6 Labor Market Flexibility in Turkey
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One of the main determinants of the macroeconomic performance of any country is the structure of the labor market. In particular the degree of "flexibility" of the labor market is one of the key determinants of the evolution of wage rates, employment, unemployment and hence competitiveness of the country. After considering the main characteristics of the Turkish labor market in Section 1, Section 2 studies labor market flexibility and Section 3 the labor market rules and regulations determined by the government. Section 4 determines the size of the formal and informal sectors. Productivity, real wages, and unit labor costs in manufacturing are analysed in Section 5. The chapter concludes with a short assessment of labor market flexibility in Section 6.

1. Labor Market

Since demographic indicators have great importance for labor supply a brief review of these indicators is presented. The population of Turkey in 2000 was 65.3 million. The annual population growth rate, which was 2.52 percent during the period 1965–1970, declined to 1.62 percent during 1995–2000. About 63 percent of the population was in the 15–64 year age group. Turkey has a very young population with a median age of 22.2 years. The dependency ratio, defined as the number of people in the age group 0-14 and 65+ to every 100 persons in the age group 15–64 was 64.2 percent in 1990. Sharp decreases in crude birth and death rates and increase in the life expectancy at birth are observed. By 1995–2000 the birth rate, death rate, and life expectancy at birth were 2.14 percent, 0.65 percent and 68.55 years respectively.

Although population growth is expected to decline over time, annual additions to the population in the near future will still be very significant, at an average of one million persons per year. What this implies is that over time, Turkey must continuously create new jobs, implement basic infrastructural investments, and provide education and health services to the growing population.

Over the past decade Turkey has had a very high urbanization rate. The urbanization rate, defined as the proportion of the population living in places with 10,000 or more inhabitants, increased from 32.4 percent in 1970 to 70.6 percent in 2000. Internal migration,which dominates population dynamics of the country, is caused by many factors including regional income differences.

Table 6.1: Labor Market Indicators

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Civilian population ('000)	53,284	54,045	55,294	56,433	57,519	58,625	59,632	60,641	61,672	62,536	63,636	64,409
Population aged 12 and over	37,223	38,026	39,296	40,433	41,532	42,672	43,734	44,811	45,871	46,880	47,980	48,839
Labor force ('000)	20,310	20,902	21,046	21,438	21,504	21,469	22,158	22,673	22,919	22,448	23,048	23,779
Participation ratio (%)	54.56	54.97	53.56	53.02	51.78	50.31	50.66	50.60	49.96	47.88	48.04	48.69
Civilian employment ('000)	18,541	19,048	19,323	19,736	19,769	19,804	20,357	21,120	21,544	21,057	21,594	22,051
Unemployment ('000)	1,769	1,854	1,723	1,702	1,735	1,665	1,801	1,553	1,375	1,391	1,454	1,728
Unemployment rate (%)	9.5	9.7	8.9	8.6	8.8	8.4	8.8	7.4	6.4	6.6	6.7	7.8
Civilian employment as share of total												
Agriculture	47.44	48.34	47.78	48.42	44.37	45.44	45.72	47.60	45.75	42.33	42.98	45.78
Industry	15.88	15.80	15.56	15.71	16.83	15.72	16.26	15.15	15.79	17.41	16.72	15.10
Mining	1.24	0.99	1.02	0.94	0.90	0.72	0.86	0.71	0.81	0.76	0.72	0.61
Manufacturing	14.28	14.46	14.19	14.45	15.61	14.47	14.90	13.93	14.57	15.87	15.47	14.14
Energy	0.36	0.35	0.35	0.32	0.33	0.53	0.50	0.52	0.42	0.54	0.53	0.35
Services	36.90	35.87	36.67	35.88	38.81	38.85	38.02	37.19	38.43	40.26	40.30	39.12
Construction	5.53	5.51	5.20	5.28	5.45	6.02	5.69	5.62	5.92	6.06	5.95	5.41
Trade	11.22	11.01	11.37	11.25	12.33	12.21	12.19	12.27	12.42	4.21	4.43	3.91
Transportation	4.22	4.37	4.23	4.09	4.40	4.66	4.24	3.99	4.15	13.50	13.38	13.35
Financial services	2.31	2.32	2.16	2.18	2.42	2.24	2.33	2.31	2.10	2.40	2.37	2.36
Other services	13.61	12.66	13.70	13.08	14.21	13.71	13.57	13.14	13.70	14.09	14.16	14.09

Note: Data refer to the average value of April and October Household Labor Force Survey results of each year.
Source: State Institute of Statistics (1997) and Haber Bulteni, (1999).

It is expected that with the completion of the South-Eastern Anatolian Project a major factor causing migration will be eliminated. In previous decades labor-supply trends were influenced by migration abroad. It has been emphasized that income differences between Turkey and EU countries were the major factors causing external migration. The flow of Turkish workers to Europe in the 1960s and 1970s came to an abrupt halt after the recession in Europe in the mid 1970's. In 1999, the number of workers and their dependents abroad amounted to 3.57 million, 1.18 million of which were workers.

One of the positive trends that has accompanied Turkey's demographic transition is the increase in the working age population. Turkey's population of aged 12 and over has increased from 37.2 million in 1988 to 48.8 million in 1999. Simultaneously, the labor force participation rate declined from 54.6 in 1988 to 48.7 percent in 1999. The decline in the participation rate is the result of growing educational involvement and change in the composition of labor force away from agriculture towards non-agricultural activities. By 1999 the labor force stands as shown in Table 6.1 at 23.8 million. The amount of employment generated by the economy has increased from 18.5 million in 1988 to 22 million people in 1999. By 1999 (1988) 45.8 (47.4) percent of the labor force was employed in agriculture, 14.1 (14.3) percent in manufacturing, 39.1 (36.9) percent in services and the unemployment rate was about 7.8 (9.5) percent.

In Turkey, agriculture has economy-wide importance. During 1998 it accounted for about 13.5 percent of GDP. The share has been falling over time, but compared to other countries the share is still relatively high. Table 6.2 reveals that value added per agricultural worker in Turkish agriculture amounts on average to only 23 percent of the value added per worker in manufacturing sector. Table 6.2 further reveals that employment (value added) in agriculture has increased from 8.96 million (12.64 billion TL) in 1980 to 10.1 million (15.4 billion TL) in 1999, that employment (value added) in agriculture on average has increased at an annual rate of 0.48 (1.27) percent, and that labor productivity in agriculture has increased by 0.8 percent. On the other hand, during 1998, industry accounted for 28 percent and services for 58.5 percent of GDP. As employment in industry (services) increased from 2.4 (5.2) million in 1980 to 3.3 (8.6) million in 1999, industrial value added (value added in services) increased from 11.2 (26.5) billion in 1980 to 31.8 (63) billion in 1999. As a result, labor productivity in industry (services) has increased at an annual rate of 3.6 (2.03) percent.

