Turkey - Inflation and the Distribution of Income

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PAPER 4: TURKEY - INFLATION AND THE DISTRIBUTION OF INCOME

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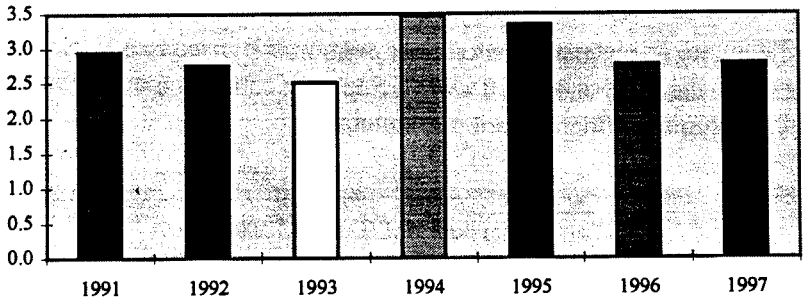
A. Introduction and Summary of Findings

1. During the inflationary process, prices, wages, and interest rates are all rising. In this panorama of movement in relative and absolute prices, are there systematic changes that have a predictable effect on the distribution of income? Chronically high inflation has often been blamed for making income distribution less equal in Turkey. This note attempts to present some evidence. We will seek to determine the impact of inflationary processes on the economic well-being of different income classes through both expenditure effects and income effects. The former effect relates to the question whether inflation could affect differently the real spending power of different groups. That is, the prices of the goods and services the poor buy could rise by less or more than the prices of those bought by the rich. In that case inflation would change the distribution of real purchasing power even if it did not affect the distribution of nominal income. The second effect relates to the relation between type of income and the size distribution. Are different types of income affected differently by inflation? If inflation erodes the real value of certain types of income more than others, and if the importance of these different income types differs across different income classes, then income distribution would be affected by inflation.

2. We will not study the wealth effect of inflation - the impact of inflation on the real value of assets and liabilities, and the redistribution between debtors and creditors, because we do not have data of an inventory of assets and liabilities by income classes. It is worth noting, however, that the inflation tax, the transfer of wealth between the government and the population, has not been very large in Turkey (see Chart 1, where inflation tax is defined as the base money times the average rate of inflation during the year). It is also unlikely that the poor have been paying a disproportionately larger share of this inflation tax, since money demand is likely to be lower for the lower income classes.

Inflation Tax as Percentage of GNP



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3. A summary of the findings are as follows:

- The poorest quintile of households did not experience *systematically or persistently* larger changes in the price of their market basket of goods and services. When the general inflation rate was increasing, the poorest quintile's inflation rate was higher than the richest quintile's inflation rate, e.g., in the first half of 1994, and the second half of 1997. When the general inflation rate was fairly stable (e.g. between December 1995 and March 1997), the richest quintile's inflation rate was higher than the poorest quintile's inflation.

- It appears that the within-region differences in inflation rates between the poor and the rich were not as large as the differences in the general inflation rates in different regions. In 1994, the poorest quintile of households in Central Anatolia experienced an inflation rate which was 12 percentage points higher than the poorest quintile in the Aegean. In comparison, the largest within region differences in inflation between the poor and the rich was only five percentage points in the Mediterranean region.

- The expenditure patterns of the poorest households that have certain characteristics, i.e., households without any employed members, households where the head is illiterate, and households living in slums, do not differ significantly from those of the typical poor households. Their experience with price increases would therefore not differ significantly from a typical poor household.

- The changes in the relative shares of wages and profits in national income indicate that income distribution was becoming more equalized in the late 1980s and early 1990s. The sharp drop of the wage share in national income in 1994 worsened income distribution. The richest quintile was likely to be the biggest winner, since they relied less heavily on wage income and much more on interest income. Effective real interest rate rose sharply in 1994. On the other hand, the poorest quintile was not necessarily hardest hit from an income effect point of view - their reliance on both wages and transfer income was less than the middle classes.

4. The rest of the note is organized as follows: Section B discusses briefly the characteristics of the inflation process in Turkey. Section C studies the expenditure effect, and Section D studies the income effect. Section E concludes.

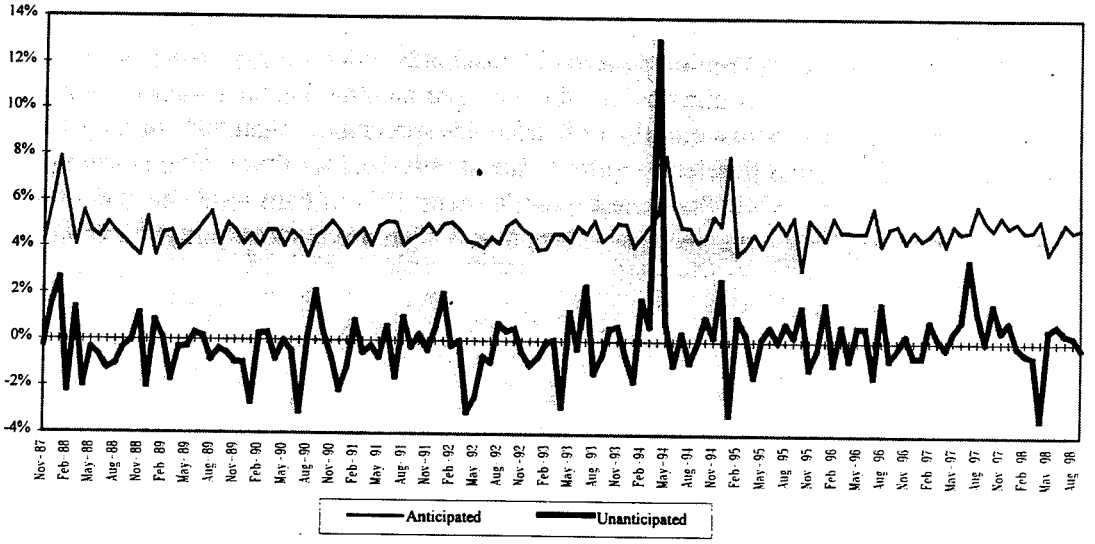
B. Characteristics of Turkish Inflation

5. Turkey experienced very high inflation for the first time during 1979-80 amid a balance of payments crisis. At some 100 percent, this was in sharp contrast with the experience of the 1960s and 1970s when annual inflation averaged less than 10 percent per annum. An effective stabilization program, launched in early 1980, reduced inflation dramatically in a year's time through a combination of tight financial policies and significant structural reforms. Following the sharp reduction in inflation, however, macroeconomic balances began to deteriorate in the mid-1980s, and thereafter annual inflation in Turkey has never been lower than 50 percent (month-on-month, CPI-based) and has had a tendency to gradually increase in a step-wise manner (Alper and Ucer, 1998).

6. Since the mid-1980s, inflation has taken a "plateau" character, with two notable jumps occurring in 1988 and 1994. While inflation persistence appeared to have increased in 1988, its variability did not seem to have changed. This implies that although inflation has had a plateau nature, once shifted to the new level, it has had a tendency to revert back to monthly averages prior to the jump. There has been likely something stable about the way public forms its expectations, which could arise from the exchange rate policy of the authorities (a real exchange rate target rule): in the absence of a sharp acceleration in the rate of depreciation, the public did not raise monthly inflation expectations any higher.

7. Monthly inflation rates exhibit strong seasonality, e.g. inflation rates in July seem to be the lowest, while inflation rates in September/October, and in January, are usually the highest. De-seasonalized monthly inflation rates are stationary, i.e. they are mean reverting. Modeling the time series of monthly inflation rates as an auto-regressive moving-average process allows us to decompose the series into an anticipated component and an unanticipated component. Chart 2 shows these two components. The major inflation shock happened in April 1994, with a sharp devaluation of the currency. Another large inflation shock happened in July 1997, in the midst of severe political uncertainty when the Islamist government was forced to resign by the military.

