduction in inequality from the1970s through the1990s.

The present study follows methods developed in papers on Argentina (Galbraith et al. 2006), Brazil (Calmon et al. 2000), Chile (Spagnolo et al. 2008), Mexico (Adair 2006), and Colombia (Spagnolo and Munevar 2008), Costa Rica (Obando 2006) and Taiwan (Wang 2007). All use the between-groups component of Theil's T statistic on regional and sectoral data sets to map the evolution of inequality through time, and the geographic and sectoral dispersion of winners and losers.

Thus, in Argentina between 1994 and 2002, overall inequality increased with the advantages going to the Buenos Aires region as against most other parts of the country, and to finance and petroleum as against most other sectors, with social services notably losing ground. In Brazil after a slight decline between 1978 and 1980, inequality increased sharply between 1981 and 1984. There followed an unstable period until the implentation of the Real Plan in 1994, after which inequality in Brazil tended to decline. Most notable, here, was the declining share of the (previously high-flying) financial sector – a decline also visible in Argentina after the crisis in 2002. Regional analysis for Brazil reveals, to no surprise, that fluctuations in overall inequality reflect the fortunes of Sao Paulo, the Distrito Federal, and Rio de Janeiro as opposed to the rest of the country.

In Chile, pay inequality acrossed economic sectors increased between 1990 and 1996, and then it declined through 2006, eventually returning to the 1990 level. Again this movement reflected, to a large degree, the rising and then declining position of the financial sector, and the relative position of Santiago, the capital, against other regions. Mexico on the other hand experienced increasing inequality through almost the whole 1980s and 1990s. Colombia and Costa Rica had somewhat mixed patterns, though each experienced periods of sharply rising inequality: in Colombia notably from 1996 through 2004, and in Costa Rica during the late 1990s. Inequality in Taiwan, an interesting example due to the remarkable economic transformation of that country toward an information economy, continued to rise in the 1980s and 1990s.

The general experience of neoliberal policy is rising inequality due largely to two factors: the increasing share of income flowing through the financial sector, and the increasing concentration of income in the leading city or cities as opposed to outlying regions or the countryside. Turkey was (is) not out of this picture. Table 1 shows the Gini coefficient for Turkey, calculated from survey data for the years available. The table appears to show that while inequality declined through the 1970s, it increased in the 1980s, and particularly from 1987 to 1994. For the same period, Gürsel et al. (2000) found that the Theil Index increased from 0.430 to 0.506. However, while the general contours of change appear reasonably well-accepted, the data coverage is extremely sparse, and differences in sources suggest that numbers from the earlier period may not be strictly comparable to numbers from the later one.

Table 1: Quintile Shares and the Gini Coefficient for Turkey

Percentage of Households	**1963 (SPO)**	**1968 (Bulutay et. al 1971)**	**1973 (SPO)**	**1973/4 Rural (TSI)**	**1978/9 Urban (TSI)**	**1986 (TSI)**	**1987 (TSI)**	**1994 (TSI)**
First 20	4.5	3	3.5	3.5	6.3	3.9	5.2	4.9
Second 20	8.5	7	8.0	11.5	12.0	8.4	9.6	8.6
Third 20	11.5	10	12.5	14.4	13.0	12.6	14.1	12.6
Fourth 20	18.5	20	19.5	18.7	21.0	19.2	21.1	19.0
Fifth 20	57.0	60	56.5	52.2	47.0	55.9	49.9	54.9
Gini Coefficient	**0.55**	**0.56**	**0.51**	**0.47**	**0.40**	**NA**	**0.43**	**0.49**

Source: Adopted from Yeldan (2000), SPO: State Planning Organization, TSI: Turkish Statistical Institute (i.e. Turkstat)

Contrary to the conventional wisdom, the openness of the 1980s did not lead to increased economic competitiveness in Turkish manufacturing (Boratav and Yeldan, 2006). While real wages increased in the 1970s, there was a trend of decline in the export-led regime era in post-1980 (Erdil, 1996; Voyvoda and Yeldan, 2001). The pay differential between the private and (internally, relatively

egalitarian) public sector is a major factor in wage differentials (Bayazıtoğlu and Ercan 2001; Ozmucur 2006, and also see Kızılırmak, 2003). Memis (2007), in a comprehensive study, analyzed the determinants of inter- and intraclass income distribution in the manufacturing sector at the sub-sector level between 1970 and 2000, and confirmed an increase in inequality for the same period.

Persistent income inequality between urban and rural Turks and between the regions of Turkey has been studied extensively. The main findings of this literature (using different surveys for different years) yield some not-unexpected facts about income inequality in Turkey in comparison with other developing countries. These are summarized in Table 2)[3]. Köse and Bahçe (2009) provide an excellent discussion of the "poverty of literature on poverty" in Turkey. After analyzing the Household Budget Surveys, they argue that a poverty/income distribution study that ignores the concept of "social class" does not present the core issue, which is the distribution of poverty within and between these classes, or identifiable groups in Turkish society.

It is a persistent fact that the income inequality is significantly higher in urban areas (Silber and Özmucur, 2000; WB, 2000; Gürsel et al., 2000). In addition, according the World Bank (2000), the rural-urban distinction explains more than 10 percent of total inequality in Turkey. Silber and Özmucur (2000) state that while rural areas contribute to the overall inequality mainly through "the within-groups" component, in urban areas the main component of inequality is that measured "between-groups". They also state that the main source of inequality in rural areas is differences in earnings from primary jobs. In urban areas, however, the effect of income from other sources has considerable impact.

The literature also shows that the most unequally distributed income is non-wage income that is mostly earned by the top quintile and the biggest source of income inequality is the interest component (Gürsel et al., 2000; Başlevent and Dayıoğlu, 2005a).

Surprisingly, some comprehensive studies have shown that transfer incomes have had an adverse effect on income equality (World Bank, 2000 and Gürsel et al., 2000). Gürsel et al. note that "the narrows limits of social groups affected by the welfare state in Turkey, the absence of many social transfer mechanisms and intervention in market prices instead of direct transfers as a way of subsidy policies are reasons why transfers do not produce their expected results" (p. 18). They also state that "agricultural support policies are in favor of relatively rich farmers producing in big scales, rather than poor ones having

3 Also, Tansel and Güngör (1997) state that there is a convergence across 67 provinces between 1975 and 1990, in terms of income per worker, whereas Filiztekin (1998) concludes that incomes per capita diverged across provinces in the same period (cited in Temel et al., (1999). Erlat (2005), using unit root tests with panel data, shows that except for provinces in East and Southeastern regions, other provinces converge in terms of GDP per capita (cited in Kirdar and Saracoglu, 2006). Ozmucur (1986) and Temel and Associates (1999) show a deteriorating functional distribution of domestic factor income in the post-1980 period, in that agricultural and wage incomes and salary have fallen persistently (cited in Yeldan, 2000). Atalik (1990) shows that the coefficient of regional income variation increased from 0.32 in 1975 to 0.43 in 1985 (cited in Gezici and Hewings, 2003).

limited opportunities" (World Bank, 2000). They conclude, however, that a decreasing negative effect in 1994 compared with 1987 (two years covered in the study) implies that increasing transfer payments had a decreasing effect on income inequality (Gürsel et al., 2000, p.18).

Dayıoğlu and Başlevent (2006) and Başlevent and Dayıoğlu (2005b), on the other hand, show that ownership of squatter houses among relatively poor families has an equalizing effect on income inequality, not just for a given province or in major cities but in all regions.

Table 2: Literature on Payment/Income Inequality in Turkey

Study	Period	Data	Method	Findings
Temel et al. (1999)	1975-1990	Gross Provincial Product Data Data Source: Özötün 1980, 1988 and TURKSTAT	Markov Chain model	Polarization among provinces
Selim and Küçükçiftçi (1999)	1994	1994 Household Income Distribution Survey	Gini coefficient	Increasing inequality between 19 provinces in study. While Zonguldak has the least unequal distribution of income distribution Istanbul and Adana have the most unequal distribution.
Gürsel et al. (2000)	1987 and 1994	1987 and 1994 Household Income and Consumption Surveys	Gini coefficient and several other indices	Theil index rose from 0.43 in 1987 to 0.506 in 1994 and squared coefficient variation rise from 1.87 to 6.29 in the same period. Gini coefficient and mean log deviation, however, declined from 0.46 to 0.45 and from 0.372 to 0.358, respectively in the same period.
World Bank (2000)	1987 and 1994	1987 and 1994 Household Income and Consumption Surveys	Gini coefficient and several other indices	Inequality between regions between 1987 and 1994 increased Gini coefficient for household money income rose from 0.411 in 1987 to 0.453 in 1994. Gini coefficient for total income remained the same. Theil index for total income rose from 0.44 to 0.49
Silber and Ozmucur (2000)	1994	1994 Household Income Distribution Survey	Gini coefficient	In 1987 Gini coefficient is 0.44 and 0.33 for urban and rural areas, respectively; for 1994 they are 0.58 and 0.46, respectively. In terms of contributions to overall inequality, in rural areas the main contribution is from the within- categories component while in urban areas it is from the between-categories component.

Source: Authors' Review

Table 2: Literature on Payment/Income Inequality in Turkey-Cont.