Table 6.2: Value Added, Employment and Productivity

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Value Added (Billion TL, 1987 Prices)																				
Agriculture	12,636	12,398	12,786	12,667	12,727	12,669	13,255	13,314	14,356	13,272	14,177	14,049	14,651	14,463	14,358	14,640	15,284	14,927	16,176	15,426
Industry	11,197	12,224	12,821	13,628	14,975	15,909	17,667	19,276	19,618	20,529	22,302	22,909	24,268	26,260	24,775	27,766	29,743	32,835	33,494	31,814
Mining	1,031	1,108	1,112	1,089	1,127	1,258	1,439	1,475	1,407	1,590	1,550	1,620	1,624	1,521	1,642	1,529	1,565	1,639	1,792	1,662
Manufacturing	9,284	10,161	10,813	11,620	12,695	13,418	14,827	16,319	16,575	17,076	18,729	19,175	20,281	22,166	20,473	23,321	24,980	27,839	28,166	26,569
Electricity	882	955	896	920	1,154	1,232	1,401	1,482	1,636	1,863	2,023	2,114	2,363	2,573	2,660	2,916	3,199	3,358	3,536	3,583
Services	26,463	28,116	29,011	31,038	33,478	35,198	37,326	42,132	42,332	42,698	47,100	47,395	50,481	55,868	52,188	55,482	59,717	64,869	66,443	63,047
Construction	3,097	3,161	2,866	3,365	3,761	4,273	4,745	5,452	5,159	5,472	5,411	5,473	5,814	6,272	6,144	5,857	6,200	6,511	6,560	5,730
Trade	8,279	9,000	9,617	10,330	11,278	11,904	12,476	14,850	15,376	15,017	16,868	16,748	17,902	19,975	18,445	20,587	22,413	25,024	25,365	23,638
Transportation	5,792	6,370	6,817	7,133	7,758	7,652	7,856	8,660	8,761	9,045	10,123	10,085	10,899	12,081	11,835	12,511	13,458	14,485	15,198	14,586
Financing	1,910	1,935	2,008	2,047	2,070	2,120	2,207	2,288	2,389	2,447	2,496	2,515	2,463	2,453	2,417	2,424	2,476	2,573	2,751	2,898
Community Service	7,386	7,649	7,703	8,164	8,611	9,250	10,043	10,882	10,648	10,717	12,200	12,574	13,403	15,087	13,346	14,102	15,170	16,275	16,568	16,194
TOTAL	50,296	52,739	54,618	57,333	61,181	63,776	68,248	74,722	76,306	76,498	83,578	84,353	89,401	96,590	91,321	97,888	104,745	112,631	116,114	110,286
Employment ('000)																				
Agriculture	8,960	8,953	8,924	8,895	8,866	8,837	8,813	8,786	8,796	9,208	9,233	9,557	8,772	8,999	9,307	10,053	9,857	8,913	9,282	10,096
Industry	2,391	2,401	2,476	2,552	2,612	2,723	2,771	2,847	2,944	3,010	3,007	3,100	3,328	3,113	3,310	3,200	3,401	3,667	3,610	3,329
Mining	197	192	196	196	200	224	230	230	229	188	198	185	178	143	175	149	174	161	155	134
Manufacturing	2,150	2,163	2,229	2,304	2,356	2,440	2,477	2,552	2,648	2,755	2,741	2,851	3,085	2,866	3,034	2,941	3,139	3,342	3,341	3,117
Energy	44	46	51	52	56	59	64	65	67	67	68	64	65	104	101	109	90	115	115	78
Services	5,172	5,310	5,437	5,557	5,782	5,987	6,281	6,635	6,841	6,832	7,086	7,081	7,672	7,694	7,740	7,854	8,279	8,478	8,702	8,626
Construction	913	914	918	921	952	979	1,034	1,097	1,026	1,049	1,005	1,042	1,077	1,193	1,158	1,188	1,275	1,277	1,285	1,192
Trade	1,465	1,531	1,575	1,624	1,703	1,780	1,899	2,044	2,080	2,098	2,197	2,220	2,438	2,419	2,482	2,591	2,676	886	958	863
Transportation	626	640	649	661	682	705	738	772	782	833	818	807	869	922	864	842	894	2,843	2,890	2,944
Financial services	350	355	358	360	371	380	388	414	429	441	418	431	478	444	474	487	453	505	512	520
Other services	1,818	1,870	1,937	1,991	2,074	2,143	2,222	2,308	2,524	2,411	2,648	2,581	2,810	2,716	2,762	2,775	2,951	2,968	3,059	3,107
TOTAL	16,523	16,664	16,837	17,004	17,260	17,547	17,865	18,268	18,541	19,048	19,323	19,736	19,769	19,804	20,357	21,120	21,544	21,057	21,594	22,051

Productivity (million TL/worker)

Agriculture	1.4103	1.3848	1.4328	1.4240	1.4355	1.4337	1.5040	1.5154	1.6322	1.4414	1.5354	1.4700	1.6702	1.6072	1.5427	1.4564	1.5507	1.6748	1.7428	1.5279
Industry	4.6829	5.0912	5.1779	5.3402	5.7333	5.8424	6.3758	6.7705	6.6638	6.8201	7.4167	7.3899	7.2922	8.4355	7.4849	8.6764	8.7446	8.9555	9.2781	9.5566
Mining	5.2311	5.7720	5.6729	5.5538	5.6359	5.6173	6.2585	6.4144	6.1447	8.4562	7.8278	8.7544	9.1224	10.6341	9.3827	10.2616	9.0188	10.2114	11.5990	12.4013
Manufacturing	4.3183	4.6975	4.8511	5.0433	5.3882	5.4992	5.9859	6.3944	6.2596	6.1982	6.8329	6.7257	6.5741	7.7343	6.7477	7.9285	7.9590	8.3312	8.4303	8.5238
Electricity	20.0426	20.7593	17.5607	17.6936	20.6022	20.8890	21.8906	22.7967	24.4133	27.8029	29.7523	33.0349	36.3598	24.7376	26.3409	26.7152	35.5436	29.3243	30.8841	45.9423
Services	5.1166	5.2950	5.3359	5.5853	5.7901	5.8790	5.9427	6.3500	6.1879	6.2496	6.6468	6.6933	6.5799	7.2612	6.7426	7.0639	7.2129	7.6519	7.6354	7.3089
Construction	3.3920	3.4587	3.1219	3.6532	3.9507	4.3644	4.5885	4.9696	5.0283	5.2162	5.3845	5.2521	5.3987	5.2571	5.3060	4.9316	4.8630	5.1007	5.1049	4.8069
Trade	5.6512	5.8786	6.1058	6.3606	6.6222	6.6875	6.5695	7.2651	7.3921	7.1580	7.6779	7.5441	7.3430	8.2574	7.4316	7.9454	8.3771	28.2602	26.4911	27.3905
Transportation	9.2516	9.9538	10.5040	10.7905	11.3755	10.8533	10.6444	11.2181	11.2032	10.8580	12.3757	12.4970	12.5419	13.1026	13.6981	14.8627	15.0549	5.0950	5.2598	4.9546
Financing	5.4562	5.4517	5.6093	5.6862	5.5797	5.5778	5.6880	5.5265	5.5681	5.5486	5.9717	5.8361	5.1529	5.5256	5.0988	4.9778	5.4665	5.0949	5.3792	5.5740
Community service	4.0628	4.0904	3.9770	4.1005	4.1521	4.3164	4.5199	4.7150	4.2185	4.4449	4.6074	4.8719	4.7696	5.5549	4.8320	5.0829	5.1406	5.4845	5.4172	5.2121
TOTAL	**3.0440**	**3.1648**	**3.2439**	**3.3717**	**3.5447**	**3.6346**	**3.8202**	**4.0903**	**4.1155**	**4.0161**	**4.3253**	**4.2741**	**4.5223**	**4.8773**	**4.4860**	**4.6349**	**4.8618**	**5.3489**	**5.3771**	**5.0014**

Source: Statistical Yearbook of Turkey, State Institute of Statistics various issues.

Note: Productivity data are obtained by dividing value added data to employment figures.

2. Labor Market Flexibility

Flexibility in the labor market refers to the ease with which employment and wages adjust, usually downward to disequilibria, in the labor market. Economists distinguish between numerical and financial flexibility, where numerical flexibility refers to the adjustment in employment, hours of work, and financial flexibility to the pay adjustment in response to changes in product markets and profitability.

The flexibility of labor markets is a major determinant of the economy's ability to adjust to external shocks without creating unemployment in the economy. As shown in Togan (2000), the Turkish labor market is extremely flexible. The reason behind the flexibility lies in the fact that the labor market is not homogeneous. It has different wage-setting mechanisms in formal and informal sectors. The informal sector is largely free from most type of labor regulation and does not pay most of the taxes and related charges. Activities in this sector rely mostly on provision of labor services without formal employment contracts. Job insecurity is pervasive and workers get very few benefits from their employers. Since wages in the informal sector are determined by demand and supply conditions, the informal sector is flexible. Labor regulations are observed by the formal sector which pays all taxes and related charges such as social security contributions and payments to various funds. Thus, this sector is not as flexible as the informal sector.

Although the informal economy is universal it has a relatively larger share in Turkey and this share has been increasing. The main reason for the rise of informal economy in Turkey is the fact that the government imposes excessive taxes and regulations, but does not enforce compliance. In Turkey, economic units choose to be partially or completely informal by weighing the costs and benefits a legal status entails. In this sense, the choice to be informal is a rational one.

Before studying the labor market flexibility in Turkey in more detail let us turn to a theoretical explanation of the rationality of being informal. For this purpose we follow the approach of Squire and Suthiwart-Narueput (1997) and consider an economy with n firms. Let $F(K_i, L_i)$ be the production function of the i-th firm where K_i denotes capital and L_i labor employed by the firm, and F is assumed to be twice differentiable, increasing, and strictly concave. Let θ_i represent the talent of enterpreneur i, where θ_i is drawn from a cumulative distribution $G(\theta_i)$. Considering the enterprenerial technology to be separate from production technology, so that θ_i behaves as a shift parameter to the production function $F(K_i, L_i)$, we represent the output of firm i managed by an enterpreneur with talent θ_i by $\theta_i F(K_i, L_i)$.