Anticipated and Unanticipated Monthly Inflation



C. Variations across the Poor and the Rich in the Rate of Inflation

8. The major indication that inflationary processes are under way is generally taken to be a substantial rise in the Consumer Price Index (CPI), which is designed to reflect the pattern of expenditure of a "typical family". The discussion of the effects of inflation on various parts of the population, on the other hand, should include an examination of the expenditure patterns of different income (or consumption) classes and the way in which differences among these expenditure patterns might generate relative differences in inflationary impacts. Obviously any given change in prices of various products will have different effects on the amount of

consumption (or real income) of groups to the extent that they spend their incomes on quite different combinations of goods and services.

9. We might reasonably expect that the expenditure patterns of the poor would be somewhat different from those of the "typical family" used as the basis for the CPI. We will therefore attempt to construct price indices which would reflect the expenditure patterns of different income (or consumption) classes and would allow us to compare the extent to which price changes had expenditure effects on the rich and the poor which, in various periods, would differ from those reflected in the CPI. We will also analyze whether households which have certain characteristics, such as having no member of households employed, the head of household being illiterate, or the household living in urban slums, experienced markedly different costs of living from the rest of the households.

Data and Methodology

10. Based on the 1994 survey results of household consumption expenditures in urban areas, we will construct Laspeyres price indices for each of the five quintiles of households ordered by total consumption expenditures. For each quintile, the price index is calculated as a weighted average of 33 price indices of sub-groups of commodities and services observed in urban areas. These 33 price indices are the most disaggregated price data series published by the State Institute of Statistics (SIS). The weights are the percentage shares of consumption of a particular group of commodity or service in total consumption for that quintile of households.

11. Table 1 shows the consumption pattern of households ordered by quintiles of total consumption expenditures. It is quite obvious that the poor and the rich have very different consumption patterns. The poorest quintile of households spend more than 50% of their total consumption on food, whereas the richest quintile spend only 16.5% of their total consumption on food. On the other hand, while the richest quintile spend 10% of their total consumption on private transportation vehicles, the poor spend less than 1% on private transportation vehicles.

Table 1 Expenditure Shares of Households in 1994
(% of total expenditure)

	poorest quintile	2nd quintile	3rd quintile	4th quintile	richest quintile
Food, Beverages and Tobacco	**51.7%**	**46.1%**	**40.4%**	**35.4%**	**19.7%**
food	45.7%	40.4%	35.2%	30.6%	16.5%
beverages	2.4%	2.3%	2.2%	2.1%	1.5%
tobacco	3.5%	3.5%	3.0%	2.7%	1.7%
Clothing and Shoes	**5.1%**	**7.3%**	**9.0%**	**10.0%**	**9.4%**
clothing	3.9%	5.5%	6.9%	7.7%	7.6%
shoes	1.3%	1.8%	2.1%	2.3%	1.8%
Housing	**29.2%**	**27.4%**	**27.2%**	**27.4%**	**21.7%**
house rent	21.1%	18.9%	18.5%	17.6%	13.4%
housing maintenance	0.4%	0.6%	0.7%	1.2%	3.1%
other housing costs	1.3%	1.3%	1.2%	1.0%	0.6%
electricity,gas,and fuels	6.4%	6.6%	6.9%	7.6%	4.7%
Houseware	**2.9%**	**3.7%**	**4.6%**	**6.2%**	**14.1%**
furniture and floor	0.1%	0.3%	0.5%	1.2%	4.8%
fabric furnishings	0.2%	0.4%	0.6%	0.8%	1.7%
appliances	0.3%	0.6%	1.0%	1.4%	5.1%
kitchenware	0.4%	0.5%	0.5%	0.8%	0.7%
tools	0.1%	0.1%	0.1%	0.1%	0.1%
housekeeping and services	1.9%	1.9%	1.9%	1.9%	1.7%
Health	**1.8%**	**2.2%**	**2.4%**	**2.6%**	**3.0%**
medicine and medical goods	1.2%	1.4%	1.3%	1.2%	1.2%
medical services	0.5%	0.7%	0.9%	1.1%	1.3%
hospital services	0.1%	0.1%	0.2%	0.3%	0.5%
Transportation	**2.7%**	**4.2%**	**5.3%**	**6.4%**	**14.2%**
private vehicles	0.5%	1.2%	1.8%	2.7%	10.4%
maintenance	0.0%	0.1%	0.2%	0.5%	1.4%
transportation services	2.2%	2.9%	3.3%	3.2%	2.4%
Entertainment and Culture	**0.7%**	**1.2%**	**1.8%**	**2.1%**	**3.9%**
entertainment goods	0.2%	0.3%	0.4%	0.6%	2.1%
entertainment services	0.1%	0.2%	0.3%	0.3%	0.6%
newspapers, books	0.4%	0.7%	1.0%	1.2%	1.2%
Education	**0.4%**	**0.7%**	**1.0%**	**1.2%**	**2.9%**
education services	0.1%	0.3%	0.5%	0.8%	2.6%
education goods	0.2%	0.4%	0.5%	0.4%	0.3%
Restaurant and Hotels	**2.1%**	**2.6%**	**2.6%**	**2.8%**	**3.8%**
dining	2.1%	2.6%	2.6%	2.5%	2.7%
hotel services	0.0%	0.0%	0.1%	0.2%	1.1%
Miscelaneous	**3.4%**	**4.5%**	**5.7%**	**6.0%**	**7.3%**
personal care	0.9%	1.2%	1.4%	1.5%	1.4%
jewelary	0.1%	0.2%	0.4%	0.5%	1.8%
communication	1.7%	2.2%	2.4%	2.4%	1.7%
financial services	0.5%	0.8%	1.4%	1.5%	2.1%
other services	0.1%	0.1%	0.1%	0.1%	0.2%

Source: Staff calculation based on 1994 household consumption expenditure survey.