Study	Period	Data	Method	Findings
Erk et al. (2000)	1979-1997	Özötün (1988) TURKSTAT	β-convergence σ-convergence	Except for the Marmara region, all regions are converging as well as provinces of the Southeastern Anatolian Project.
Altinbas et al. (2002)	1987-1998	GDP per capita by provinces, TURKSTAT	β-convergence σ-convergence	No convergence among provinces under the "Priority Regions in Development" program. Declining discrepancy among other provinces.
Gezici and Hewings (2003)	1980-1997	GDP per capita by provinces. Data source: Istanbul Chamber of Industry and TURKSTAT	Theil index	Numbers refer Theil Index at 1980 and 1997, respectively . Provincial level: Especially after 1986 inequality declines (0.116 – 0.109) Functional and geographical regions levels: Inequality slightly decreasing within regions (0.40 – 0.27, 0.45 – 0.34 respectively), increasing between regions (0.60 – 0.73, 0.55 – 0.66, respectively).
Ozcan and Ozcan (2003)	2001	TURKSTAT	Gini coefficient and Standard income distribution methods	Improvement in distribution of income from 1994 to 2001.
Gezici and Hewings (2004)	1980-1997	GDP per capita by provinces. Data source: Istanbul Chamber of Industry and TURKSTAT	β-convergence σ-convergence	No convergence. East-West dualism.
Karaca (2004)	1975-2000	Gross Provincial Product. Data source: Özötün 1980, 1988 and TURKSTAT	β-convergence σ-convergence	No convergence among provinces.

Source: Authors' Review

Table 2: Literature on Payment/Income Inequality in Turkey-Cont.

Study	Period	Data	Method	Findings
Memis (2005)	1980-2000	The annual Manufacturing Industry Statistics by TURKSTAT	Clustering Analysis	Wage patterns experienced a substantial change with the year 1988. After 1988, the high-wage cluster increases while the lowest and the low-wage clusters decrease.
Baslevent and Dayioglu (2005a)	1994 and 2003	1994 Household Income Distribution Survey, TURKSTAT 2003 Household Budget Survey, TURKSTAT	Gini coefficient The squared coefficient of variation	The Gini coefficient dropped from 0.54 in 1994 to 0.44 in 2003.
Aldan and Gaygisiz (2006)	1987-2001	Provincial GDP by TURKSTAT	β-convergence Markov Chain model	No convergence among provinces.
Yıldırım and Öcal (2006)	1987-2001	GDP per capita by provinces, TURKSTAT	Theil index	Interregional inequalities decline. Theil index increases in economic expansion and declines in recession.
Kirdar and Saracoglu (2006)	1975-2000	GDP per capita by provinces. Data source: Özötün 1980, 1988 and TURKSTAT	Nonlinear least squares estimation and instrumental variables method	Conditional convergence. No convergence by provinces and regions.
Sari and Guven (2007)	1979-1998	GDP per capita by provinces. Data source: Istanbul Chamber of Industry and TURKSTAT	Generalized entropy inequality measure and the Theil index	Consistent increase in inequality. Priority Regions in Development program has no improving effect on inequality.
Guven (2007)	1979-2000	GDP per capita by provinces. Data Source: Istanbul Chamber of Industry and TURKSTAT	Generalized entropy inequality. Gini and Theil indices	Consistent increase in inequality. Priority Regions in Development program has no improving effect on inequality.

Source: Authors' Review

The Turkish economy has a remarkable dual structure. While the relatively industrialized West has a relatively high income per capita, the East is mainly involved in agrarian production and has poor standards of living and development indicators. When one considers that the East is where the Kurdish people mainly live, this difference becomes more significant in terms of high migration into urban areas due to political and economic pressures, which in turn creates high unemployment and contributes to inequality.

This substantial regional discrepancy is a persistent problem in the Turkish economy. Several studies that address this issue have shown that there has been no convergence between the regions in Turkey (Şenesen, 2003; Doğruel and Doğruel, 2003), and East and West (Gezici and Hewings, 2004).

Gezici and Hewings (2003), using the provincial GDP time series, have shown that at the provincial level inequality is increasing after 1992, while at the more coarsely aggregated regional level there is stable high inequality. In a comparison of coastal and interior provinces there is increasing inequality in favor of the former. In terms of "within-province" inequality, it is declining in the coastal areas while there is slightly increasing inequality among interior provinces (Gezici and Hewings, 2003).

To reduce this regional gap has been one of the main interests of policy makers for decades. Regional development projects and "Priority Regions in Development", a program for less developed regions, have been implemented to reduce this income gap. However, it has shown that these programs have not been effective (Aldan and Gaygisiz 2006; Gezici and Hewings 2004; Sari and Guven 2007).

It is true that the distribution of pay is only part of the distribution of income; in an ideal-data world the effects of capital income and entitlements should be taken also into account. However, capital income and entitlements cannot usually be attributed to regions or sectors, so that for every effort to broaden coverage there is a corresponding loss of detail. We do not think it matters much. It is a fact that wages are a major component of income, and that measures of pay inequality are, in most cases, broadly consistent with survey-based income inequality measures. Indeed, Galbraith and Kum (2005) show that pay inequality in manufacturing sector is a highly significant determinant of the widely-used Deininger and Squire inequality measure, after controlling for survey type and for the share of manufacturing employment in population. Therefore, we believe that the evidence presented below, which examines inequality in the payment of wages in the manufacturing sector and the contribution to inequality by region, by the East-West divide, by province and more importantly, by sub-sectors of the manufacturing sector, represents a useful contribution to knowledge of the evolution of inequality in Turkey.

4. Methodology and Data

We use the between-groups component of Theil's T statistic to analyze the overall evolution of pay inequality in the manufacturing sector as well as the

contributions to inequality of each manufacturing sub-sector, region and province in Turkey.

Theil's T statistic has two components, the between-group (T^B), and the within-group component (T^W).

$$T = T^B + T^W \quad [1]$$

Since we have aggregated data, the within-group component of inequality is unobserved; the between group-component, on the other hand, provides the lower-bound estimate of general pay inequality in this case (Theil, 1972). T^B can be stated as

$$T^B = \sum_{i=1}^{n} \left\{ \left(\frac{p_i}{P} \right) * \left(\frac{y_i}{\mu} \right) * \ln \left(\frac{y_i}{\mu} \right) \right\} \quad [2]$$

where i indexes groups, p_i is the population of group i, P is the total population, y_i is the average wage in group i, and μ is the average wage of the entire population.

This measure provides a robust indicator of the trend of overall inequality and demonstrates the evolution of the contribution to inequality of various groups for whom data on average income and population weights are available (manufacturing sub-sectors, regions, and provinces in this case).

We use the Annual Manufacturing Industry Statistics (AMIS) provided by the Turkish Statistical Institute. The data is provided at a two-digit level and is disaggregated according to provinces. It covers establishments that have more than 10 employees. In order to prevent an arbitrary increase in the Theil's T statistic due to an increase in the number of provinces throughout the period (i.e. currently there are 81 provinces), we recalculated the data based on 67 provinces. We also analyzed seven geographical regions (namely Marmara, Aegean, Mediterranean, Central Anatolia, Black Sea, Southeast Anatolia, and Eastern Anatolia), and the East-West distinction, so as to clarify the geographic duality of the Turkish economy.

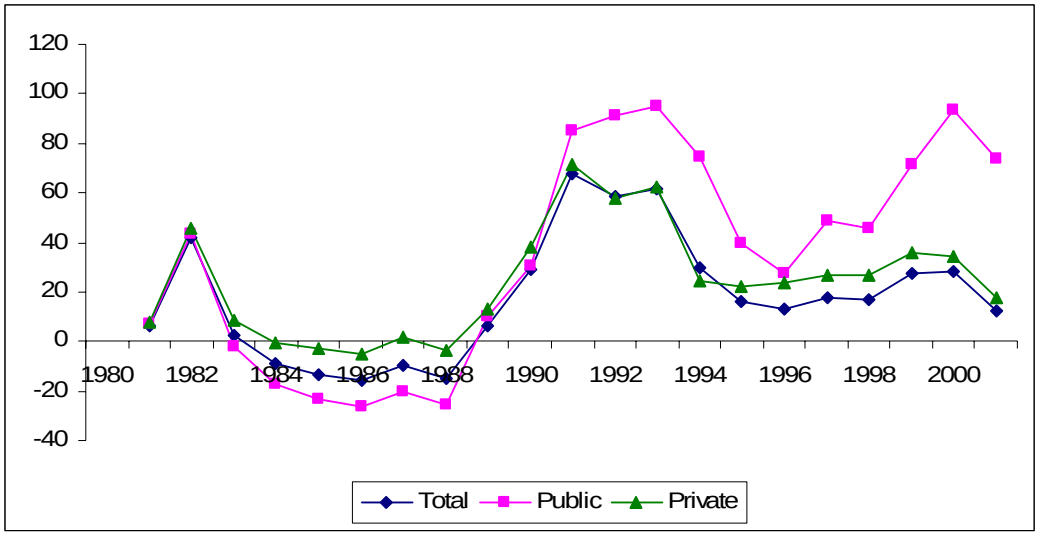
We made all calculations separately for the private sector, the public sector and for both sectors together. All results are provided in the Appendix. Nominal values are deflated according to the consumer price index, which does not affect the inequality calculations but may be useful for some other purposes.