Let p be the price of product, w the wage rate and r the rental rate of capital. The profit maximizing firm chooses the amounts of labor and capital satisfying the condition:

$$\Pi i(\theta_i, w, r) = \text{maks} \ [p \ \theta_i \ F(K_i, L_i) - wL_i - rK_i]$$
$$K_i, L_i$$

The firm is supposed to face the wage rate in the informal economy w, and the wage rate in the formal economy w*, where w* is assumed to be larger than w. Let β be the probability of being inspected by regulators and let Γ be the fine the firm has to pay if on inspection it is found to employ labor at the wage rate w.

Let $\Pi_i(\theta_i, w^*, r)$ be the expected profit of the firm when the firm complies with the regulations, and let:

$$(1 - \beta) \ \Pi_i(\theta_i, w, r) + \beta \ \{\Pi_i(\theta_i, w^*, r) - \Gamma\}$$

be the expected profit of a firm that does not comply with the regulations. Squire and Suthiwart-Narueput (1997) assume that β is an increasing function of firm size and that firm size is an increasing function of the productivity parameter θ_i. Then β is an increasing function of θ_i shown by the relation $\beta(\theta_i)$. Similarly, the authors assume that fine Γ is an increasing function of the productivity parameter θ_i shown by the relation $\Gamma(\theta_i)$.

Since the profit when the firm does not comply with the regulations is $\Pi_i(\theta_i, w, r)$, and profit when the firm complies with the regulations is $\Pi_i(\theta_i, w^*, r)$, the difference between the profits can be taken as the cost of complying with the regulations. Hence we obtain from the above relations:

$$\Delta\Pi_i = \Pi_i(\theta_i, w, r) - \Pi_i(\theta_i, w^*, r) > \frac{\beta(\theta_i)\Gamma(\theta_i)}{(1-\beta(\theta_i))} \qquad (1)$$

The left side of equation (1) shows the cost of complying and the right side of equation (1) cost of non-complying with the regulations. The authors using the envelope theorem show that the left side, the cost of complying, is an increasing function of the productivity parameter θ_i as shown in Figure 6.1. Similarly the right hand side, the cost of non-complying, is an increasing function of the productivity parameter θ_i as shown again in Figure 6.1.

Suppose that the cost of non-complying intersects the cost of complying from below. Let θ_i^* be the firm size for which the cost of complying equals cost of non-complying. Then for $\theta_i < \theta_i^*$ the cost of complying exceeds cost of non-complying, and for $\theta_i > \theta_i^*$ the cost non-complying exceeds cost of complying. Thus the firm will comply for $\theta_i > \theta_i^*$, and will not comply with regulations for $\theta_i < \theta_i^*$. Furthermore, Squire and Suthiwart-Narueput (1997) show that an increase in either β or Γ shifts cost of the non-compliance curve to the left, causing a decrease in θ_i^*. Finally, an increase in w* leads to an outward shift of the cost of complying to the regulations. As a result the increase in w* leads to an increase in θ_i^*. From these considerations it follows that:

- It is advantageous for large firms to comply with regulations, and it is advantageous for small firms not to comply with regulations.
- A relative increase in w*, the wage rate in the formal economy relative to the wage rate in the informal economy, causes a larger number of firms not to comply to the regulations.
- An increase in β, the probability of getting inspected by the regulators, causes a larger number of firms to comply to the regulations.
- An increase in Γ, the fine the firm has to pay if found to employ labor at the wage rate w, causes a larger number of firms to comply to the regulations.

Figure 6.1: Cost of Complying and Non-complying
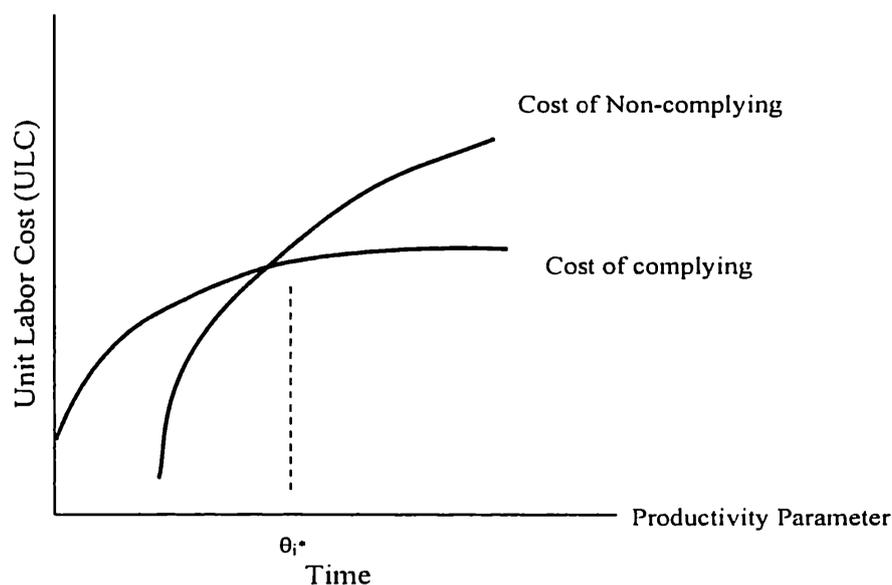
Thus, according to Squire and Suthiwart-Narueput (1997), the main factors determining the size of the informal economy can be summarized under four headings: (i) size of the firm, (ii) the ratio of the wage rate in the formal economy to the wage rate in the informal economy, (iii) the probability of getting inspected by the regulators, (iv) the fine the firm has to pay if it is found to employ labor at the informal economy's wage rate. Employment in the informal sector increases as the size of firms decreases in the economy and/or as the ratio of the wage rate in the formal economy relative to the wage rate in the informal economy increases. On the other hand, as the regulatory authority increases the inspection resources and/or increases the efficiency of inspection, and/or the fine the firm has to pay if found guilty, the size of the informal sector decreases.

Let us now turn briefly to consideration of the macroeconomic effects of regulation. Consider an economy composed of formal and informal labor markets. Figure 6.2a shows the demand and supply schedules in the formal labor market, where the vertical axis measures the real wage rate and the

214

horizontal axis the employment in the formal labor market. Suppose that for every TL of wages, the firm must pay in addition, a fraction f in taxes and fringe benefits. Then the cost to the firm of an additional unit of labor is $(1+f)w^*$. Let MPL be the downward sloping marginal product of labor schedule showing how much extra output one can get for a marginal one unit increase in labor input. The optimality condition for a profit maximizing firm becomes p MPL = $(1+f)$ w^* where p stands for the price of output. Writing the marginal condition as $[MPL/(1+f)] = (w^*/p)$ we note that an increase in the tax rate 'f' leads to a downward (leftward) shift of the labor demand schedule.

Let S graph the quantity of labor supplied at an after tax real wage of $(1-t)$ (w^*/p) where t denotes the tax rate to be paid by the workers. Given the tax rate 't' we assume that the labor supply is perfectly elastic at the after-tax real wage rate prevailing in the formal labor market. We note that an increase in the tax rate 't' induces an upward shift in the labor supply schedule.

Given the values of the parameters (f, t), the employment in the formal labor market is determined by the intersection of demand and supply schedules in Figure 6.2a. From the total labor supply we subtract the employment in the formal market and obtain the labor supply in the informal labor market. Given the demand for informal labor shown in Figure 6.2b, the intersection of the demand and supply schedules in the informal market determines the wage rate and employment level in the informal market.

Consider now an increase in 'f' due for example higher social security contributions or higher taxes in the formal labor market. The increase in 'f' shifts the demand curve for labor in the formal market to the left. As a result, employment in the formal market decreases. This leads to an increase in the supply of labor in the informal labor market causing a decrease in the equilibrium wage rate of the informal labor. On the other hand, an increase in the tax rate 't' causes an upward shift of the labor supply schedule in the formal market. This causes a decrease in employment in the formal sector, a rightward shift of the supply curve in the informal market, and hence a decrease in the wage rate in the informal sector.

The above considerations reveal that the tax parameters 'f' and 't' are of importance for the analysis of labor market flexibility. An increase in 'f' or 't' leads to a decrease in employment in the formal sector, and to an increase in the employment level and a decrease in wage rate in the informal sector. Hence equilibrium in the labor market is attained by adjustments in wages and employment of the flexible informal labor market.

Starting from a situation where the wage in the formal sector, w^*, is substantially higher than the wage in the informal sector, w, we note that labor market flexibility in the economy can be increased by decreasing the values of the parameters 'f' and 't' so that the wedge between w and w^* is reduced.