Table 2 Annual Inflation Rates of 33 Subgroups of Goods and Services

	1994*	1995	1996	1997	1998**
All Items	**125.9%**	**76.0%**	**79.8%**	**99.1%**	**57.6%**
Food, Beverages and Tobacco	**142.1%**	**67.9%**	**68.5%**	**117.3%**	**50.3%**
food	147.6%	76.3%	65.9%	115.9%	50.4%
beverages	126.0%	44.8%	91.8%	124.5%	58.3%
tobacco	130.8%	18.4%	92.7%	130.3%	41.9%
Clothing and Shoes	**132.4%**	**86.3%**	**80.2%**	**80.5%**	**54.6%**
clothing	129.7%	83.2%	76.6%	80.2%	55.5%
shoes	142.0%	97.6%	91.7%	81.2%	52.0%
Housing	**103.2%**	**82.3%**	**84.6%**	**88.0%**	**69.6%**
house rent	98.0%	89.2%	68.6%	94.2%	84.2%
housing maintenance	97.3%	50.1%	103.0%	79.9%	58.0%
other housing costs	99.9%	89.8%	145.1%	76.7%	63.0%
electricity,gas,and fuels	119.6%	73.0%	112.9%	78.9%	39.5%
Houseware	**129.9%**	**70.3%**	**63.1%**	**84.4%**	**54.9%**
furniture and floor	109.2%	75.6%	68.3%	91.1%	61.3%
fabric furnishings	153.6%	61.2%	54.8%	78.9%	44.5%
appliances	145.3%	64.1%	63.8%	81.9%	50.0%
kitchenware	118.6%	72.1%	51.5%	79.9%	55.4%
tools	113.4%	44.0%	77.8%	68.2%	58.6%
housekeeping and services	128.7%	79.6%	63.1%	84.6%	58.1%
Health	**104.4%**	**77.9%**	**102.3%**	**85.0%**	**90.1%**
medicine and medical goods	143.7%	52.0%	109.8%	71.5%	62.4%
medical services	92.5%	89.9%	97.2%	100.4%	100.6%
hospital services	87.4%	125.4%	97.1%	74.9%	133.6%
Transportation	**130.5%**	**71.4%**	**106.3%**	**105.3%**	**45.6%**
private vehicles	133.0%	94.6%	87.8%	81.2%	53.9%
maintenance	159.4%	49.0%	125.7%	130.9%	29.0%
transportation services	100.9%	70.4%	111.2%	105.7%	57.9%
Entertainment and Culture	**131.4%**	**83.1%**	**68.5%**	**107.2%**	**56.0%**
entertainment goods	160.9%	55.4%	64.8%	77.8%	48.9%
entertainment services	110.2%	75.1%	105.9%	82.1%	65.5%
newspapers, books	112.3%	117.0%	61.0%	140.3%	57.8%
Education	**77.2%**	**122.7%**	**70.8%**	**99.6%**	**94.3%**
education services	70.4%	109.8%	86.9%	109.3%	89.7%
education goods	99.5%	160.9%	32.1%	66.3%	114.1%
Restaurant and Hotels	**103.9%**	**89.7%**	**80.7%**	**101.2%**	**66.3%**
dining	101.9%	92.0%	79.4%	100.9%	67.0%
hotel services	123.6%	67.2%	94.8%	104.9%	59.2%
Miscelaneous	**136.5%**	**48.6%**	**109.1%**	**104.3%**	**40.1%**
personal care	126.3%	66.6%	75.7%	102.9%	72.7%
jewelary	135.8%	59.3%	82.4%	70.1%	47.3%
communication	136.0%	23.5%	157.7%	127.3%	13.8%
financial services	189.9%	123.0%	92.5%	77.5%	92.0%
other services	111.0%	56.9%	99.7%	48.6%	62.2%

* February 1994 to January 1995; ** January to October

Source: Staff calculation based on data published by SIS.

12. Table 2 shows the rate of price changes of different goods and services that form the basket for the calculation of the CPI. There has been considerable variation in the rate of price changes among various goods and services. In 1994 and 1997 when the general price level was rising faster than in the other years, food prices were rising faster than the general price level, whereas in 1995, 1996 and 1998, food prices were growing more slowly than the general price

level. House rents rose much faster than the general price level in 1995 and 1998, but they rose more slowly than the general price level in 1994 and 1996. Thus for the whole period under consideration (January 1994 to October 1998), food prices did not grow much faster than the general price level; nor did the house rents. The fastest growing prices during the period were those of hospital services (which rose about 29 times as compared to 20 times for the general price level), and the slowest growing prices were those of tools (13 times) within the houseware category.

Price Indices for the Poor and the Rich

13. The data on household expenditure patterns and price indices for different goods and services are used to calculate price indices for five groups of households ordered by their total consumption expenditures. We take the price index for the lowest quintile as the Poor Man's Index, and the price index for the highest quintile as the Rich Man's Index. Table 3 shows the annual price increases for the five quintiles of households based on the calculated indices.

Table 3
Annual Price Increases for Households Ordered by Total Consumption

	1994*	1995	1996	1997	1998**
The Poorest Quintile	128.0%	76.2%	75.5%	103.5%	58.0%
The Second Quintile	127.5%	76.3%	77.0%	102.1%	57.7%
The Third Quintile	126.8%	77.1%	78.0%	100.5%	58.3%
The Fourth Quintile	126.1%	77.2%	78.8%	99.1%	58.4%
The Richest Quintile	124.9%	78.1%	80.1%	94.2%	59.6%
All Households	125.9%	76.0%	79.8%	99.1%	57.6%

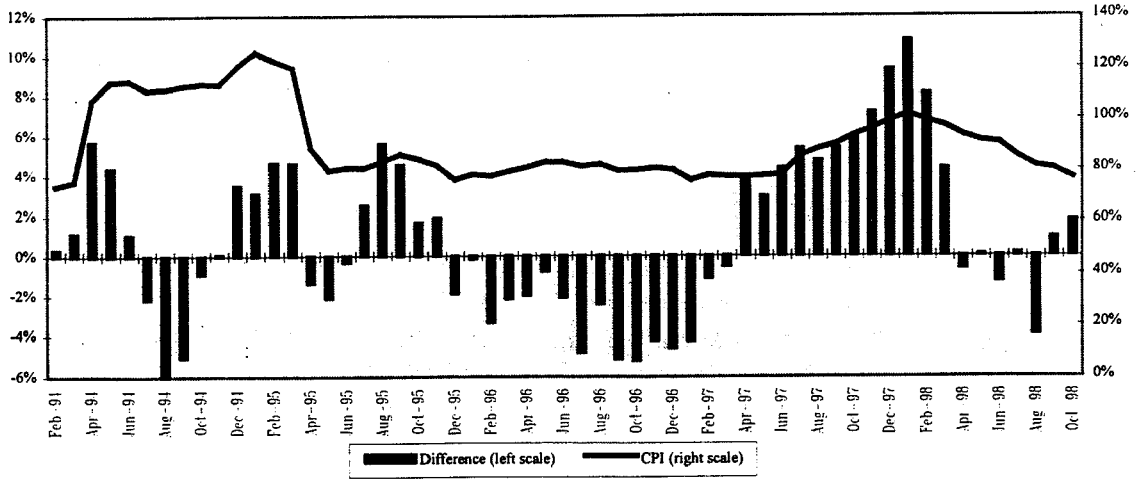
* February 1994 to January 1995; ** January to October

Souce: Staff calculation.

14. It can be seen from Table 3 that the Poor Man's Index was rising about three percentage points faster than the Rich Man's Index in 1994, and it was rising more than nine percentage points faster than the Rich Man's Index in 1997, while it was rising slower than the Rich Man's Index in 1995, 1996 and in 1998. The cumulative increase in the Poor Man's Index from January 1994 to October 1998 was 20.1 times, as compared to 19.5 times for the Rich Man's Index during the same period of time. Thus the lowest quintile of households did not experience *systematically or persistently* larger changes in the price of their market basket.

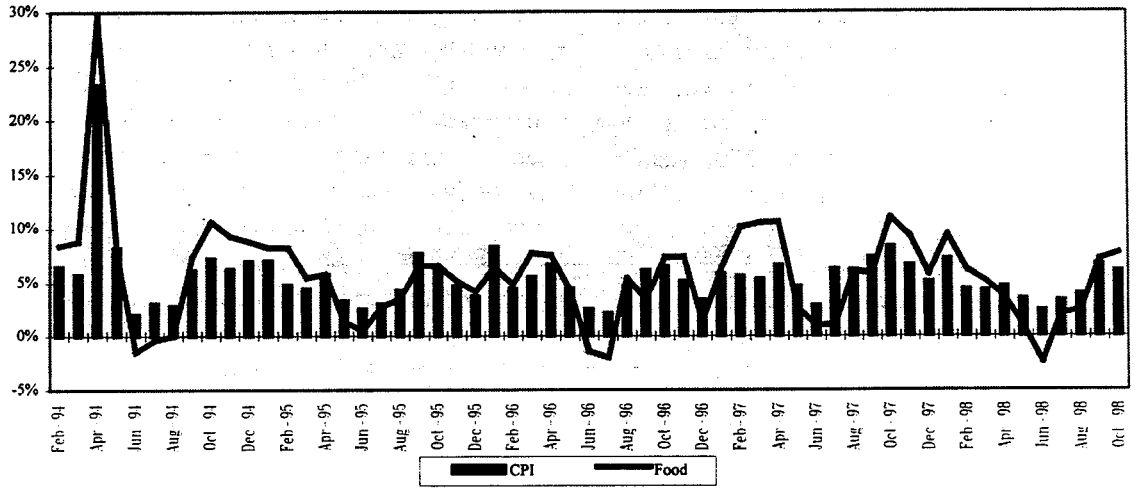
15. Chart 3 shows the difference in the 12-month inflation rates between the Poor Man's Index and the Rich Man's Index, and the movement of the general price index (CPI). It is clear that when the general inflation rate was increasing, the Poor Man's 12-month inflation was higher than the Rich Man's 12-month inflation, e.g., in the first half of 1994, and the second half of 1997. When the inflation rate was fairly stable (e.g. between December 1995 and March 1997), the Rich Man's 12-month inflation was higher than the Poor Man's 12-month inflation.