5. Pay Inequality in the Manufacturing Sector

First, several preliminaries are in order. Figure 2 and Figure 3 show the change in real average pay in the manufacturing sector and the share of the private and public sectors, respectively (also see Figure 19 in the Appendix for the share of the manufacturing sector in GNP and total employment). Note the stagnation until the late 1980s, followed by a sharp rise, and then collapse in the

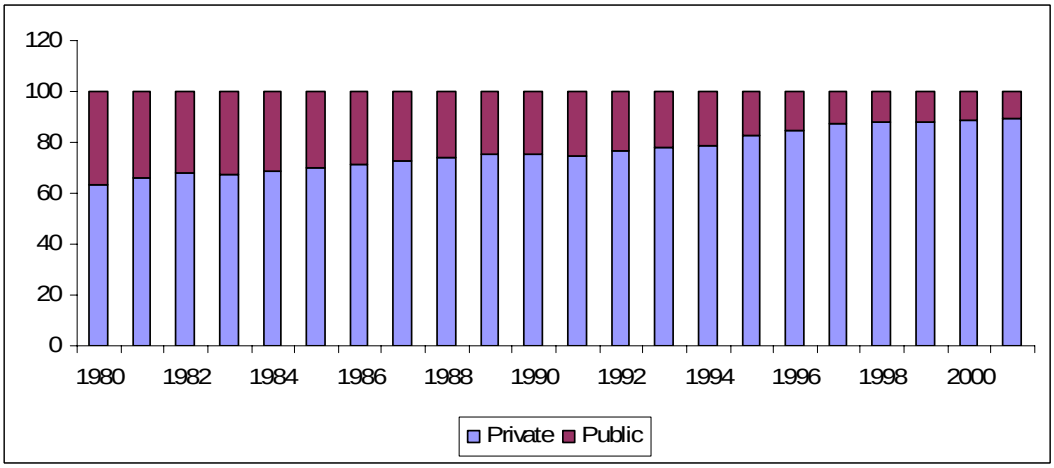
crisis of 1994. The figures together also show the limited positive impact of an increase in average pay in the public sector after 1995, since the share of that sector is shrinking substantially. Of course, what are more important to inequality are sectoral and regional/provincial discrepancies in wage levels. These will be demonstrated below.

Figure 2: Percentage Change in Real Average Pay in the Manufacturing Sector



Source: Authors' calculation based on AMIS

Figure 3: Share of Private and Public Sectors in the Manufacturing Sector

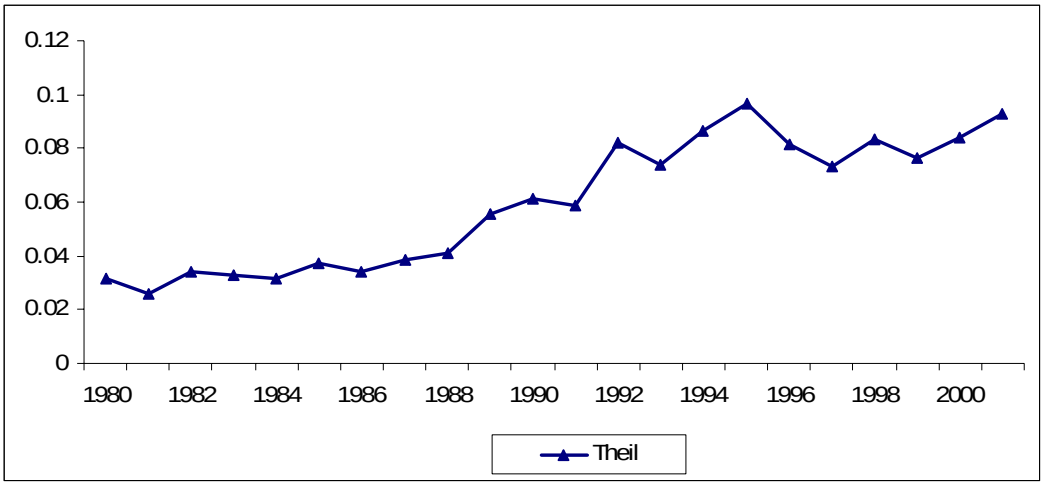


Source: Authors' calculation based on AMIS

5.1 Inequality by Sectors

Figure 4 shows the overall payment inequality in the Turkish manufacturing sector, measured across industrial sectors. The figure shows that there is a slight increase in pay inequality until 1988, and after that inequality rises more rapidly.

Figure 4: Pay Inequality in the Turkish Manufacturing Sector: 1980-2001

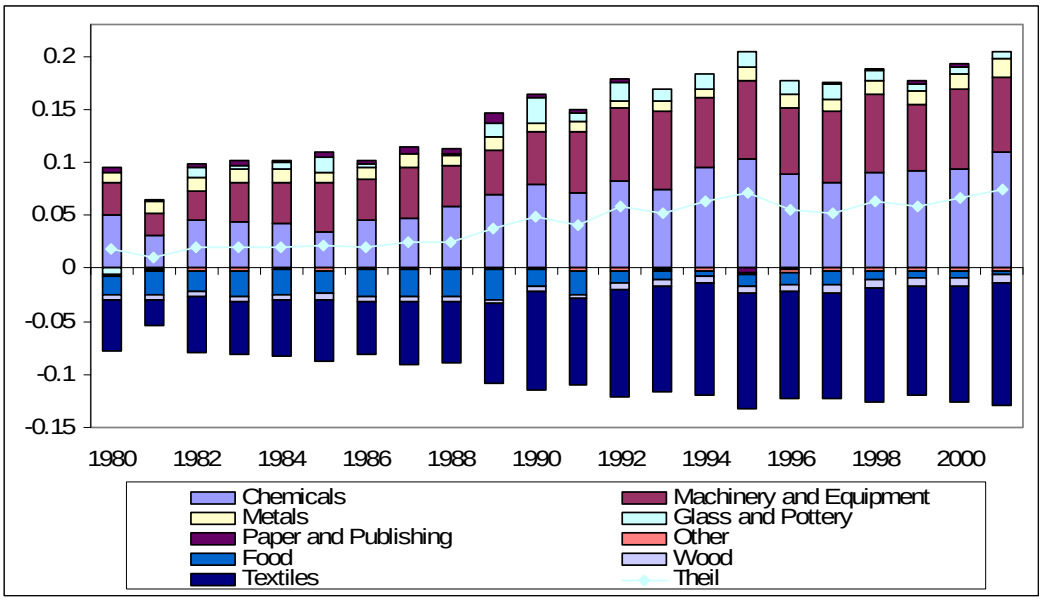


Source: Authors' calculation based on AMIS

In Figure 5, we see a detailed decomposition. Sectors that have above-average pay appear above the x-axis, and the size of the bars show the relative contribution to inequality of each sector. In the same manner, the sectors that are located below the zero line have a lower average wage than the mean wage. However, it is worth noting that changes may be caused by changes in either wages and/or in the employment level. The line in this diagram, as in those that follow, represents the overall (between-groups) Theil statistic and is the sum of the positive and negative elements shown in the graph.

Accordingly, while the sectors of *chemicals, machinery and equipment, glass and pottery, metals*, and *paper* are "winners" – with high wages and increasing importance -- the sectors of *wood*, *food*, and particularly *textiles* suffer from lower wages compared with the manufacturing sector in general. Although the gender gap is not the focus point of this study, it is worth noting that food and textiles are two sectors where women are highly represented in the workforce (Elveren and Hsu, 2007). Thus an increasing (negative) contribution of the textile sector can be caused either by a decline in wage level and/or an increase in the size of the sector (see Figures 17 and 18 in the Appendix for the sub-sector shares in employment and value added). Considering existing literature on wage levels in the textile sector in Turkey, we argue that this confirms the fact that the wage level in the textile sector, one of the major export sectors in the Turkish economy, has been pushed down, in relative terms, in the neoliberal period. The same pattern of inequality is observed at the provincial level and at the East-West levels.

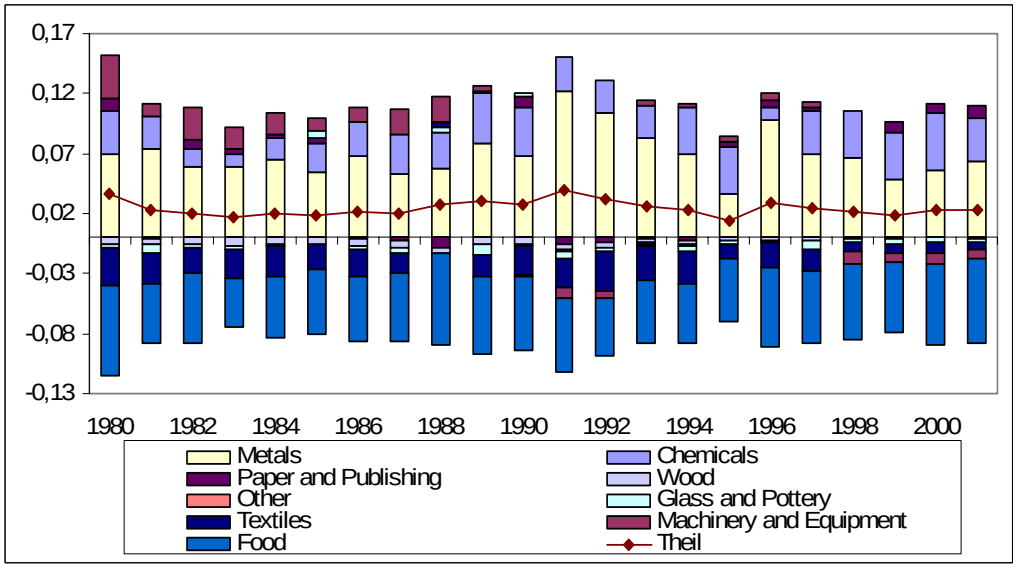
Figure 5: Pay Inequality by Manufacturing Sectors (Private Sector)



Source: Authors' calculation based on AMIS

For the public sector, the picture is quite different (see Figure 6). First, as expected, there was not an increase in inequality; in fact pay inequality within the public sector declined after the early 1990s. Second, we observe that the metals and chemicals are the major contributors (on the positive side) to inequality inside the public sector. These are state-owned industries with relatively high pay scales, compared for example to the public sector in food or textiles.