Figure 6.2a: Labor Market Equilibrium

Real wage in
the regulated

Supply

Demand

Employment in regulated sector
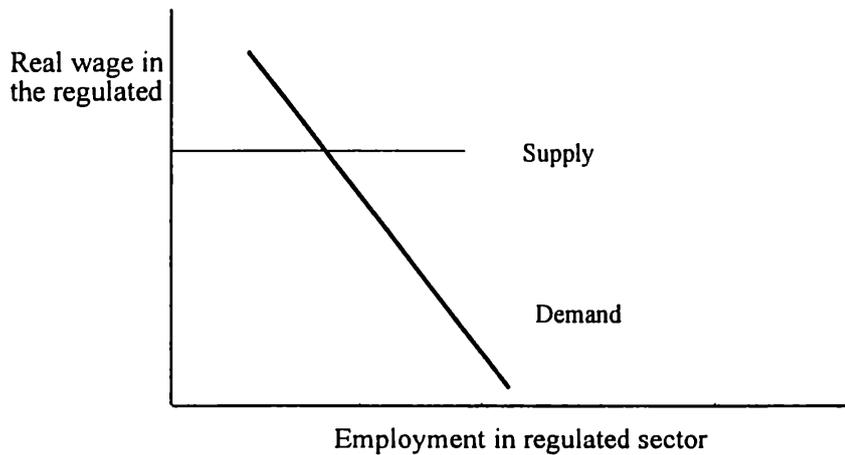
Figure 6.2b: Labor Market Equilibrium

Real Wage in
the Regulated
sector

Supply

Demand

Employment in the unregulated sector
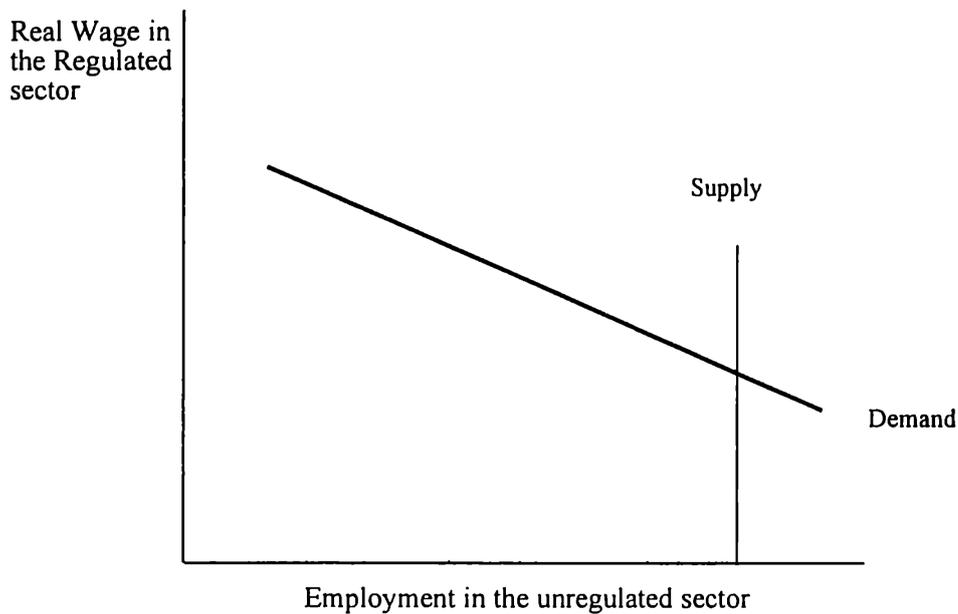
Alternatively, labor market flexibility can also be increased by increasing the values of 'f' and 't', but by not enforcing the rules on all economic units in the economy. But lax enforcement of the laws may create different problems for the society. In this case, the economic units may start to take it for granted that they can avoid the rule of law.

3. Labor Market Rules and Regulations in Turkey

The labor market rules and regulations summarized below concern the formal sector and they are analyzed under the headings of system of taxation, minimum wages, social safety net and social security systems, and labor market regulations.

System of Taxation. The legal framework governing the taxation of personal income is provided by the Income Tax Code (Statute 193). Wage and salary income is defined very broadly to include the cash value of virtually anything (including all benefits) that an employer provides to his/her employees as a result of their employment. Employees take a personal exemption. Premiums paid for personal insurance purchased from companies in Turkey are deductible provided that the amount deducted does not exceed the amount that the employee pays as his share of social security. Employer-provided severance pay and marriage allowances are also tax free, subject to certain conditions. Personal income tax rates vary between 15 and 40 percent depending on the size of taxable income.

The Social Security Law requires that employers and employees contribute by premiums to the financing of social security institutions. Since services provided by the Social Insurance Institution do not in general meet the demand, employers have been forced to insure employees through private retirement and health insurance companies. This has further raised the premiums paid by the employers.

According to Law No. 3289 on the 'Establishment of the General Directorate for Youth and Sports' all firms employing more than 500 workers are required to have sporting facilities. Firms not fulfilling this condition are fined, and the fine amounts to one third of each worker's gross salary multiplied by the trial number of employees. The fine has to be deposited to the Turkish Sport Incentive Fund.

Minimum Wages. Article 33 of Labor Law No. 1475 specifies that minimum wages be determined at least every two years by a committee comprising representatives from trade unions, employers, and the government. In practice, minimum wages are determined annually with adjustments every six months. Previously separate minimum wage rates were determined for different regions and sectors. Since January 1, 1989 the same minimum wage has been applied to all sectors and regions, with lower wages only for workers younger than sixteen years old. The statutory minimum wage is binding across the economy, work status, or contractual relationship with the employer. Unfortunately, there are no reliable data on the coverage of minimum wage. It is claimed that in a number of small establishments a large number of workers who are registered as minimum-wage earners receive substantially higher wages. The workers are registered as minimum-wage earners in order to minimize the tax and social security contributions. Finally, it should be emphasized that lax enforcement of the law provides incentives to evade the law.

Social safety Nets and Social Security System. In Turkey there has been no unemployment insurance until very recently. On September 8, 1999 the Turkish government enacted new social security reform bill which introduced unemployment insurance. It became compulsory for all members of the social

217

security institutions from June 1, 2000. With the introduction of unemployment insurance, payments to forced saving funds amounting to 2 percent of wages by the employee and 3 percent of wages by the employer were eliminated. Contributions to the unemployment insurance are paid as 2 percent of wages by the employee, 3 percent by the employers and 2 percent by the government. Members who have been unemployed are eligible to receive unemployment benefits provided they have paid their contributions for 600 days over the last three years and for at least 120 days uninterruptedly prior to being unemployed. The unemployment benefit, amounting to 50 percent of the last four months, average wage, will be paid over 180 days as long as the member has paid contributions for 600 days, for 240 days with 900 days of contributions or 300 days with 1080 days of contribution.

The social insurance system in Turkey is under the responsibility of three independent agencies. These agencies are the "Retirement Fund" (RF) whose members are public servants; the "Social Insurance Institution" (SII) responsible for workers in private and public sectors; and the "Self-Employment Institution" (SEI), which meets the social security needs of self-employed individuals. In addition to pensions, all three funds provide health, disability, and death benefits. Each fund functions on a pay-as-you-earn basis.

In the following we concentrate on the Social Insurance Institution (SII), as similar considerations apply for the Self Employment Institution (SEI). As of 1998 the SII had 5.6 million insured contributors in formal employment with an additional 0.9 million voluntary members and 0.2 million contributors from agriculture. There were 2.9 million pensioners and 25.2 million dependents. The dependency ratio, defined as the ratio of the sum of pensioners and amounted to 4.19, dependents for every contributor. Contributions were paid at 33.5 percent of wages, 14 percentage points being paid directly by the employee with the balance paid by the employer. The wage on which contributions were based was capped at 1.8 times the minimum pensionable wage in order to cap the consequent pension benefits. Since average private sector wages were five times the minimum wage, the effective contribution rate for those that earned the average wage was not 33.5 percent but 12 percent of actual wages.

One of the problematic features of the Turkish social security system was the absence of a minimum retirement age. Until 1992, the minimum retirement age in Turkey was 60 years for men and 55 for women, but the minimum retirement age limit was removed in 1992. Henceforth members who have been enrolled in the pension system for at least 25/20 years for men/women were eligible to receive full pension benefits upon the completion of a relatively short minimum contribution period of only 5000/3600 days by men/women. As a result of this legislation, women at the age of 38 and men at the age of 43 had the chance to retire. These pensioners drew benefits for a

long time, as life expectancy of women at the age of 38 is calculated as 38.5 more years and that of men at the age of 43 as 30.8 more years.