Difference in 12-Month Inflation Rates betwen the Poor and the Rich



16. It seems that the key to an understanding of the difference between the Poor Man's Index and the Rich Man's Index is to understand the behavior of the price movements of food items, which took up 46% of the Poor Man's consumption basket, but only 16% of the Rich Man's consumption basket. Chart 4 shows the monthly increases in the price index for food as compared to the monthly increases in the general CPI. It can be seen that food prices rose faster than the general prices when the general inflation was increasing; they rose more slowly than the general prices when the general inflation was decreasing.

Monthly Inflation Rates of Food Items and CPI



Poor Households with Special Characteristics

17. In this subsection we consider the consumption expenditure patterns of the poorest households (the lowest quintile) that have certain characteristics: households without any employed members, households where the head is illiterate, and households living in slums. Table 4 shows the expenditure shares of these households in ten major commodity and services groups. Overall, the expenditure patterns of these households do not differ significantly from those of the typical poor households as shown in Table 1. Their experience with price increases would therefore not differ significantly from a typical poor household.

Expenditure Shares of Poor Households with Certain Characteristics

	Unemployed	Illiterate	Living in Slums
Food, Beverages, Tobacco	47.6%	53.9%	50.8%
Clothing and Shoes	4.1%	5.0%	5.8%
Housing	35.8%	29.9%	27.5%
House furnishing	2.7%	2.8%	3.6%
Health	2.4%	2.2%	1.4%
Transportation	1.9%	1.5%	3.8%
Entertainment and Culture	0.6%	0.4%	0.8%
Education	0.3%	0.3%	0.4%
Restaurants and Hotels	0.9%	1.3%	2.5%
Other	3.8%	2.6%	3.3%

Source: 1994 household consumption expenditure survey.

Regional Differences in Inflation Rates[2]

18. Tables 5 and 6 show the annual inflation rates for households in different quintiles in the seven regions of Turkey in 1994 and 1995. It appears that the within-region differences in inflation rates between the poor and the rich were not as large as the differences in the general inflation rates in different regions. In 1994, there was a nine percentage points difference between higher inflation areas in Southeastern Anatolia, Marmara and Central Anatolia, and lower inflation areas in the Aegean and Eastern Anatolia. The poorest quintile in Central Anatolia experienced an inflation rate which was 12 percentage points higher than the poorest quintile in the Aegean. On the other hand, the largest within region differences in inflation between the poor and the rich was only five percentage points in the Mediterranean region. In 1995, there was also about nine percentage points difference in inflation between the high inflation regions and low inflation regions, and the poorest quintile in the Mediterranean experienced an inflation 11.4 percentage points lower than the poorest quintile in the Aegean region. In contrast, the largest within region difference between the poorest quintile and the richest quintile in inflation rates was 6.6 percentage points in the Mediterranean region.

[2] In this section price indices for households in different quintiles are based on price indices for ten major groups of commodities and services, rather than price indices for 33 sub-groups of commodities and services, because the expenditure weights for such 33 sub-groups are not available. In addition, the expenditure weights are assumed to be the same for all seven regions.

19. It should also be noted that the poorest region, Southeastern Anatolia, experienced the highest inflation in 1994, but the lowest inflation in 1995, while the Aegean region, probably the richest region, experienced the lowest inflation in 1994, but one of the highest inflation in 1995. But more data points are needed to arrive at stronger statement on the relationship between the level of general price inflation, the level of income, and the magnitude of regional differences in inflation.

Regional Differences in Inflation Rates in 1994*

	Poorest Quintile	2nd Quintile	3rd Quintile	4th Quintile	Richest Quintile	All Households
Marmara	129.6%	129.3%	128.7%	128.0%	126.5%	128.3%
Aegean	119.2%	119.1%	118.2%	117.1%	116.6%	119.3%
Mediterranean	123.3%	122.3%	120.6%	119.0%	116.3%	122.0%
Central Anatolia	131.1%	130.1%	129.1%	128.0%	125.9%	128.5%
Black Sea	119.7%	119.3%	118.5%	117.6%	117.4%	120.7%
Eastern Anatolia	120.2%	119.1%	117.8%	116.6%	114.9%	119.5%
Southeastern Anatolia	128.1%	127.3%	126.0%	124.8%	123.2%	129.8%

*February 1994 to January 1995.

Regional Differences in Inflation Rates in 1995*

	Poorest Quintile	2nd Quintile	3rd Quintile	4th Quintile	Richest Quintile	All Households
Marmara	78.1%	78.5%	78.8%	79.3%	79.7%	80.2%
Aegean	80.8%	80.8%	81.0%	81.4%	80.6%	81.2%
Mediterranean	69.4%	70.7%	71.8%	72.9%	76.0%	73.2%
Central Anatolia	72.7%	73.4%	74.1%	74.7%	76.4%	75.6%
Black Sea	73.1%	74.2%	75.0%	75.7%	77.8%	76.4%
Eastern Anatolia	72.0%	72.2%	72.2%	72.3%	73.1%	72.7%
Southeastern Anatolia	71.2%	71.5%	71.7%	71.8%	73.5%	72.3%

*February 1995 to January 1996.

D. The Effects of Inflation on the Real Value of Income Types

20. In this section we attempt to determine how the major sources of income have behaved in the 1990s. Our problem can be phrased as follows: given the historical evidence on the extent to which economic decisions have become adjusted to inflation, how would a change in the rate of inflation affect the size distribution of income? The role of expectations and resulting lags in adjustment is vital. Indeed, if the rate of inflation has been fully anticipated, reflected in individual behavior and hence in market prices and rates of return, and embodied in the appropriate contracts - such as in current rates of interest and in wage escalator clauses - the realization of the anticipated rate need not result in any redistribution.

21. Empirically, our investigation is hampered by the fact that we do not have a time series data of income distribution. We cannot therefore relate the changes in income distribution directly to changes in inflation and other variables. We can only make inferences about the impact of inflation on income distribution through analyzing the impact of inflation on the composition of factor shares in national income, and the relative importance of various types of income to different income classes.