Figure 6: Pay Inequality in Manufacturing Sectors (Public Sector)

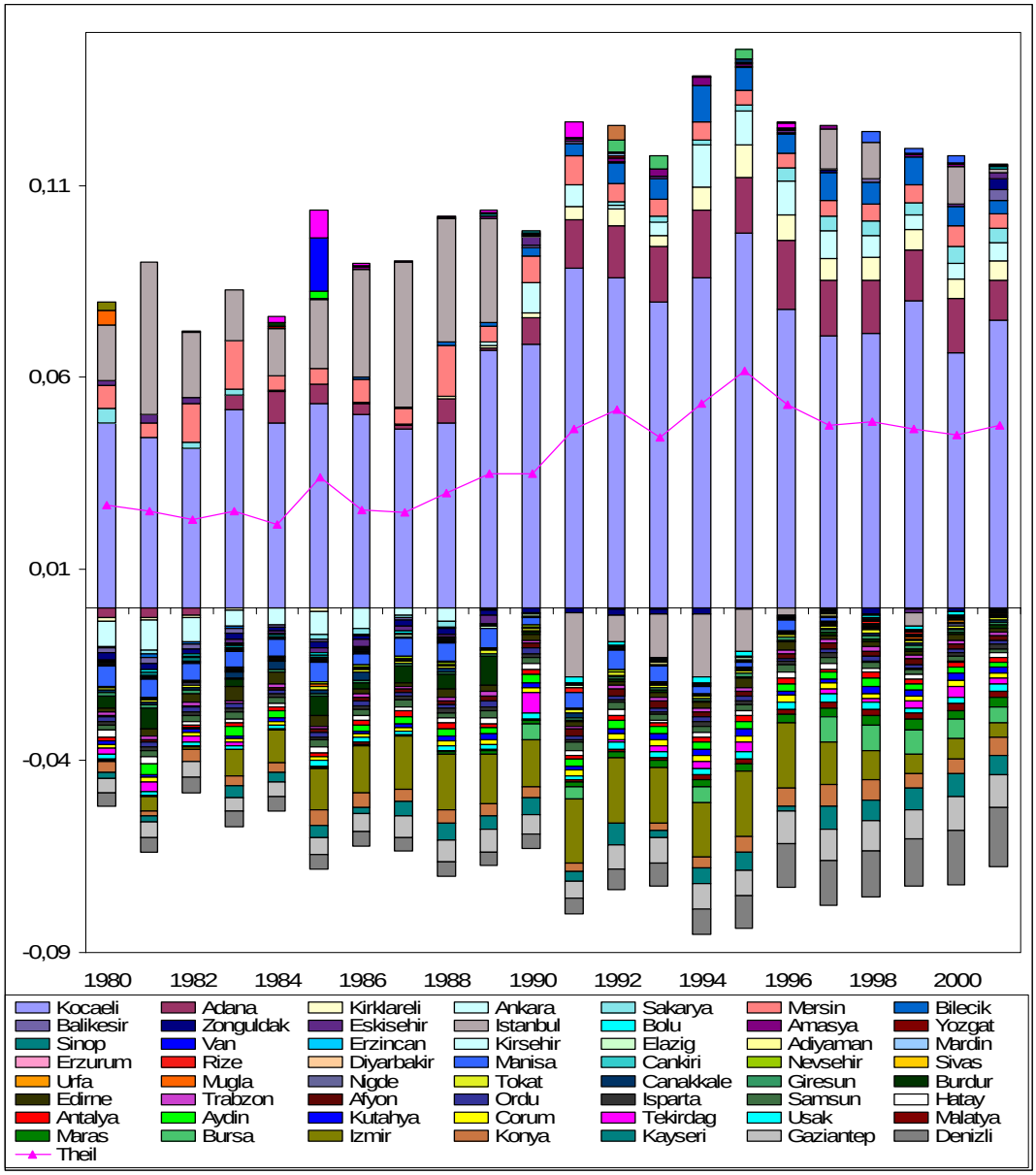


Source: Authors' calculation based on AMIS

5.2 Inequality by Province

Figure 7 shows pay inequality across 67 Turkish provinces. Overall, inequality increases from 1987 to 1995, then declines, by 2001, to levels previously seen in 1991. The major part of inequality is contributed by cities that have a substantial share of manufacturing and are located in the most developed area of the country. The biggest contribution is made by Kocaeli, Adana, Kirklareli, Ankara, Sakarya, Mersin, Bilecik, Balikesir, and Zonguldak, which have above mean wage levels, and by other developed provinces such as Denizli, Gaziantep, Kayseri, Konya, Izmir, and Bursa, which have lower wages than average.

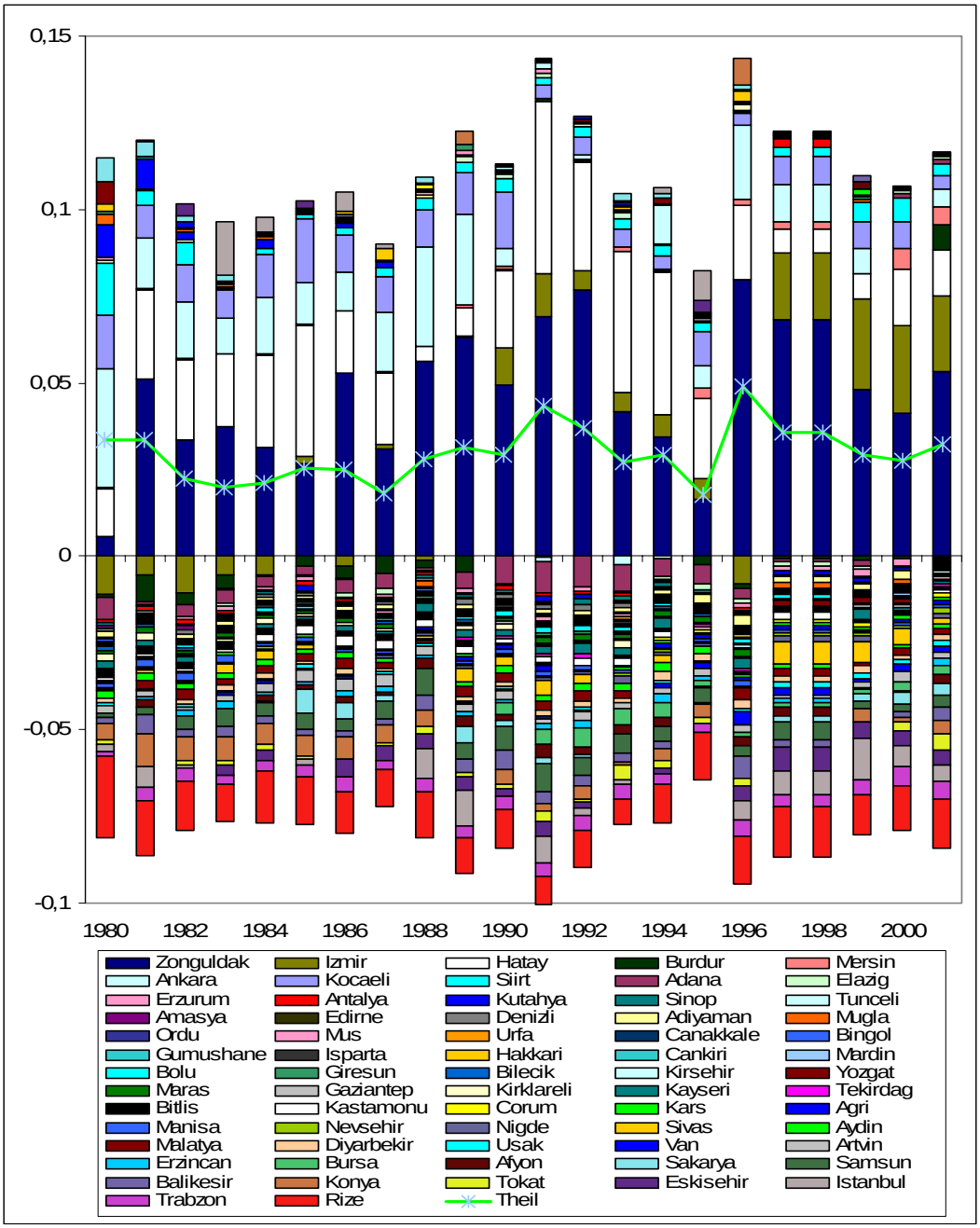
Figure 7: Pay Inequality by Provinces (Private Sector)



Source: Authors' calculation based on AMIS

Figure 8 shows similar information for the public sector. Here the major contributor to inequality is Zonguldak, where mining is the major sector, followed by Izmir, Hatay, Burdur, Mersin, and Ankara. Among the less-well-paid in the public sector, Rize is the biggest contributor to inequality, followed by Trabzon, Istanbul, and Eskisehir.

Figure 8: Pay Inequality by Provinces (Public Sector)

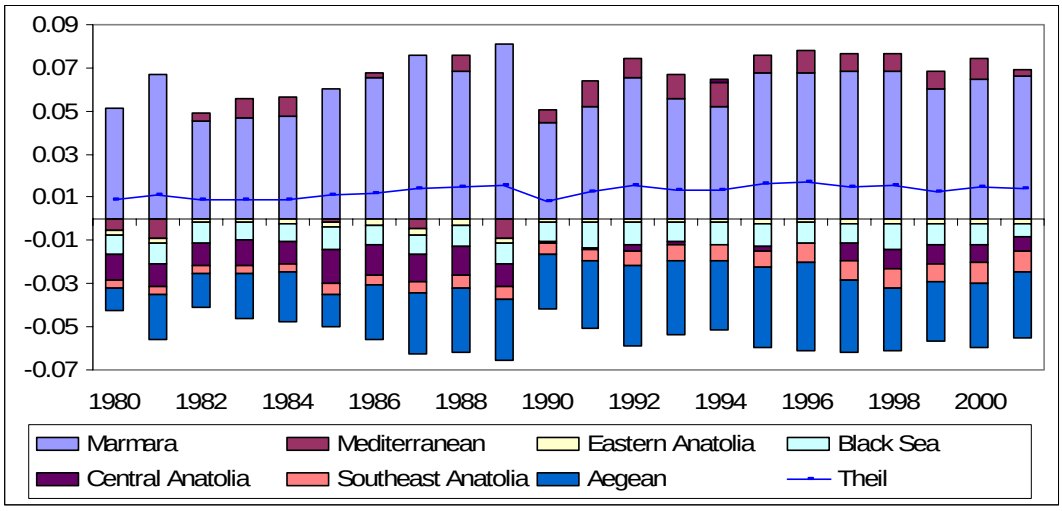


Source: Authors' calculation based on AMIS

5.3 Inequality by Geographic Regions

Figure 9 shows inequality by seven major geographic regions for the period between 1980 and 2001. What is clearly observed is that inequality remains almost the same throughout the period. The Marmara region, the most developed area of the country which includes big cities such as Istanbul, Bursa, Kocaeli, and Sakarya, is the main component in this picture of inequality. Another key observation is the fact that the importance of the Southeast Anatolia region increased in the second decade. This is partly due to the fast-growing province of Gaziantep.