In the SII, the reference period for calculating benefits was the last five years of contributions for those paying on the lower pension scale and the last ten years for contributors on the upper scale. Pensioners retiring after 14 years, which was the statutory contribution period for full pension, received a replacement ratio of 60 percent of their average salary during the reference period, and each additional contribution year raised benefits by 1.5 percent of salary. The maximum replacement ratio amounted to 85 percent. The low rate of increase in the replacement ratio after 14 years of contributions relative to the cost of continuing to pay into the system provided a strong incentive for participants to declare retirement as soon as they satisfied the minimum contribution period. Furthermore the system had the inherent incentive for employers and employees to under-declare incomes of the workers until the final 5–10 contribution years before the worker became eligible for a pension. There were also major compliance problems due to administrative deficiencies. First, the SII faced problems of enrolling contributors. Second, even among those enrolled, there were problems in collecting contributions due. The compliance rate (cash receipt/accrued contribution revenues) was estimated at 84.5 percent of the declared pensionable wage bill.

The combination of early retirement, generous benefit formulas, and poor collection and enforcement practices have combined to create serious financial problems in each of the social security funds SII, RF, and SEI. The social security deficit, amounting to 2.7 percent of GNP in 1998, increased to 3.3 percent in 1999. This deterioration was expressed in a decline in revenue and rapid rise in expenditures. It was estimated that in the absence of serious reform, the deterioration in the social security finances would continue. The deficit was projected to rise to 6 percent of GNP by the year 2005.

In summary, the pension scheme has suffered from serious weaknesses. The system has become a major fiscal burden, has fostered high intergenerational inequities as younger participants have contributed to a non-sustainable system, and evasion has been encouraged by high replacement rates for short contribution periods and other administrative weaknesses.

On September 8, 1999 the Turkish government enacted the social security reform bill. This law included a number of major changes, including the introduction of a minimum retirement age; increases in the minimum contribution periods for pensions; changes in the replacement ratio, basing pensions on indexed lifetime earnings rather than earnings in the years immediately before retirement; increasing the retirement pension in line with changes in prices; and a significant increase in the ceilings on contributions.

Minimum retirement age was introduced and for new workers the retirement age was set as 60/58 for men/women. For current workers the minimum

retirement age was raised and it was set at 56/52 for men/women who still have more than 10 years before retirement. Members who have been enrolled in the pension system for at least 25 years were eligible to receive full pension benefits upon the completion of the contribution period of 7000 days. For seasonal workers, the contribution period has been set as 4500 days (12.5 years). The benefit formula for new entrants to SII provides for 3.5 percent accrual rate for each of the first 10 years, 2 percent for each of the following 15 years, and 1.5 percent accrual rate for each year thereafter. Thus the replacement rates for 10, 25, and 40 years of contributions are 35 percent, 65 percent, and 82.5 percent respectively, as a percentage of the reference wage. The new system is basing pensions on lifetime earnings. The system thus removes incentives to distort earnings. The contribution ceiling has been raised to five times the minimum wage, and annual indexation of pensions has been limited to changes in the CPI. In addition, the government has taken measures to improve administration, increase enforcement measures, and expand membership.

Finally, we note that the social security system is financed by payroll-based social security contributions. Contributions are paid at 33.5 percent of wages (20 percent for pensions, 12 percent for health care, and 1.5 percent for other benefits). Fourteen percentage points of contributions are paid directly by the employee and 19.5 percent by the employer. By law, there are lower and upper limits for earnings which form the basis of the social security contributions by the employer. The contribution rate equals 33.5 percent as long as earnings lie between the lower and upper bounds and will equal 33.5 percent of the lower (upper) bound if earnings are below (above) the lower (upper) bound.

Regulations in the Labor Market. Labor regulations can change the price of labor, its quantity, its quality, and the way labor is exchanged in the market. We consider in this section the regulations concerning hiring, trial periods, working hours, rest periods, protection of female employees, dismissals, forced employment obligations, the obligation to have a day nursery and kindergarten, and the obligation to employ medical doctors in the workplace.

Recruitment. The typical employment contract establishes a permanent and full-time relationship between employer and employee. Hiring procedures in the public sector differ widely from those in the private sector. It is widely held that political parties play a large role in the hiring procedures of the public sector. In the unionized sector, work contracts are usually of unlimited duration. In addition to the indefinite labor contract the labor law allows for temporary or fixed term contracts. Employment, which owing to its nature, does not last for more than 30 working days is deemed to be "temporary" employment and employment for a longer period is considered as "permanent" employment. This distinction is based on an objective criterion, that is, the nature of the work itself and thus of employment, rather than on any subjective will or

decision of the parties. Labor contracts for an indefinite period are much more common in Turkish labor practice. Turkish employers can in principle choose among the following employment contracts when hiring a new employee:

- Full-time permanent employment contract, which is the normal form of employment contract.
- Contract for temporary jobs which do not entail any severance payments in the case of dismissals.
- Fixed-term contracts under which there is no requirement of a minimum tenure. Work contracts over one year have to be made in writing. In case of dismissal from work after one year, workers are entitled to receive lump sum severance payment. In case of dismissals during the fixed term period, the employee has the right to sue the employer in the labor court for compensation of social rights. The decision of the court is conclusive.
- The training and apprenticeship contract for youngsters which, under Turkish law is the contract which establishes the relationship between an apprentice and his/her employer. The subject matter of the apprenticeship contract is the acquisition of a certain skill or trade by the apprentice. Being special legislation, the Act of 1977 on Apprentices, Journeymen, and Master Workmen aims to cover general provisions concerning apprentices. The Act has laid down the lower (12) and upper (18) age limits for the acquisition of the apprentice status. However, the apprenticeship contract shall continue to be valid even if the apprentice attains the age of 18 during the existence of the contract. The Act requires the employer to pay the apprentice, effective from the date on which he begins work, a certain wage, which must not be less than 30 percent of the prevailing minimum wage. Furthermore, these contracts entail substantial reductions in the social security contributions paid by the employer.

Note that part-time contracts are not covered by the labor law. The above considerations reveal that the main characteristics of fixed-term employment contracts is that they involve substantially lower firing costs than the typical contract. Furthermore, workers employed under fixed-term contracts cannot sue the employer for "unfair" dismissal.

Working Hours. The maximum number of normal working hours is set, by law, at 45 hours to be divided into 5 to 6 working days. Regarding the remuneration of overtime hours the law says that there should be an overtime premium of at least 50 percent over ordinary hours. The maximum number of overtime hours is restricted to 90 days per year per worker. According to the labor law, night work hours are not remunerated with a premium. But in general, collective bargaining includes clauses on 25 percent premium payment for night work. Holidays must be at least 12 and at most 34 days per year and paid leave no less than 30 days. The holiday period can be extended by

collective bargaining. Holidays do not include weekends and official holidays. The labor law also stipulates that daily working hours cannot exceed 9 hours and between full work spells there should be a minimum gap of 12 hours. There is little flexibility in the organization of working hours.

Dismissals. Dismissal of workers is regulated by the Labor Law. The minimum period of notice for dismissals increases with the length of service at the firm, not with age. During the period of notice, the employee can take two hours per day off per week to look for a new job. Alternatively, the employee can use the time at the end of the notice period. In addition Article 14 of the Labor Law requires that workers dismissed at the employer's initiative (except disciplinary dismissals) receive lump-sum severance payments. The severance payment corresponds to one month's salary for each completed year of service, paid at the wage level prevailing at the time of leaving, with ceilings of 30 years. Dismissed workers may sue employers in the labor courts. If the court decides in favor of the worker, that is, if the dismissal is judged as "unfair," the minimum severance payment is increased by about three times. The lump-sum severance payment will not be affected.

Forced Employment Obligations. According to Article 25 of the Labor Law, Law No. 3713 on Terrorist Activities and Law No. 4131 firms employing more than 50 workers have to employ 3 percent of the workforce from disabled people, 3 percent of the workforce from former convicts and 3 percent of the workforce from those people who have suffered from terrorist activities.

Obligation to have Day Nursery and Kindergarten and Obligation to Employ Medical Doctors at the Workplace. According to the Labor Law all firms employing more than 150 female workers must have a day nursery and kindergarten. Furthermore, all firms employing 50 or more workers must employ one or more medical doctors depending on the size of the workforce.

The regulations summarized above and imposed by the government lead to a divergence of the cost of labor to the employer from the wage rate received by the employee after taxes and related charges. The size of this difference turns out to be one of the main causes for the emergence of the informal sector in the labor market.