Income Distribution in 1994

(% share in total income)

	incl. imputed rent	excl. imputed rent
poorest quintile	4.4%	5.0%
2nd quintile	8.1%	8.7%
3rd quintile	12.1%	12.5%
4th quintile	18.4%	18.6%
richest quintile	56.9%	55.1%
total	100.0%	100.0%

The Relative Importance of Various Types of Income

22. Tables 8 shows a profile of the income sources of households ordered by total income, based on the 1994 household survey. These tables yield the following important observations: 1) the share of wages and salaries in total income for the highest quintile was significantly less than the shares for the other four quintiles; there did not seem to be substantial differences between the other four quintiles in terms of the share of income from wages and salaries. 2) Interest income was a significant source of income only for the highest quintile of households; the differences in the significance of this source of income between the highest quintile and the rest are striking; 3) There was no significant difference between the poorest quintile and the richest quintile in terms of the significance of government transfers; 4) imputed rent was a much more important source of income for the poorest quintile than for the richest quintile.

23. Table 9 shows the source of income in broad categories. Problems of allocation arise very acutely in the case of self-employment income, which represents a return both on the labor contributed by the self-employed and on their capital (or land). If we classify self-employment income as capital income, and classify transfers as labor income, then the relative shares would correspond well with the classification of national income at the aggregate level, as operating surplus is a residual in the calculation of national income and it includes income from self-employment (see below). What is surprising from this broad categorization of income sources is that the poorest quintile had substantial share of income from capital income, primarily because they had a large share of income from imputed rent. In addition, the poorest quintile's reliance on wage income was less than the middle three quintiles (the middle classes).

Sources of Household Income

	poorest quintile	2nd quintile	3rd quintile	4th quintile	richest quintile	All
Wage & Salaries Income	**35.9%**	**40.4%**	**40.1%**	**39.9%**	**25.4%**	**31.8%**
Self-employment Income	**33.3%**	**33.5%**	**34.4%**	**35.8%**	**43.1%**	**39.4%**
Rent and Property Income	**1.0%**	**1.1%**	**1.5%**	**1.8%**	**4.0%**	**2.8%**
Interest Income	**0.4%**	**0.7%**	**1.1%**	**1.4%**	**13.2%**	**7.7%**
Transfers	**9.6%**	**10.3%**	**11.9%**	**11.9%**	**9.1%**	**10.2%**
of which:						
Government transfers	6.1%	7.4%	9.0%	9.2%	5.9%	7.1%
Total	**80.2%**	**86.0%**	**89.0%**	**90.8%**	**94.8%**	**91.9%**
Imputed Rent	19.8%	14.0%	11.0%	9.2%	5.2%	8.1%
Total inc. imputed rent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Sources of Household Income in Broad Categories

	poorest quintile	2nd quintile	3rd quintile	4th quintile	richest quintile	All
Labor Income	45.5%	50.7%	52.0%	51.8%	34.5%	42.0%
Capital Income:	54.5%	49.3%	48.0%	48.2%	65.5%	58.0%
of which:						
Self-employment Income	33.3%	33.5%	34.4%	35.8%	43.1%	39.4%

Note: Labor income includes wages and salaries, and transfers.

Capital income includes self-employment income, rent and property income, interest income, and imputed rent.

24. Table 10 shows the concentration coefficients of various sources of income and their contribution to the total inequality of income distribution. It is clear that interest income has the highest concentration coefficient, and government transfers have the lowest concentration coefficient, implying they have the strongest equalizing impact. Thus if inflation negatively affects the real value of transfers, then it may not have any large effect on income distribution since every income class gets hurt. If inflation reduces the real value of wages and salaries, all the four quintiles other than the richest quintile get hurt since wages and salaries were more or less equally important for all these four quintiles. If inflation enhances the real value of interest income (for example by inducing investors to include a high risk premiums in interest rates), then the richest quintile is better off while the rest four quintiles do not get much benefit. On the other hand, if inflation reduces the real value of interest income, then the richest quintile gets hurt without having too much impact on the rest four quintiles.

Decomposition of Income Inequality by Income Components

	Concentration Coefficients	Contribution to Total Inequality
Wages & Salaries	0.377	28.1%
Other wage Income	0.573	5.0%
Self-employment Income	0.491	43.8%
Rent and Property Income	0.587	4.1%
Interest Income	0.714	3.9%
Transfers		8.4%
Govt. transfers	0.215	3.8%
Foreign transfers	0.545	2.6%
Other transfers	0.240	2.0%
Other Income	0.367	6.7%
Total	0.428	100.0%

Note: incomes are in average 1994 Central Anatolia prices

Factor Shares and the Personal Distribution of Income

25. Inequality in the distribution of income depends on the distribution of earned incomes, on the concentration of wealth, and on the relative importance of income from labor and capital. We are concerned with this last aspect in this section. We will analyze the changes in the relative shares of factors in total national income and the relationship between such changes and inflation. We will then make inferences about the changes in income distribution between different people or households.

26. The relationship between the shares of factors of production and the distribution of income among persons is rather complicated. The worker may be receiving profit income via his rights to a pension fund and may also benefit from (imputed) rent via the ownership of his house. It does not necessarily follow that a rise in the share of property is to the benefit of those at the top of the income distribution. However, if we regard earnings and transfers as "labor" income, and the remainder as "capital" income, we may use the simple formula given by Meade (1964): if the top 20 percent in the income distribution receive *a* percent of the income from earnings and *b* percent of the income from capital, then their share in total income is given by

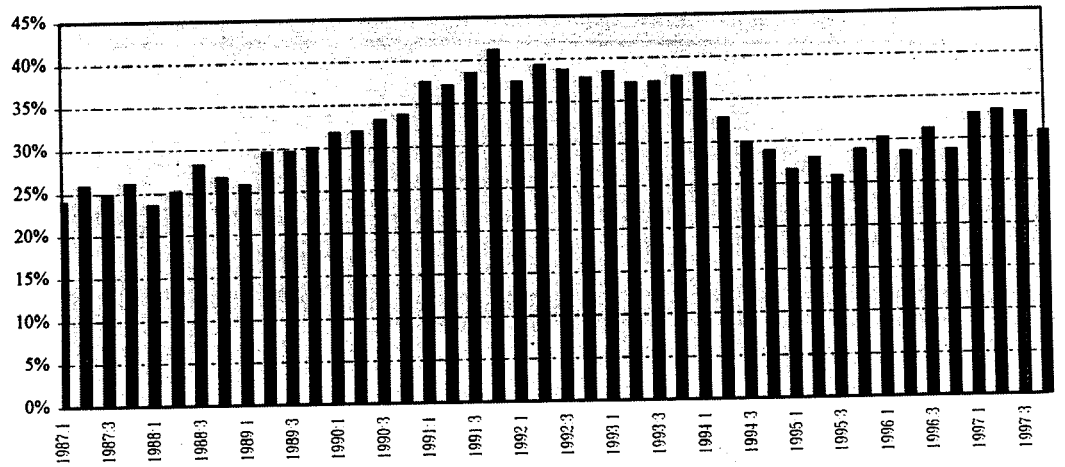
(a*share of labor compensation) + (b*share of operating surplus)

This formula would allow us to make inferences about the changes in income distribution based on observed changes in relative shares of factor income. An increasing share of labor compensation would be in favor of income redistribution to the middle classes, while an increasing share of operating surplus would be in favor of income redistribution to the richest. The impact of these changes on the poorest is less clear.

27. Chart 5 shows the movements of the share of labor compensation (wages and salaries) in total factor income (labor compensation plus operating surplus). It should be noted that according to the methodology used by the SIS in calculating GDP by cost components, operating surplus is treated as a residual item and labor compensation includes only compensation to the employees of an enterprise, thus income from self-employment would largely fall into the category of "operating surplus" rather than labor compensation. This problem would explain the relative low share of labor in total factor income in Turkey.