Figure 9: Pay Inequality by Regions (Private Sector)

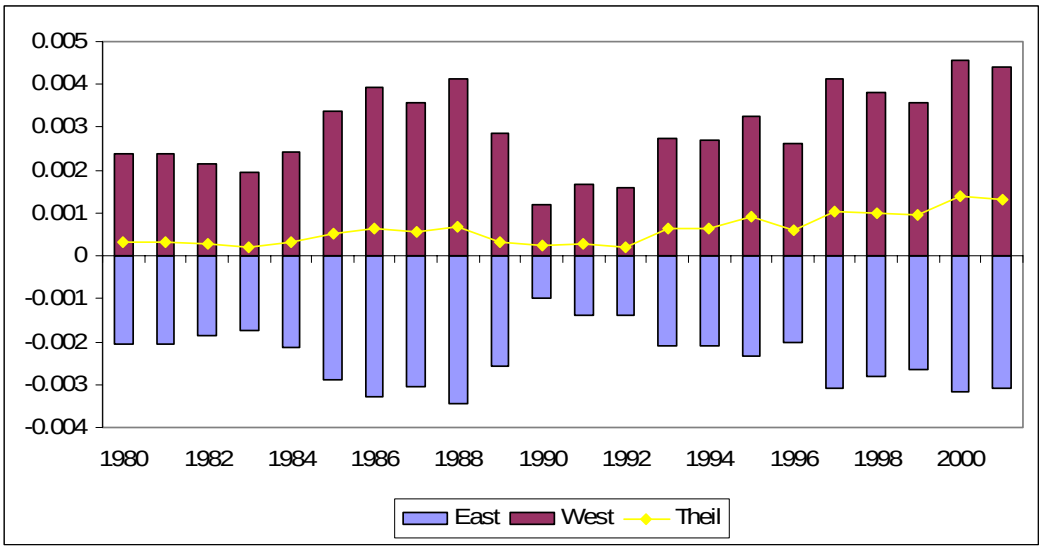


Source: Authors' calculation based on AMIS

5.4 Inequality across the East-West Divide

The dual structure of the Turkish economy is a persistent problem. While the West consists of relatively more developed areas, the Eastern part is where mostly Kurdish citizens live and consists of the least developed provinces in the country. We believe this distinction is of importance since excessive migration to urban areas forced by both economic and political pressures, is an important aspect of income inequality. We define the "East" as those provinces whose majority of population call themselves Kurdish and thus we have categorized them accordingly. The rest of the country is categorized as "West." Figure 10 demonstrates inequality according to this East-West distinction. What we observe is that inequality increases in the second decade. However, no similar increase in inequality occurs within the public sector during this period (see Figure 14 in Appendix).

Figure 10: Pay Inequality by East-West (Private Sector)



Source: Authors' calculation based on AMIS

Since there is no other study that uses the same method and data for the period in question for Turkey, it is not possible to make a direct comparison between our results and overall literature on Turkey. However, in a partial sense, we can conclude that our study confirms some early findings such as the polarization/no convergence among provinces (i.e. Temel et. al. 1999, Karaca 2004, Aldan and Gaygisiz 2006, Kirdar and Saracoglu 2006), increasing inequality - in 1994 compared with 1987- (Gursel et. al. 2000, World Bank 2000, Memis 2005, Guven 2007), a temporary improvement in income distribution after 1994 - just for a few years- (Ozcan and Ozcan 2001), and the East-West dualism (Gezici and Hewings 2004). In these respects, our findings add confirmation and detail to what is already known.

On the other hand, our results do not support some findings such as declining discrepancy among provinces (Altinbas et. al 2002), declining interregional inequalities (Yıldırım and Ocal 2006), and increasing inequality between regions from 1987 to 1994 (World Bank 2000).

6. Conclusion

We have investigated pay inequality in the Turkish manufacturing sector between 1980 and 2001. By doing so, we contribute some useful new information on the overall trend of income distribution in the economy; since wages are a major component of income and manufacturing is a major part of all economic activity, we expect trends broadly similar to those we can observe directly from these data to hold throughout the entire economy. Our findings showed that pay inequality in Turkey increased after 1980, under the neo-liberal model. This effect occurred only in the private sector. But even though the public sector has displayed unchanged inequality throughout the period at both the provincial and

regional levels, the shrinking share of the public sector reduces any positive effect that stability may have.

Across provinces, we observed a similar trend; more specifically inter-provincial inequality increased sharply between 1987 and 1995 and then declined again, reaching its 1991 level in 2001. However, we also showed that inequality between the broader geographical regions remained almost the same in the study period. This confirms a main finding in the literature, that there is no convergence between regions. Also, we showed that the dual structure in the Turkish economy, namely between an impoverished East and affluent West, has been unchanged during the years of neo-liberalism in Turkey.

References

Adair C. (2006), 'Structural Change, Inequality and Growth in Mexico', The University Inequality Project Working Paper No. 35.

Aktan C. C. (1997), 'Turkey: From Etatism to a More Liberal Economy', Journal of Social, Political and Economic Studies, **22(2)**, 165-184

Akyüz Y., Boratav K. (2003), 'The Making of the Turkish Financial Crisis', World Development, **31(9)**, 1549–1566

Aldan A., Gaygisiz E. (2006), 'Convergence Across Provinces of Turkey: A Spatial Analysis', Working Paper No. 0609, Research and Monetary Policy Department, Central Bank of the Republic of Turkey.

Alper C.E., Öniş Z. (2002), 'Finansal Küreselleşme, Demokrasi Açığı ve Yükselen Piyasalarda Yaşanan Sürekli Krizler: Sermaye Hareketlerinin Liberalleşmesi Sonrasında Türkiye Deneyimi', Doğu-Batı, **4(17)**, 203-226

Altinbas S., Dogruel F., Gunes M. ((2002), 'Turkiye'de Bolgesel Yakinsama: Kalkinmada Oncelikli Iller Politikasi Basarili Mi?', at http://www.econ.utah.edu/~ehrbar/erc2002/pdf/P192.pdf

Atalik G. (1990), 'Some Effects of Regional Differentiation on Integration in the European Community', Papers in Regional Science Association, 69, 11-19

Bayazıtoğlu B., Ercan H. (2001), 'Turkish manufacturing wages: Inter-industry earning inequality', in Bulutay T. (ed), Wages, Income and Wages Distribution, State Institute of Statistics, Printing Division, Ankara

Başlevent C., Dayıoğlu M. (2005a), 'A household level examination of regional income disparity in Turkey', METU Studies in Development, 32, 275-302

Başlevent C., Dayıoğlu M. (2005b), 'The Effect of Squatter Housing on Income Distribution in Urban Turkey', Urban Studies, **42 (1)**, 31-45

Boratav K., Yeldan E. (2006), 'Turkey, 1980-2000: Financial Liberalization, Macroeconomic (In)-Stability, and Patterns of Distribution' in Taylor L. (ed), External Liberalization in Asia, Post-Socialist Europe and Brazil, Oxford University Press

Calmon P.D.P., Conceição P., Galbraith J. K., Garza-Cantú V., Hilbert A. (2000), 'The evolution of industrial wage inequality in Mexico and Brazil', Review of Development Economics, **4(2)**, 194-203.

Cizre Ü., Yeldan E. (2002), 'Turkey: Economy, Politics and Society in the Post-Crisis Era', mimeo

Dayıoğlu M., Başlevent C. (2006), 'Imputed Rents and Regional Income Inequality in Turkey: A Subgroup Decomposition of the Atkinson Index', Regional Studies, **40(8)**, 889-905

Doğruel F., Doğruel A. S. (2003), 'Türkiye'de Bölgesel Gelir Farklılıkları ve Büyüme', in Köse A. H., Şenses F., Yeldan E. (eds), Kuresel Duzen: Birikim ve Siniflar, Iletisim Yayinlari, Istanbul

Duygan B., Guner N. (2006), 'Income and Consumption Inequality in Turkey: What role does education play?', in Altug S., Filiztekin A. (eds), The Turkish Economy: The Real Economy, Corporate Governance and Reform and Stabilization Policy, Routledge Curzon Studies in Middle Eastern Economies

Ekinci N.K. (1990), 'Macroeconomic Developments in Turkey: 1980-1988', METU Studies in Development, 17(1-2), 73-114

Elveren A. Y., Hsu S. (2007), 'Gender Gaps in the Individual Pension System in Turkey', University of Utah, Department of Economics, Working Paper No. 6

Elveren A. Y., Kar M. (2008), 'Turkey's Economic Integration into the EU: Challenges and Opportunities' in Phuskele P. (ed), Economic Integration – Global Experience, ICFAI University Press, Hyderbad

Erdil E. (1996), 'Inter-industry wage differentials: An analysis of wages in Turkish manufacturing industry, 1980/1985', Middle East Technical University Studies in Development, **23(1)**, 1-19

Erk N., Ates S., Direkci T. (2000), 'Convergence and Growth within GAP Region (South Eastern Anatolia Project) and Overall Turkey's Region at http://idari.cu.edu.tr/sanli/sanli8.pdf

Erlat H. (2005), 'Turkiye'de Bolgesel Yakinsama Sorununa Zaman Dizisi Yaklasimi', in Erlat H. (ed), Bolgesel Gelisme Stratejileri ve Akdeniz Ekonomisi, Ankara: Turkish Economic Association

Filiztekin A. (1997), 'Turkiye'de Iller Arasinda Yakinsama', Koc University Working Paper Series 1997-15

Galbraith J. K. (2007), 'Global inequality and global macroeconomics', Journal of Policy Modeling, **29**, 587-607.