In Turkey, the basic wage includes payments for period worked as well as payments for period not worked such as weekends, public holidays and paid leaves. In addition to the basic wage there are other payments such as overtime payments, payments for night work, shift indemnity, and work hardness indemnity, etc. Even though these payments are determined by the Labor Act, most of the prevailing amounts are negotiated and determined in collective agreements. The sum total of all these payments make up the wages and salaries. Earnings include wages and salaries, bonuses, premiums, and various social benefits. Social benefit payments consists of payments such as child allowances, fuel, education, holiday pay, and other social allowances. In the

private sector, some of these allowances are paid since they are compulsory. However, in the public sector, there are social benefit payments agreed by collective bargaining. In these agreements payments for meals, fuel, holiday and additional pay are always determined as social benefits. By law, family and children allowances are determined using the seniority chart of the employees. By collective agreements, these allowances, particularly meals, transportation, clothing, heating, marriage, birth, death allowances, subsidy for employee under military service, rent, and nursery allowances may be determined as lump-sum amounts.

Labor cost is defined as the sum of earnings, social security contributions, severance payments, notification indemnity, employer's contribution for housing, and compulsory savings funds. There are additional costs such as expenses related with sports centers, canteens, camping facilities, apprentices, and vocational training funds. Some of these payments are also obligatory and some of them are paid under the consent of the organizations. According to the Turkish Confederation of Employer Association (TISK) the composition of labor cost during 1998 was as shown in Table 6.3. From the table it follows that the share of basic wage in total labor cost is 40 percent and the share of fringe costs, 60 percent. To obtain wages after taxes we have to subtract from total labor cost payments for social security premiums, severance pay, notification indemnity, and payments to various funds such as the defense industry encouragement fund, the incentive for social assistance and solidarity fund, the apprenticeship and vocational training fund, the housing fund, and the sports center fund that are not paid to the worker. In addition, we subtract from the remaining figure the income and related taxes and employee's social security premiums and obtain wages after taxes and related charges. The table indicates that during the year 1998 out of every 100 TL paid as labor cost by the producer, the worker received only 59 TL.

Consider next the case of a worker paid the minimum wage which during the first six months of the year 2001 was TL 139.5 million. The social security contribution by the employee, amounting to 14 percent of the minimum wage, is estimated as TL 19.593 million. On the other hand, the unemployment insurance contribution by the employee, amounting to 2 percent of the minimum wage, is estimated as TL 2.799 million. According to the Personal Income Tax Law the personal exemption entitles the worker to a total exemption of TL 21.9 million. Since in addition to the personal exemption, the social security and the unemployment insurance contributions are deductible, the tax base is estimated as TL 95.658 million. The income tax, calculated as 15 percent of the tax base, amounts to TL 14.3487 million. The stamp duty calculated as 0.6 percent of the minimum wage amounts to TL 0.8397 million. Since total deductions amount to TL 37.5804 million the amount received by employee after taxes and contributions is calculated as TL 102.3696 million.

Table 6.3: Labor Cost during 1998 (TL/Hour)

	Components (TL)	Percentages (%)
Basic wage	545,735	40.02
Payments for weekends and public holidays	106,506	7.81
Payments for leaves	39,872	2.92
Bonuses and premiums	243,392	17.85
Social payments	154,437	11.33
Meals	70,234	5.15
Fuel pay	18,626	1.37
Transportation	34,147	2.5
Holiday and additional holiday pay	9,313	0.68
Family, children and education allowances	4,656	0.34
Payments to private insurance institutions	2,328	0.17
Health services, kindergarten, sport services	1,552	0.11
Birth, death, marriage allowances	1,552	0.11
Other social payments	12,029	0.88
Earnings (1–5)	1,089,942	79.93
6 Statutory social security premiums	121,345	8.9
7 Forced saving fund	23,697	1.74
8 Apprenticeship and vocational training fund	8,217	0.6
9 Other payments by employer to the government	9,302	0.68
Payments made by employer to the state (6–9)	162,561	11.92
10 Severance pay	78,445	5.75
11 Notification indemnity	9,806	0.72
12 Work Outfit, protective materials	15,117	1.11
13 Other	7,672	0.56
Other expenditures related to employment (10-13)	111,040	8.14
TOTAL LABOR COST (1–13)	**1,363,543**	**100**
14 Payment to social security institution by the employee	79,380	5.82
15 Payment to forced saving fund by the employee	11,052	0.81
16 Income tax to be paid by the employee	189,221	13.88
17 Stamp Duty	5,232	0.38
Payments made by employee to the state (14–17)	284,885	20.89
WAGES NET OF TAXES AND OTHER CHARGES	805,057	59.04

Source: Turkish Confederation of Employer Associations (1999).

From previous considerations we know that there are lower and upper limits for earnings which form the basis for social security and unemployment insurance contributions. During the year 2001 the upper bound TL 600 million and the lower bound TL 150 million. For a worker on the minimum wage we determine the total social security contribution to be paid by the employer and employee as 33.5 percent of the TL 150 million, i.e. TL 50.25

million. To obtain the social security contribution by the employer we deduct from this amount the contribution paid by the employee, i.e. TL 19.593 million. The result is TL 30.657 million. Similarly the unemployment insurance contribution to be paid by the employer and the employee amounts to 5 percent of the TL 150 million, i.e. TL 7.5 million. To obtain the unemployment insurance contribution to be paid by the employer, we deduct from this amount the contribution paid by the employee, i.e. TL 2.799 million. The labor cost to the employer of employing a minimum wage earner is thus the minimum wage before deductions plus the social security contributions paid by the employer, plus the unemployment insurance premium paid by the employer. Thus, the labor cost to the employer amounts to TL 175.308 million.

The above considerations reveal that the employee receives TL 102.3696 million whereas the employer pays TL 175.308 million. Thus, during the year 2001 a worker on minimum wage receives only TL 58.39 out of every 100 TL paid as labor cost by the producer. Hence the size of the difference between the cost of labor to the employer and the wage received by the employee after taxes and related deductions is substantial by any standard. This kind of divergence, as mentioned above, is the main cause for the emergence of the unrecorded sector in the labor market.

Consider now the term "f" introduced above within the context of the discussion around Figure 6.2, where "f" was defined as the amount the firm has to pay in terms of taxes and fringe benefits. In terms of the components of labor cost presented in Table 6.3, this term would include cost items such as statutory social security premiums paid by the employer, payments by the employer to the forced saving and the apprenticeship and vocational training funds. On the other hand the term "t" showing the tax rate on wages to be paid by the employee would include costs such as payments by the worker to social security institutions, payments to the forced saving fund and income tax to be paid by the employee.

4. Formal and Informal Labor Markets

There are various methods to estimate the size of the informal sector in the labor market. Castells and Portes (1989) define informal employment as the sum of unpaid family workers, domestic servants, and the self-employed, minus professionals and technicians. While the ratio of informal employment in the non-agricultural sector to urban employment was 34.05 percent in 1988 according to this definition, the share has amounted to 31.04 percent in 1999. On the other hand, most of the workers in agriculture are, as shown in Table 6.4, unpaid family members and self-employed people. These people formed 94.9 percent of all workers in agriculture during 1999. It is emphasized that

wage setting of unpaid family and self-employed labor in the agricultural sector is dominated by informal arrangements. The sector faces a low tax wedge on wages and they are largely free from most types of labor regulation. Because of the absence of regulatory restrictions this type of labor market can be assumed to be part of the informal labor market. Considering the unpaid family members and self-employed people in agriculture as part of the informal sector we note that the share of informal employment, as defined by Castells and Portes (1989), in total employment amounted to 54.89 percent in 1988 and 54.71 percent in 1999.

An alternative approach to determination of the informal sector, followed by Assaad (1997), considers the coverage of workers by social security institutions. The workers are divided into two groups: those who are covered by a social security program and those who are not covered by any social security program. The covered workers are considered as part of the formal sector and uncovered workers as part of the informal sector. Here we consider the "Retirement Fund" (RF) whose members are the public servants, and "Social Insurance Institution" (SII) whose members are workers in private and public sectors, and exclude from consideration the members to the "Self Employment Institution" (SEI) which meets the social security needs of self-employed individuals. Members belonging to SEI are considered as part of the informal sector. According to this definition the share of informal employment in total employment amounted, as shown in Table 6.5, to 73.84 percent in 1989. The share decreased to 58.15 percent in 1999.