Share of Wages & Salaries in Total Factor Income

(Seasonally Adjusted)



28. The share of wages and salaries was increasing rapidly in 1989 to 1991, then it stabilized at about 38% in 1992 and 1993. The wage share declined sharply in 1994. It increased from the fourth quarter 1995 and in 1996, and again in the first half of 1997, but declined in the second half of 1997. This pattern of factor shares would imply that income distribution was becoming more in favor of the middle classes in the late 1980s and early 1990s, but the middle classes were hit hard in 1994 which saw an inflation and devaluation shock and sharp decline in economic

activity. The middle classes might have recovered some of their lost ground in 1995 and 1996, but their lot might have worsened again in the second half of 1997.

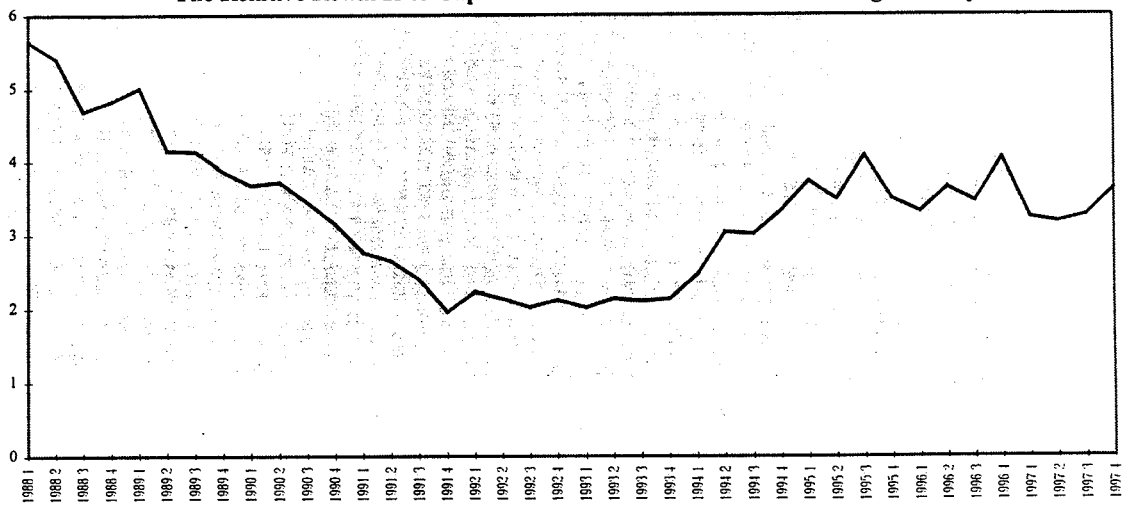
29. The explanation of the determination of the share of wages and profits in national income is a difficult problem. Alternative theories emphasize the role of technology, the contribution of accumulation to growth, the strength of unions and employers, and the interests of workers and capitalists - but none by itself is probably fully adequate as an explanation of the observed pattern. According to the orthodox competitive theory, the factor shares depend on the relative supplies of capital and labor and the relative factor rewards or the rates of return (Atkinson, 1983). The relative shares of capital and labor may be written:

$$\frac{Total\ profits}{Total\ wages} = \left(\frac{r}{w}\right) \times \left(\frac{capital}{labor}\right)$$

According to this formula, inflation would influence relative factor shares if the relative rewards of capital and labor change as a result of inflation, when the relative supplies of capital and labor do not change. If inflation induces a lag of wages behind producers prices, the reward to capital would increase relative to the reward to labor, and the share of profits would increase and the share of labor would decrease.

30. Chart 6 shows the relative rewards (or costs of) to capital and labor (r/w) in the private manufacturing industry, as calculated using the formula from above[3]. Up to the end of 1991, the cost of labor had been growing much faster than the cost of capital. This ratio (r/w) was fairly stable in 1992 and 1993, but it went up sharply in the first quarter of 1994, i.e. the cost of labor declined sharply relative to the cost of capital. The ratio was on a declining trend since the fourth quarter of 1995, but it not clear by late 1997 whether the trend was being reversed.

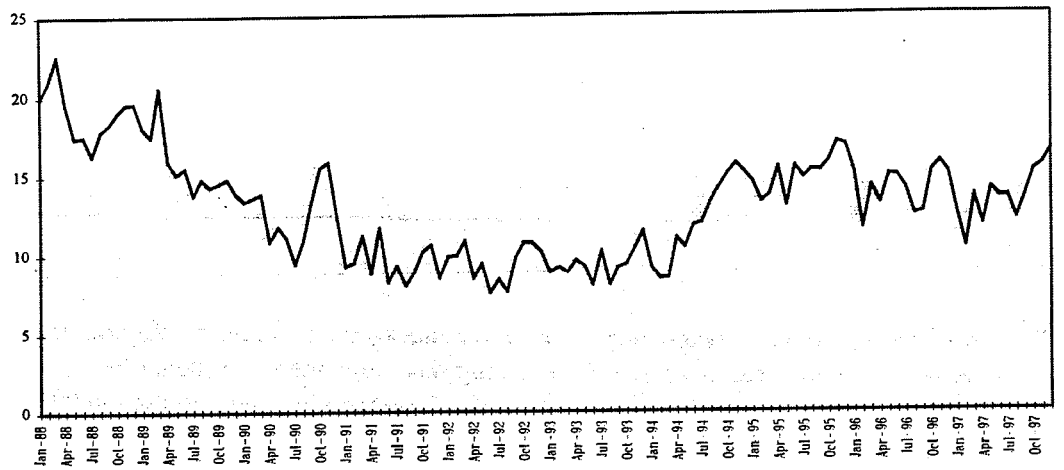
The Relative Rewards to Capital & Labor in Private Manufacturing Industry



[3] It is assumed that the factor shares in the private manufacturing industry were the same as in total national income, and we measure capital/labor ratio as the capacity utilization rate divided by the employment index.

31. Chart 7 shows the relative difference between the wholesale price index and the labor cost index in the private manufacturing industry. It can be seen that the movement of the curve in Chart 7 is consistent with that in Chart 6, which implies that when labor cost increased faster than the wholesale prices, the relative reward (cost) to capital decreased, and conversely, when labor cost lagged behind the wholesale prices, the relative reward to capital increased.

The Relative Difference between Wholesale Price Index and Labor Cost Index



Inflation and Real Labor Cost

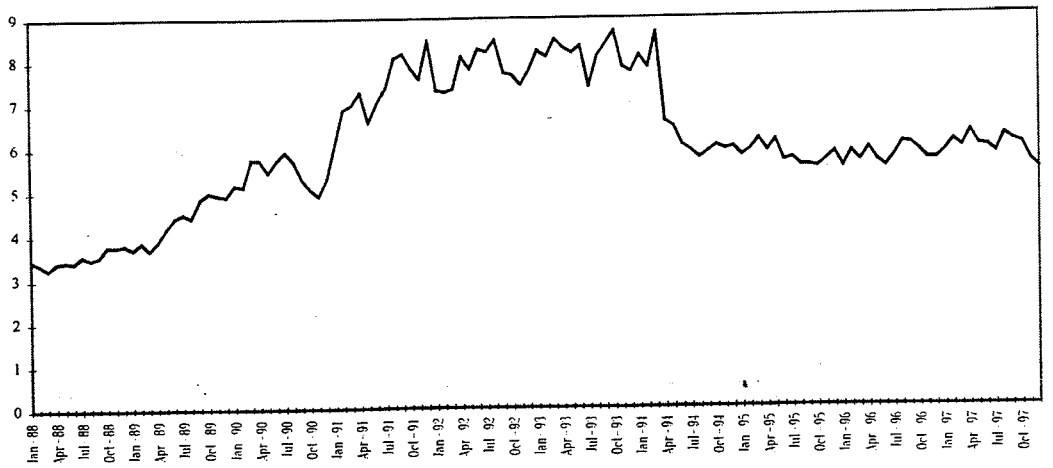
32. Table 11 shows the annual changes in real wages (nominal wages deflated by CPI) in various sectors, and Chart 8 shows the real wage index in the private manufacturing industry.