Galbraith J. K., Kum H. (2005), 'Estimating the inequality of households incomes: toward a dense and consistent global data set', Review of Income and Wealth, **51(1)**, 115-143.

Galbraith J. K., Spagnolo L., Pinto S. (2007), 'Economic inequality and political power: a comparative analysis of Argentina and Brazil', Business and Politics, **9(1)**, Berkeley Electronic Press.

Gezici F., Hewings G. J.D. (2003), 'Spatial Analysis of Regional Inequalities in Turkey', 43rd Congress of European Regional Science, 27-30 August, 2003, Jyvaskyla, Finland, mimeo

Gezici F., Hewings G. J.D. (2004), 'Regional Convergence and the Economic Performance of Peripheral Areas in Turkey', Review of Urban and Regional Development Studies, **16(2)**, 113-132

Gürsel S., Levent H., Selim R., Sarıca Ö. (2000), 'Individual Income Distribution in Turkey, A Comparison with the European Union' TUSIAD Publication No: T/2000-12/296.

Güven A. (2007), 'The Role of Incentive Policy on Income Inequality Between Turkish Provinces: A Decomposition Analysis', Akdeniz I.I.B.F. Dergisi, **14**, 20-38

Karaca O. (2004), 'Turkiye'de Bolgeler Arasi Gelir Farkliliklari: Yakinsama Var Mi?', Turkiye Ekonomi Kurumu Tartisma Metni 2004/7, at http://www.tek.org.tr/dosyalar/O-KARACA.pdf

Kızılırmak A. B. (2003), 'Explaining Wage Inequality: Evidence from Turkey', Ankara University Faculty of Political Science Research Center for Development & Society Working Paper Series, No. 57

Kirdar M G., Saracoglu D. S. (2006), 'Does Internal Migration Lead to Faster Regional Convergence in Turkey: An Emprical Investigation at http://www.ersa.org/ersaconfs/ersa06/papers/784.pdf

Köse S., Güven A. (2007), 'Government education expenditures and income inequality: evidence from provinces of Turkey', South-East Europe Review, 1/2007, 79-101

Köse A. H., Bahçe S. (2009), ' "Yoksulluk" Yazınının Yoksulluğu: Toplumsal Sınıflarla Düşünmek', *Praksis*, **19**, 2009/1, Ankara

Memis E. (2005), 'Is the Pattern of Wage Differentials Stable Over Times? A Cluster Analysis in Turkish Manufacturing Industry' at http://www.policyinnovations.org/ideas/policy_library/data/01224/_res/id=sa_File1/

Memis E. (2007), 'Inter-and Intraclass Distribution of Income in Turkish Manufacturing, 1970-2000', Unpublished Ph.D. Dissertation, Department of Economics, University of Utah

Obando J. C. (2006), 'Patterns of Wage Inequality in Costa Rica during the Structural Change, 1976-2004', The University of Texas Inequality Project Working Paper No: 36.

OECD (2001), 'Economic Survey of Turkey, 2000-01', Policy Brief, OECD, Paris.

Ozcan Y., Ozcan K. (2003), 'Measuring Poverty and Inequality in Turkey, 2001', Topics in Middle Eastern and North African Economies, electronic journal, Vol. 5, Middle East Economic Association and Loyola University Chicago.

Ozmucur S. (2006), 'Wage and Productivity Differentials in Private and Public Manufacturing: The Case of Turkey', at http://www.econ.upenn.edu/~ozmucur/papers/sonwagesandproductivitypdf.pdf

Özötün E. (1980), 'Iller Itibariyle Türkiye Gayri Safi Yurtiçi Hasilasi- Kaynak ve Yöntemler 1975-1978 Publication No. 907 Ankara: State Institute of Statistics

Özötün E. (1988), 'Turkiye Gayri Safi Yurtici Hasilasinin Iller Itibariyle Dagilimi 1979-1986' Publication no 1988/8 Istanbul: Istanbul Chamber of Industry Research Department

Pamukcu T., Yeldan E. (2005), 'Country Profile: Turkey Macroeconomic Policy and Recent Economic Performance', at http://www.bilkent.edu.tr/~yeldane/FEMISE_Fiscal2005.pdf

Rodrik D. (1990), 'Premature Liberalization, Incomplete Stabilization: The Ozal Decade in Turkey', NBER Working Paper No. W3300, NBER

Sari R., Guven A. (2007), 'Kalkınmada öncelikli yöreler uygulamasının iller arası gelir dağılımı üzerindeki etkisi', ODTU Gelisme Dergisi, 34, 77-96

Selim R., Küçükçiftçi S. (1999), 'Income Inequality and Economic Growth: An Empirical Study for Turkish Provinces', Iktisat Isletme ve Finans, **14(160)**

Silber J., Ozmucur S. (2000), 'Decomposition of Income Inequality: Evidence from Turkey', Topics in Middle Eastern and North African Economies, at http://www.luc.edu/orgs/meea/volume2/ozmucur2.doc

Spagnolo L., Munevar D. (2008), 'After Years of (Economic) Solitude: Neoliberal Reforms and Pay Inequality in Colombia', The University of Texas Inequality Project Working Paper No: 47.

Spagnolo L., Quezada A., Salinas V. (2008), 'Growth with Equity? Pay Inequality in Chile during the Democratic Era (1990-2006)', The University of Texas Inequality Project Working Paper No: 46.

Şenesen U. (2003), 'Bölgesel Gelir Dağılımı', in Balkan N., Savran S. (eds), Neoliberalizmin Tahribatı, Metis Yayinlari, Istanbul

Tansel A., N. D. (1997), 'Income and Growth Convergence: An Application to the Provinces of Turkey', paper presented at the First Annual ERC/METU Conference on Economics, September 18-20, 1997.

Temel A., Associates. (1999), 'Functional distribution of income in Turkey', (mimeo) State Planning Organization: Ankara

Temel T., Tansel A., Albersen P. J. (1999), 'Convergence and Spatial Patterns in Labor Productivity: Nonparametric Estimations For Turkey', Journal of Regional Analysis and Policy, **29(1)**, 3-19

Theil H. (1972), Statistical Decompostion Analysis: With Applications in the Social and Administrative Sciences, Amsterdam-London: North Holland Publishing Company

Voyvoda E., Yeldan E. (2001), 'Patterns of Productivity Growth and the Wage Cycles in Turkish Manufacturing', International Review of Applied Economics, **15(4)**, 375-396

Wang, W. C. (2007), 'Information Society and Inequality: Wage Polarization, Unemployment, and Occupation Transition in Taiwan since 1980', The University of Texas Inequality Project Working Paper No: 44.

Yeldan E. (2000), 'The Impact of Financial Liberalization and the Rise of Financial Rents on Income Inequality: The Case of Turkey', WIDER Working Paper No. 206. at http://62.237.131.23/publications/wp206.pdf

Yeldan E. (2006), 'Turkey 2001-2006 Macroeconomics of Post-Crisis Adjustment', Global Policy Network, at http://www.gpn.org

Yıldırım J., Öcal N. (2006), 'Income Inequality and Economic Convergence in Turkey', Transition Studies Review, **13(3)**, 559-568

Appendix

Figure 11: 7 Geographical Regions

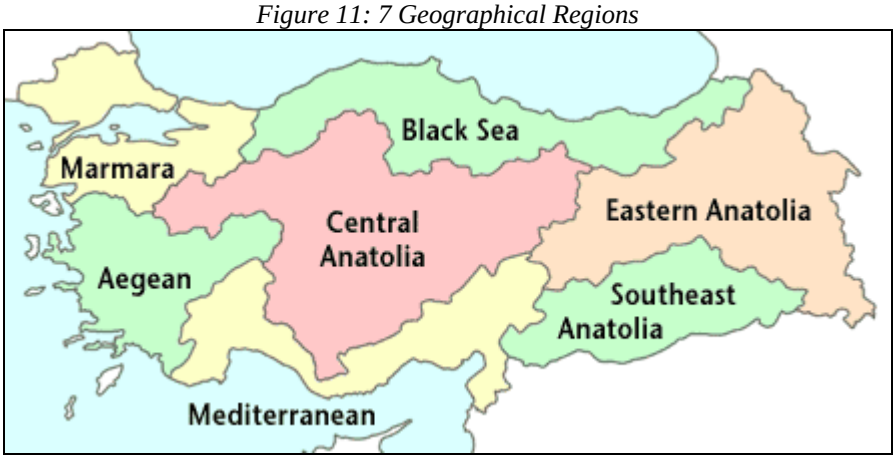


Table 3: Manufacturing Sectors at 2-digit ISIC categorization

Code	Industry
3	Total Manufacturing
31	Food, Food Products and Beverages
32	Textiles, Textile Products, Leather and Footwear
33	Wood and Products of Wood
34	Pulp, Paper and Paper Products and Publishing
35	Chemicals, Chemical Products
36	Manufacture of glass and pottery
37	Basic Metals, Iron and Steel
38	Machinery and Equipment
39	Other Manufacturing