A third approach to determination of the informal sector is provided by Bulutay (1999) who considers the data provided by Household Labor Force Survey Results on "Employed persons by size of workplace and status in employment". He defines the informal sector as consisting of (i) the self employed, (ii) unpaid family workers, (iii) employers employing two or three workers, and (iv) regular and casual employees in private sector work places employing 1-3 workers. The Household Labor Force Survey Results provide information on the self employed, unpaid family workers, and employers employing two or three workers presented in Table 6.4. Data on regular and casual employees in private sector work places employing 1-3 workers is not directly available. Bulutay (1999) multiplies the figures for private sector regular and casual employees with the share of employees at workplaces with 1-3 workers in total private sector employment. The share has been estimated as 0.3386. Table 6.6 reveals that the share of the informal sector in Turkey, when the third approach is adopted, is 58.95 percent of total employment in 1999.

Togan (1997) in his estimation of informal employment deducts from total employment public sector employment and obtains employment in the private sector. Deducting from this figure the employment in the agricultural sector he obtains employment in the private non-agricultural sector.

Table 6.4: Employment by Professional Status

	Self employed and employee ('000)	Agriculture Unpaid Family Worker ('000)	Regular Employee and Casual Employee ('000)	Total ('000)	Self employed and employee ('000)	Non-Agriculture Unpaid Family Worker ('000)	Regular Employee and Casual Employee ('000)	Total ('000)	Total Urban Employment ('000)	Total Employment ('000)	Share of Unrecorded Employment in Non-Agriculture in Urban Employment (%)	Unrecorded Sector in Total Employment (%)
Oct-88	2775	5454	567	8796	2456	463	6826	9745	8572	20309	34.05	54.89
Apr-89	2935	5899	402	9236	2552	483	6731	9766	8638	20819	35.14	57.01
Oct-89	3011	5771	397	9179	2504	474	6937	9915	8837	20983	33.70	56.05
Apr-90	3045	5628	438	9111	2395	446	6747	9588	8728	20529	32.55	56.09
Oct-90	3193	5713	449	9355	2856	505	7232	10593	9312	21562	36.09	56.89
Apr-91	3375	6200	287	9862	2714	503	6940	10157	9032	21637	35.62	59.12
Oct-91	2935	5838	479	9252	2759	464	6977	10200	9061	21283	35.57	56.36
Apr-92	2962	5252	418	8632	2946	591	7410	10947	9480	21303	37.31	55.16
Oct-92	3201	5282	428	8911	3033	604	7410	11047	9580	21703	37.96	55.84
Apr-93	3201	5733	422	9356	2701	445	7201	10347	9452	21310	33.28	56.69
Oct-93	2895	5374	374	8643	2958	491	7813	11262	9882	21628	34.90	54.18
Apr-94	3399	5859	332	9590	2774	474	7477	10725	9927	22179	32.72	56.39
Oct-94	3272	5264	486	9022	2972	529	7875	11376	10214	22136	34.28	54.38
Apr-95	3481	5917	481	9879	2754	512	7687	10953	9997	22446	32.67	56.42
Oct-95	3738	5983	507	10228	2896	463	7789	11148	10247	22900	32.78	57.12
Apr-96	3280	5969	502	9751	2882	499	8243	11624	10268	22808	32.93	55.38
Oct-96	3474	5735	753	9962	2980	496	8262	11738	10350	23030	33.58	55.08
Apr-97	3616	5486	505	9607	2944	478	8172	11594	10291	22537	33.25	55.57
Oct-97	3396	4198	625	8219	3104	383	9109	12596	11015	22359	31.66	49.56
Apr-98	3535	5081	413	9029	3086	415	8700	12201	10881	22681	32.18	53.42
Oct-98	3599	5281	654	9534	3027	485	8911	12423	11045	23415	31.80	52.92
Apr-99	3596	5982	519	10097	2889	542	8526	11957	11055	23779	31.04	54.71
Average											**33.87**	**55.42**

Note: Unrecorded sector is calculated as the sum of 'self-employed and employee' and 'unpaid family workers'

Source: "Labor Statistics," State institute of Statistics, various issues.

Table 6.5: Employment in Recorded and Unrecorded Sectors

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total employment ('000)	19,048	19,323	19,736	19,769	19,804	20,357	21,120	21,544	21,057	21,594	22,051
Members of social insurance institution ('000)	3,612	3,821	3,992	4,274	4,592	5,188	5,645	5,924	6,165	6,876	7,120
Members of retirement fund ('000)	1,500	1,560	1,640	1,730	1,812	1,896	1,880	1,964	2,036	2,072	2,109
Members of either SII or RF ('000)	5,112	5,381	5,632	6,004	6,404	7,084	7,525	7,888	8,201	8,948	9,229
Employment in unrecorded sector ('000)	13,936	13,942	14,104	13,765	13,400	13,273	13,595	13,656	12,856	12,646	12,822
Employment in recorded sector ('000)	5,112	5,381	5,632	6,004	6,404	7,084	7,525	7,888	8,201	8,948	9,229
Share of unrecorded sector (%)	73.16	72.15	71.46	69.63	67.66	65.20	64.37	63.39	61.05	58.56	58.15
Share of recorded sector (%)	26.84	27.85	28.54	30.37	32.34	34.80	35.63	36.61	38.95	41.44	41.85

Note: Employment in recorded sector is calculated as the sum of members of either SII or RF.

Source: "Economic and Social Indicators," State Planning Organization, various issues.

Table 6.6: Employment in Unrecorded Sector

	Self Employed and Employer ('000)	Unpaid Family Worker ('000)	Employers Employing 2 or 3 Persons ('000)	Regular Employees in Private Sector ('000)	Casual Employees in Private Sector ('000)	Regular Employees Working in Enterprises Employing 1-3 persons ('000)	Employment in Unrecorded Sector ('000)	Total Employment ('000)	Share of Unreported Sector in Total Employment (%)
1998 Nisan	5352	5496	618	4448	346	1623	13089	22681	57.71
1998 Ekim	5322	5767	710	4486	394	1652	13451	23415	57.45
1999 Nisan	5463	6523	474	4170	427	1557	14017	23779	58.95

Notes: 1. Employers employing 2 or 3 persons have been obtained from Table 5.49 of Household Labor Force Survey Results, April 1999 as the sum of employers employing 2 and 3 persons.

2. Regular employees in private sector have been obtained from Table 5.53 of Household Labor Force Survey Results, April 1999 as regular employees under fixed-private column.

3. Casual employees in private sector have been obtained from Table 5.53 of Household Labor Force Survey Results, April 1999 as casual employees under fixed-private column.

Source: "Labor Statistics," State Institute of Statistics, various issues.

To determine the informal employment in the private non-agricultural sector he subtracts from the regular and casual employers in non-agricultural sector figure (reported in Table 2.2 'Employment by Professional Status and Branch of Economic Activity' of "Household Labor Force Survey Results April 1999") the number of registered wage earners from the Ministry of Labor Registrations as formal by the Ministry of Labor publication "Çalı_ma Hayatı _statistikleri," to obtain the estimate of informal wage earners in the private non-agricultural sector. Employment in the private non-agricultural formal sector is then obtained as the residual. Total employment in the formal sector is derived as the sum of public sector employment and employment in the private non-agricultural formal sector. Employment in the informal sector is obtained as the sum of employment in the agricultural sector and in private non-agricultural informal sector. The data reported in Table 6.7 reveal that the share of the informal sector in Turkey is about 65 percent of total employment.

A different estimation method used for determining the size of the informal sector considers the share of subcontracting activity in the economy. Recently, the growing integration of national economies into the international system has led firms to reduce their labor costs. This has largely been achieved through subcontracting. In this system of organization, the parent firms subcontract a portion of their unskilled labor-intensive production operations to take advantage of lower wages in smaller firms, which usually operate in the informal sector.

According to a survey conducted by the State Institute of Statistics (1996), covering all public sector establishments in the manufacturing industry and all private establishments in the manufacturing industry employing at least 25 workers, 48.69 percent of the 5219 establishments in 1987 were involved in subcontracting. The share increased to 51.33 percent of 5969 establishments in 1992. The share according to the number of employees increased from 49.92 percent in 1987 to 53.67 percent in 1992. On the other hand, the share according to value added increased from 43.35 percent in 1987 to 47.49 percent in 1992. Table 6.8a shows the results of a survey conducted in 1992 on 186,902 establishments in the private sector employing 1–9 workers, and Table 6.8b shows the results of a survey on 5550 establishments in the private sector employing 25 and more workers. The table reveals that the share of small enterprises engaged in subcontracting is 33.8 and that of large enterprises is 53.1 percent. Among the small enterprises, 19.45 percent of all enterprises do only subcontracting work, 11.01 percent of enterprises are involved in own production and subcontracting, and 3.34 percent of enterprises give subcontracting work. The equivalent shares among large enterprises are as follows: 4.9 percent of enterprises are doing only subcontracting work, 22.11 percent are engaged in own production and subcontracting, and 26.09 percent of large enterprises give subcontracting work.