33. "For any time series of real wages, there exists a fantastically difficult problem of imputing changes in the level of real wages to one or the other of two classes of variables, i.e., real or monetary forces. Only if one is able to abstract from the effects of real forces can one determine the effect of inflation upon an observed time series of real wages" (Kessel and Alchian, 1960).

Nominal Wages Deflated by Consumer Price Index

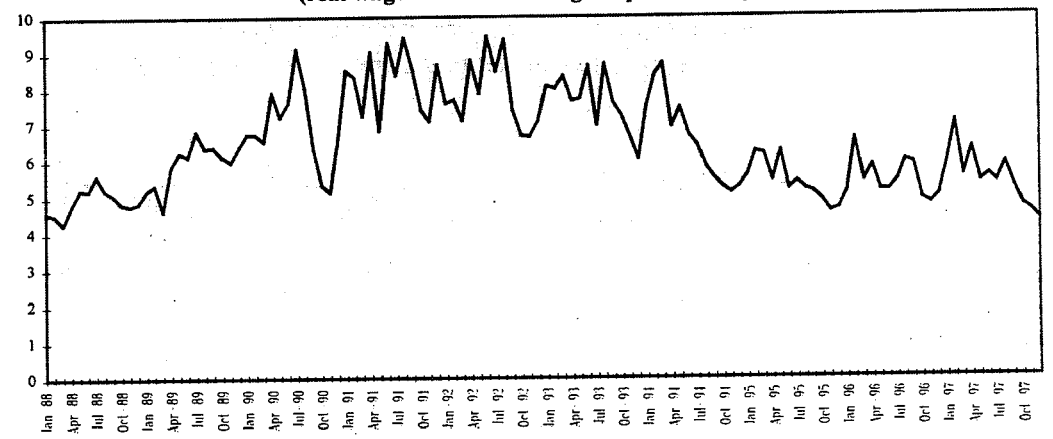
	1990	1991	1992	1993	1994	1995	1996	1997
	(index: 1989=100)							
Minimum wage	111.3	129.2	141.4	150.0	117.8	111.5	131.3	145.2
Private sector gross wage	119.8	170.8	176.0	179.2	143.3	122.6	125.3	127.5
Public sector gross wage	121.8	182.7	193.5	208.1	197.1	155.2	117.8	155.7
Civil Servants' net salary	115.0	123.3	140.3	143.2	111.8	106.5	113.4	132.1
	(percentage changes)							
Minimum wage	13.3	14.1	9.5	6.0	-21.4	-5.3	17.7	10.6
Private sector gross wage	19.8	42.6	3.0	1.8	-20.1	-14.4	2.2	1.8
Public sector gross wage	21.8	49.9	5.9	7.5	-5.3	-21.3	-24.1	32.2
Civil Servants' net salary	15.0	7.2	13.7	2.1	-22.0	-4.7	6.4	16.5

Real Wage Index in the Private Manufacturing Industry

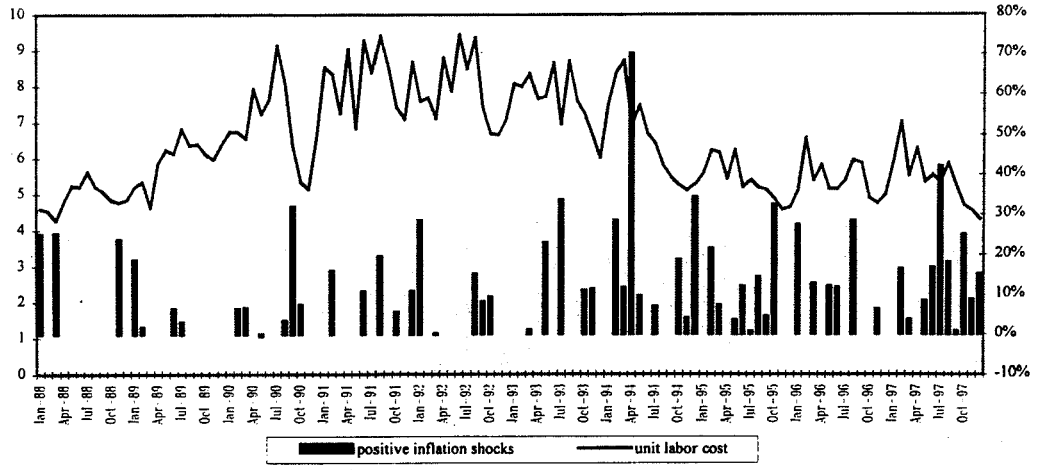


34. Chart 9 shows the real wage index in private manufacturing industry after controlling for productivity growth (this index is derived by dividing real wage index by productivity index, and productivity index is in turn derived by dividing production index by employment index). Chart 10 superimposes positive inflation shocks (defined as unpredicted inflation rate in a month as a percentage of predicted inflation rate in that month) onto Chart 9. Since labor supply is likely to be very elastic in the Turkish context, the decline in real labor cost associated with the large higher than expected inflation was unlikely because of a decline in labor demand, but more likely because of an inflation-induced lag of wages behind prices. Inflation may have wiped almost all of the gains in real wage (after controlling for productivity) in late 1980s and early 1990s.

Real Labor Cost in Private Manufacturing Industry
(real wage after controlling for productivity)



Real Labor Cost and Positive Inflation Shocks



35. Wage contracts in Turkey have been effectively backward indexed, though the length of the wage agreements differ from sector to sector. Almost all of the public sector workers are covered by collective wage agreements. These wage contracts are usually for two years. Prior to April 1994, these contracts were de jure backward indexed and included an extra welfare component determined by the rate of economic growth. The 1994 stabilization program eliminated both practices. In 1997, collective wage agreements stimulated that the wage level set on January 1st would be fixed for the first six months of the year after which wages were to be adjusted monthly for CPI inflation in the preceding month (the so called monthly echelle mobile). This practice of monthly backward indexation of wages continued in 1998 for the public sector workers. In the private sector, for workers subject to collective agreements[4], wages are usually adjusted at six-monthly intervals, and the wage contracts often specifically stipulate that wage increased will be based on CPI inflation during the previous 6 months. Civil servants, including employees of both the central government and the local authorities, may not engage in collective bargaining and their wage increase in set by the government, usually two or three times a year, though the magnitude of adjustments are not necessarily linked to past inflation.

Transfer Income

36. Social security benefits are formally indexed to civil servants' salaries. Table 12 shows the developments in civil servants salaries since 1981, and Chart 11 shows the real value of social security benefits per recipient since 1993. Since civil servants' salaries were still lower in real value in 1997 than in 1993, the real value of social security benefits were also lower in real value in 1997 than in 1993. The sharp drop in the real value of these benefits in 1994 was likely because of the inflation shock rather than productivity losses, since the magnitude of the fall in the real value of civil servants' salaries was about the same as that of the private sector gross wages, and the latter was largely due to the inflation shock rather the productivity losses, as we argued earlier.

[4] In January 1998, the trade union membership ratio with respect to the total number of registered workers was 67%. On the other hand, there is no important unionization in the small and medium industrial enterprises in the private sector.