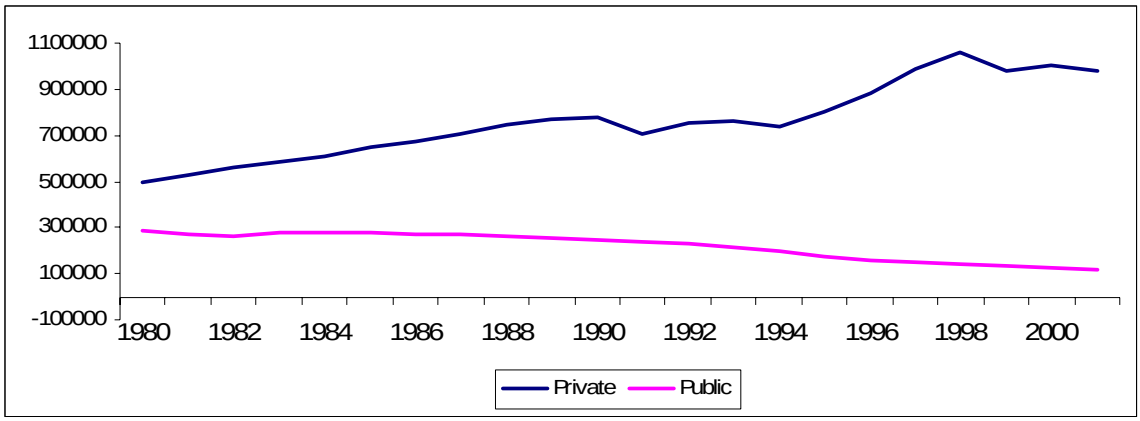
Source: UN Statistics Division

Table 4: Provinces and Regions

Province Code	Name of Province	Region
1	Adana	Mediterranean
2	Adiyaman	Southeast Anatolia
3	Afyon	Aegean
4	Agri	East Anatolia
5	Amasya	Black Sea
6	Ankara	Central Anatolia
7	Antalya	Mediterranean
8	Artvin	Black Sea
9	Aydin	Aegean
10	Balikesir	Marmara
11	Bilecik	Marmara
12	Bingol	East Anatolia
13	Bitlis	East Anatolia
14	Bolu	Black Sea
15	Burdur	Mediterranean
16	Bursa	Marmara
17	Canakkale	Marmara
18	Cankiri	Central Anatolia
19	Corum	Black Sea
20	Denizli	Aegean
21	Diyarbakir	Southeast Anatolia
22	Edirne	Marmara
23	Elazig	East Anatolia
24	Erzincan	East Anatolia
25	Erzurum	East Anatolia
26	Eskisehir	Central Anatolia
27	Gaziantep	Southeast Anatolia
28	Giresun	Black Sea
29	Gumushane	Black Sea
30	Hakkari	East Anatolia
31	Hatay	Mediterranean
32	Isparta	Mediterranean
33	Icel	Mediterranean
34	Istanbul	Marmara
35	Izmir	Aegean
36	Kars	East Anatolia
37	Kastamonu	Black Sea
38	Kayseri	Central Anatolia
39	Kirklareli	Marmara
40	Kirsehir	Central Anatolia
41	Kocaeli	Marmara

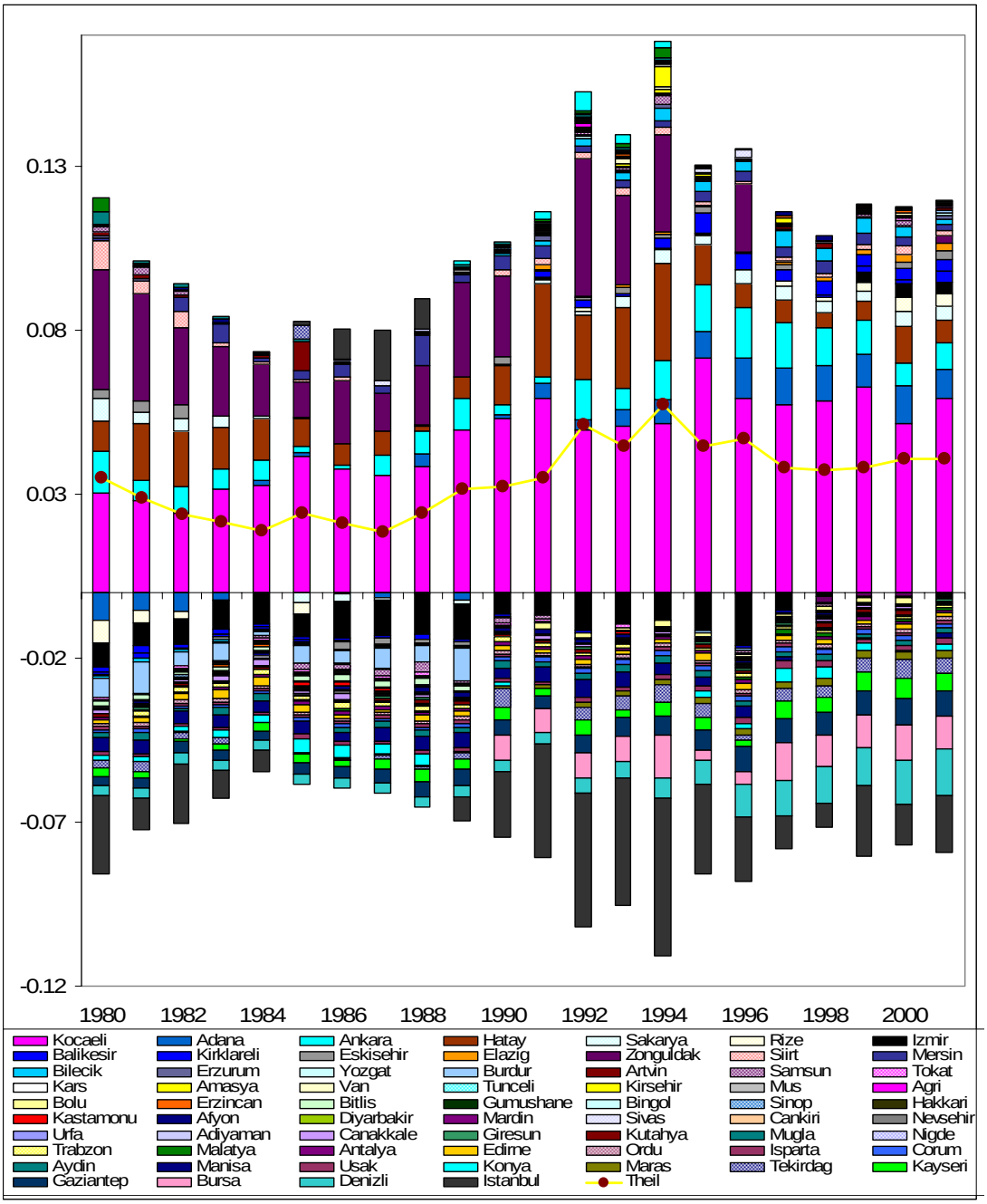
42	Konya	Central Anatolia
43	Kutahya	Aegean
44	Malatya	East Anatolia
45	Manisa	Aegean
46	Kahramanmaras	Mediterranean
47	Mardin	Southeast Anatolia
48	Mugla	Aegean
49	Mus	East Anatolia
50	Nevsehir	Central Anatolia
51	Nigde	Central Anatolia
52	Ordu	Black Sea
53	Rize	Black Sea
54	Sakarya	Marmara
55	Samsun	Black Sea
56	Siirt	Southeast Anatolia
57	Sinop	Black Sea
58	Sivas	Central Anatolia
59	Tekirdag	Marmara
60	Tokat	Black Sea
61	Trabzon	Black Sea
62	Tunceli	East Anatolia
63	Urfa	Southeast Anatolia
64	Usak	Aegean
65	Van	East Anatolia
66	Yozgat	Central Anatolia
67	Zonguldak	Black Sea

Figure 12: Number of Employees in Manufacturing Sector



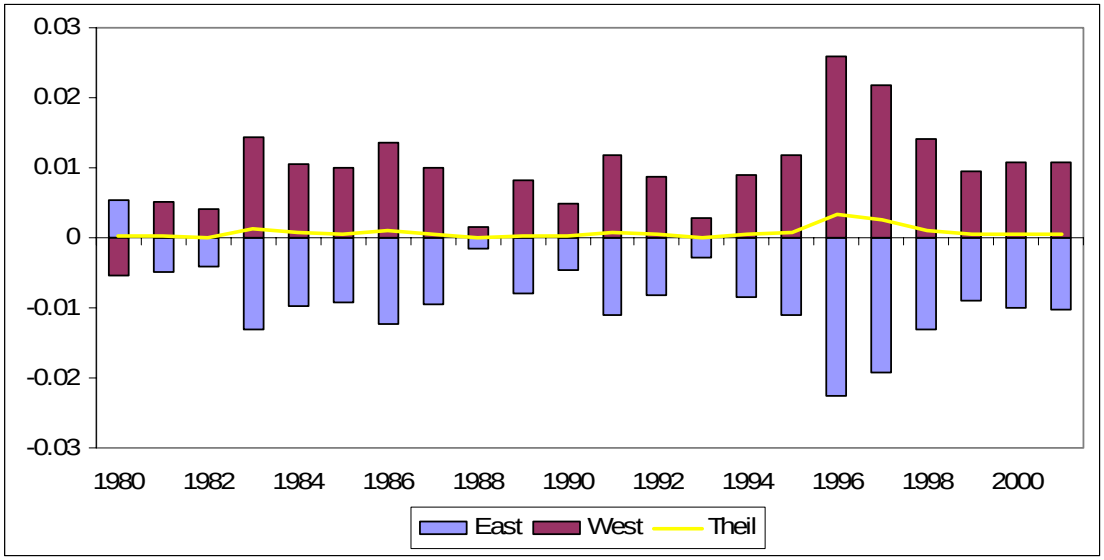
Source: AMIS

Figure 13: Contribution to Inequality by Provinces (Total)