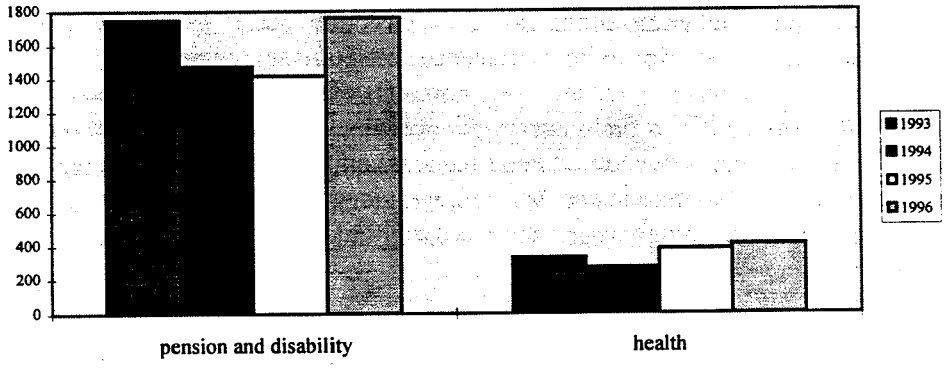
Developments in Civil Servants' Salaries

	Nominal Increase (%)	Real Increase (%)
1981	42.8	8.3
1982	37.9	8.1
1983	26.5	-3.8
1984	33.0	-10.4
1985	44.1	-0.6
1986	36.8	1.6
1987	44.3	3.9
1988	59.9	-8.8
1989	107.4	22.3
1990	84.4	15.0
1991	77.9	7.2
1992	93.5	13.7
1993	69.6	2.1
1994	61.0	-22.0
1995	84.4	-4.7
1996	94.0	7.6
1997	116.4	16.5

Note: Real increases are nominal increases deflated by CPI.

Social Security Benefits Per Recipient

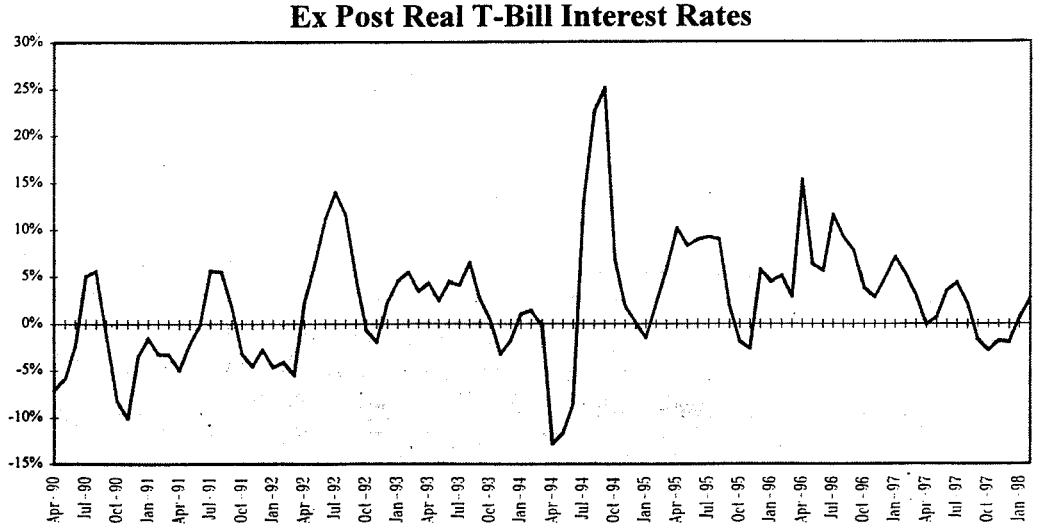
(TL thousands, in 1993 constant prices)



Interest Income

37. Chart 12 shows the annualized ex post real T-bill interest rates in the 1990s[5]. This chart yields two observations: firstly, real interest rates are highly volatile in Turkey, and secondly, the level of real interest rates has been edging up in the 1990s.

[5] The rates are three-month T-bill yields, or if not available, yields of bills with the highest auction volume, and with the closest maturity to three months. The rates are corrected for a 13.2% withholding tax initiated in October 1996, and 6.6% from January 1998. The real rate is calculated as the quarterly nominal rate deflated by the cumulative inflation rates in the three-month period ahead.



38. The real value of interest income depends on the average interest rate that applied to the debt stock, which may be quite different from the marginal interest rates that we observe from the government securities market, as shown above in Chart 12, or rates that published by banks which they offer to their customers. The longer the maturity structure of the debt stock, the more likely that average interest rates would be different from marginal interest rates. Table 13 shows the real value of interest payments on domestic marketable government debt. The real interest is calculated as the difference between nominal interest bill as reported in the budget realization and inflation erosion of the debt stock.

Real Interest on Domestic Government Debt
(Excluding Non-Cash Debt Stock)

	1990	1991	1992	1993	1994	1995	1996	1997
Domestic Interest payments/GNP	2.4%	2.7%	2.8%	4.6%	6.0%	6.1%	8.8%	6.7%
Domestic Debt Stock [1](eop)/GNP	6.1%	6.8%	7.8%	7.1%	9.1%	9.3%	12.8%	16.0%
Domestic Debt Stock[1] (p.a.)/GNP	4.4%	4.3%	4.4%	6.8%	5.2%	7.9%	9.9%	11.1%
Inflation - CPI (eop)	60.4%	71.1%	66.0%	71.1%	120.3%	76.0%	79.8%	99.1%
Inflation - CPI (p.a.)	60.3%	65.9%	70.1%	66.1%	105.3%	89.0%	80.4%	85.7%
Inflation Erosion /GNP	2.0%	2.3%	2.2%	3.6%	3.7%	4.3%	5.6%	7.5%
Real Interest /GNP	0.4%	0.4%	0.6%	1.0%	2.3%	1.8%	3.2%	-0.9%
Implied Real Interest Rate	8.4%	9.3%	13.0%	15.2%	43.6%	22.3%	32.7%	-7.9%

Notes: 1 Total cash sales of govt. bonds and Treasury bills, excluding non-cash sales of govt. bonds and Treasury bills, Central Bank advances, and consolidated debts.

** Inflation erosion is the sum of monthly monetary correction, calculated as $P_t(1+P_t)$ times D_t, where P_t is the monthly inflation rate, and Dt is the end of month cash debt stock.

39. As can be seen from the table, the real value of interest payments as well as real interest rate were increasing up to 1996. The average real interest rate increased sharply in 1994 when the large inflation shock occurred. In 1994, real GDP declined by 6 percent, credit to private sector declined by 25% in real terms, lira liquidity (M2 plus repos) declined by 11%, and public sector borrowing requirement declined from 15% to 10% in 1994. All these indicators point to that the inflation shock, and its associated volatility, were the major factor for the sharp rise in

real interest rate in 1994. The negative effective real interest rate in 1997 was largely a result of the effort of lengthening the maturity structure of domestic borrowing and improper accrual of interest payments in the budget (interest payments due on bills maturing in 1998 will be reflected in 1998 budget realization rather than 1997 budget realization).

E. Conclusions

40. Our analysis in this study supports the proposition that it is unanticipated inflation shocks that have negative impact on income distribution and hurt the poor. On the expenditure side, when inflation turned out to be much higher than expected, food prices would be rising the fastest among all goods and services, and the poorest were hit the hardest because they had the largest expenditure on food items in relative terms.

41. On the income side, when inflation turned out to be much higher than expected, the richest quintile of households were much less affected because they were relying much less heavily than the rest of the population on wages and salaries. Wages, salaries and transfers in Turkey have been essentially backward indexed, and their real value was negatively affected by unanticipated inflation. The relationship between the real value of interest income and inflation was less clear cut, and it is difficult to conclude whether the richest quintile of households have benefited or been hurt by inflation shocks as a result of the fact that interest income was an important source of their total income.

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