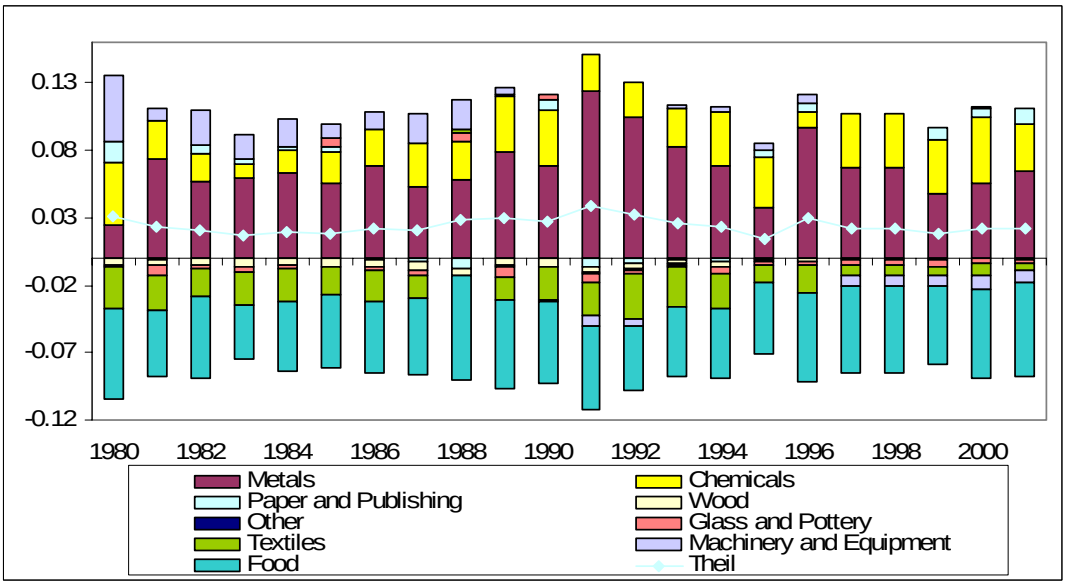
Source: Authors' calculation based on AMIS

Figure 14: Pay Inequality by East-West (Public Sector)



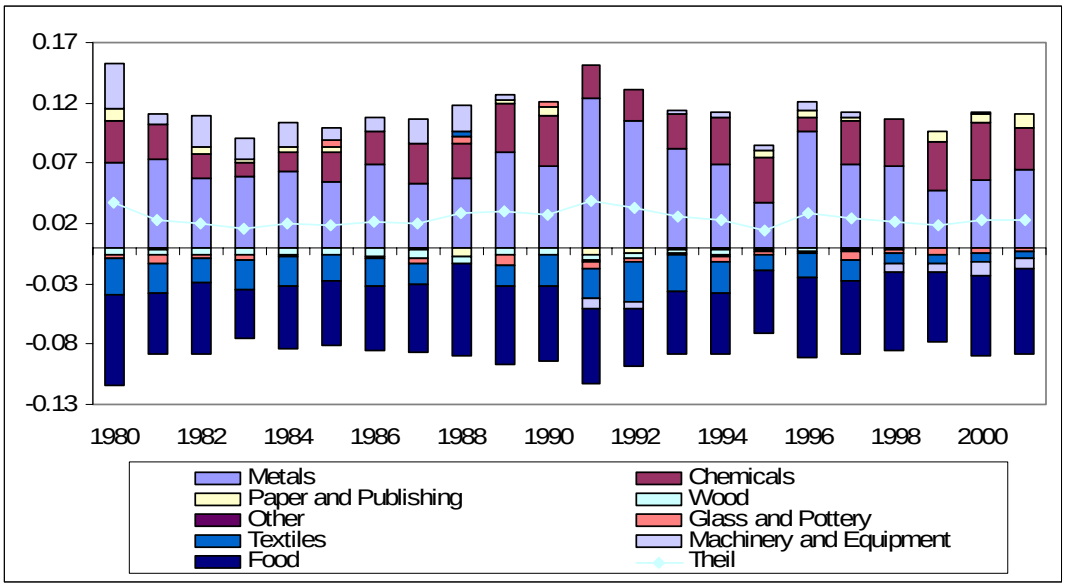
Source: Authors' calculation based on AMIS

Figure 15: Pay Inequality by Manufacturing Sectors (Province-Public Sector)



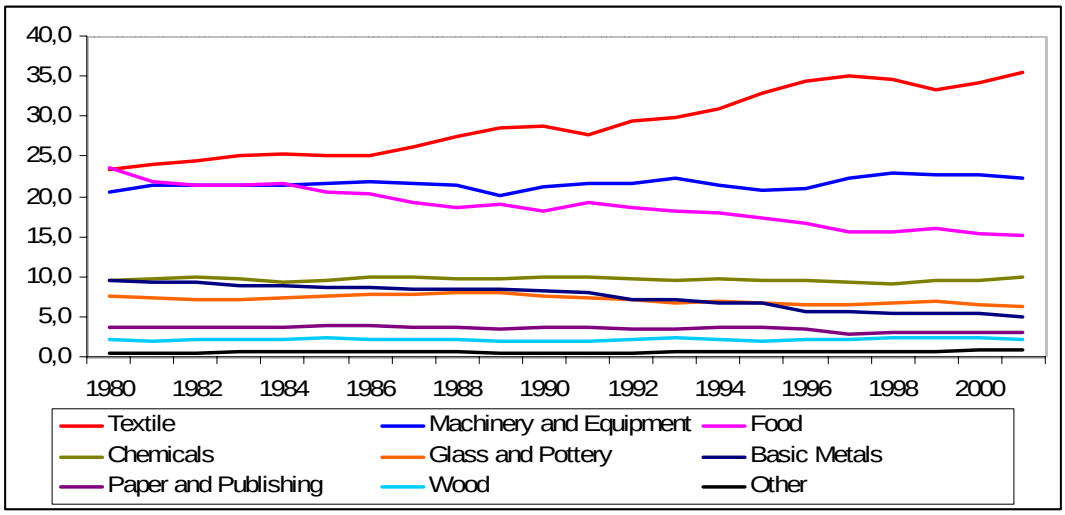
Source: Authors' calculation based on AMIS

Figure 16: Pay Inequality by Manufacturing Sectors (East-West; Public Sector)



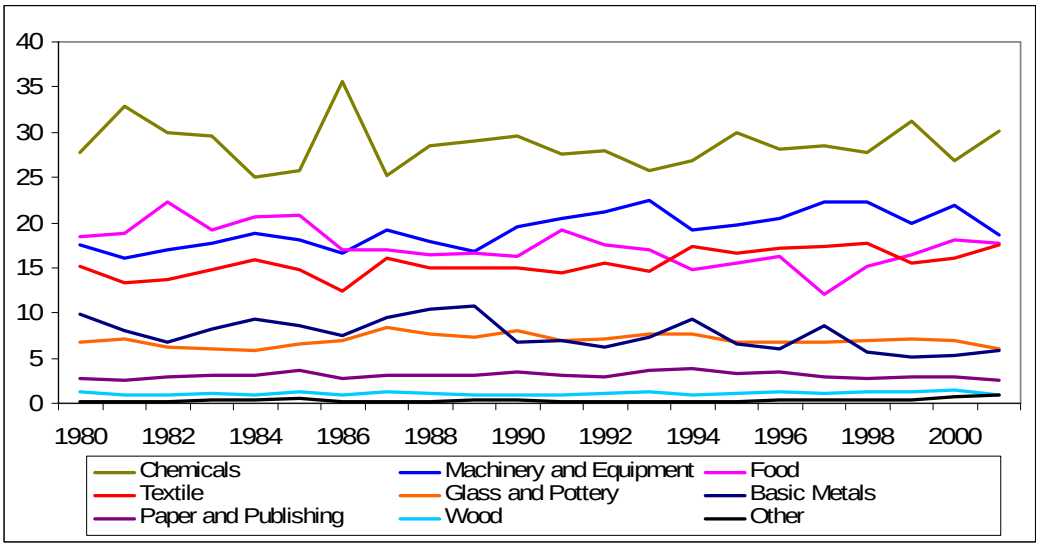
Source: Authors' calculation based on AMIS

Figure 17: Sectors Shares in Employment



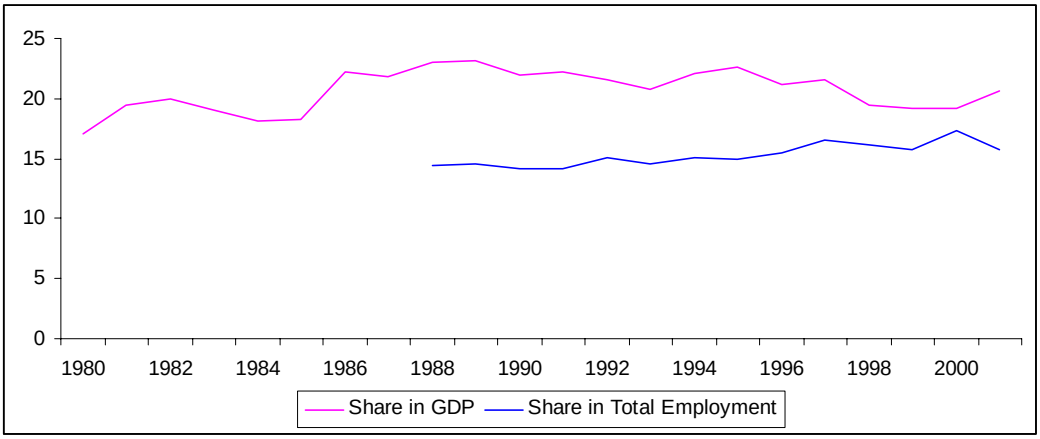
Source: Authors' calculation based on AMIS

Figure 18: Sector Shares in Value Added



Source: Authors' calculation based on AMIS

Figure 19: Share of the Manufacturing Sector in GDP and Total Employment



Source: TURKSTAT