Table 6.7: Recorded and Unrecorded Employment

	1989	1990	1991	1992	1993	1994
Total Employment ('000)	19,050	19,326	19,738	19,772	19,806	20,357
- Employment in public sector ('000)	2,684	2,750	2,780	2,859	2,946	2,881
Employment in private sector ('000)	16,366	16,576	16,958	16,913	16,860	17,476
- Employment in agriculture ('000)	9,208	9,233	9,557	8,772	8,999	9,307
Employment in non-agriculture ('000)	7,158	7,343	7,401	8,141	7,861	8,169
Regular employees in non-agriculture ('000)	6,937	7,232	6,977	7,410	7,813	7,875
Employees recorded in the ministry of labor ('000)	3,564	3,564	3,513	3,596	3,742	3,815
Private non-agricultural unrecorded employment ('000)	3,373	3,668	3,464	3,814	4,071	4,060
Private non-agricultural recorded employment ('000)	3,785	3,675	3,937	4,327	3,790	4,109
Employment in unrecorded sector ('000)	12,581	12,901	13,021	12,586	13,070	13,367
Employment in recorded sector ('000)	6,469	6,425	6,717	7,186	6,736	6,990
Share of unrecorded sector in total employment (%)	66.04	66.76	65.97	63.65	65.99	65.66
Share of recorded sector in total employment (%)	33.96	33.24	34.03	36.35	34.01	34.34

Source: Togan (1997).

Thus the table shows that large firms are mostly subcontracting their work to smaller firms, and small firms are largely engaged in work subcontracted by large firms. The subcontracting activity of all public firms and all private firms employing 25 and more workers in the manufacturing sector has recently been analyzed by Taymaz and Kilicaslan (2000). Their results are summarized in Table 6.9. According, to the table the subcontracting intensity as measured by the share of subcontracted inputs in all inputs and the share of subcontracted output in total output is rather low in manufacturing industries.

There are significant inter-industry variations in subcontracting intensity. The textile industry has the highest subcontracted input and output shares, followed by machinery and equipment industry. The shares increase for sub-sectors in the textile industry. The relatively low subcontracting intensity observed by Taymaz and Kilicaslan is due mainly to their neglect of small firms in the manufacturing industry. It should also be emphasized that subcontracting is quite common in the services sectors, which have also not been analyzed by the authors.

The above considerations reveal that the share of informal labor in Turkish total employment is in the range of 60 percent. The share is quite substantial by any standards.

5. Productivity, Real Wages, and Unit Labor Costs in Manufacturing

Turning to consideration of empirical evidence on value added, employment, productivity, wages, and unit labor costs in the manufacturing sector we note that Table A6.1 summarizes the statistics obtained from the "Annual Manufacturing Industry Statistics" of the State Institute of Statistics for the period 1980–97. The surveys cover all firms in the public sector, and private firms employing more than or equal to ten employees. The table reveals that the three sectors with the highest share in total value added of the manufacturing sector are 'petroleum refineries,' 'spinning, weaving and finishing textiles,' and 'iron and steel basic industries,' and the three sectors with the highest growth rates of value added over the period 1980–97 are 'fur dressing and dying industries,' 'manufacture of professional and scientific, measuring and controlling equipment, n.e.c.,' and 'manufacture of electrical appliances and housewares'.

In terms of employment the sectors with the highest shares in total manufacturing employment are 'spinning, weaving and finishing textiles,' 'fur dressing and dying industries,' and 'knitting mills,' and in terms of employment creation the sectors with the highest growth rates are 'manufactures of motor vehicles,' 'cordage, rope and twine industries,' and 'manufacture of transport equipment n.e.c.'

Table 6.8: Share of Subcontracting Activities in Manufacturing Sector

6.8A: Share of subcontracting in private sector establishments employing 1–9 workers during 1992

	Share of Establishments	Share of Average Annual Workers	Share of Income from Subcontracting in Total Income	Share of Subcontracting Expenditures in Total Expenditures in	Share of Value Added
Total of establishments engaged in subcontracting	**33.80**	**30.55**	**31.75**	**7.29**	**27.98**
Only subcontracting	19.45	15.70	90.79	10.16	11.17
Intermediate subcontracting	0.96	1.18	93.91	61.26	1.24
Complete subcontracting	18.49	14.52	90.31	0.00	9.92
Own production and subcontracting	11.01	10.39	20.35	2.86	9.66
Basic subcontracting	0.9	1.08	16.40	11.39	1.77
Not subcontracting to other establishments	10.12	9.30	21.55	0.00	7.88
Subcontracting to other establishments	3.34	4.47	0.00	10.25	7.14
Total of establishments not engaged in subcontracting	**66.20**	**69.45**	**0.00**	**0.00**	**72.02**

6.8B. Share of subcontracting in private sector establishments employing at least 25 workers during 1992

Total of establishments engaged in subcontracting	**53.10**	**59,40**	**2.87**	**4.66**	**59,13**
Only subcontracting	4.9	2.7	88.02	7.34	0.79
Intermediate subcontracting	1.73	1.03	86.16	13.66	0.37
Complete subcontracting	3.17	1.68	89.94	0.00	0.43
Own production and subcontracting	22.11	27.95	3.98	3.87	26.66
Basic subcontracting	14.13	19.45	3.65	5.43	18.13
Not subcontracting to other establishments	7.98	8.49	4.76	0.00	8.53
Subcontracting to other establishments	26.09	28.75	0.00	5.33	31.68
Total of establishments not engaged in subcontracting	**46.9**	**40.6**	**0.00**	**2.67**	**40.87**

Source: Topta (1998).

Labor Market Flexibility in Turkey

Given the value added figure of sector i, VA_i, we deflate it by the implicit manufacturing price index p obtained from national income accounting data published by the State Institute of Statistics. The real value added figure is obtained as $va_i = (VA_i/p)$, and given the employment level of sector i, L_i, the productivity of labour in sector i is defined as $PROD_i = (va_i/L_i)$. Table A6.1 shows the large differences between the productivity levels in the various manufacturing sub-sectors. The sectors with high productivity figures include 'petroleum refineries,' 'malt liquors and malt,' and 'tire and tube industries,' and the sectors with low productivity figures include 'cordage, rope and twine industries,' 'manufacture of structural clay products,' and 'manufacture of wood, and cork products not elsewhere classified.' The sectors with the highest productivity growth rates include 'fur dressing and dying industries,' 'soft drinks and carbonated waters industries,' and 'manufacture of soap and cleaning preperations, perfumes, cosmetics, and other toilet preperations.'

The "Annual Manufacturing Industry Statistics" include information on annual payments to employees denoted by $w_i L_i$. Dividing this figure by employment we obtain the nominal wage data. The real wage is then obtained as (w_i/CPI), where CPI denotes the consumer price index. Table A6.2 shows the developments in real wage in the manufacturing sector. From the table it follows that there have been large fluctuations in the real wage. The real wage rate in the manufacturing sector decreased by 20 percent over the period 1982–88, and increased by 97.9 percent over the period 1988–91. The fall in the real wage rate during 1993–96 amounted to 28 percent. The picture does not change very much when one considers the developments in manufacturing sub-sectors.

The above considerations, showing the extreme flexibility of labour markets in Turkey, need some clarification. The country, after pursuing inward-oriented development strategies for fifty years, switched over to outward-oriented policies in 1980. With the real depreciation of the Turkish currency, real wages started to decline as indicated in Chapter 1. In 1989 the government reversed its real exchange rate policy and conceded substantial pay increases during the collective bargaining in the public sector during 1989. Consequently, pressure built up in the private sector to arrive at similarly high wage settlements. As a result of these developments the real wages increased. But the increase in real wages was not sustainable. In 1994 the country faced balance of payments crises. With the introduction of stabilization measures the trend in real wages was reversed. But again political pressure increased to reverse the policies. At the end of 1999 Turkey had to sign a stand-by-agreement with the IMF, again reversing the trend in real wages.

The ultimate aim of any society is to increase the real wage over time. But the increase in real wages has to be sustainable. Large fluctuations in real wages reveal that the policies pursued, e.g. over the period 1988–93 have not been sustainable.

Table 6.9: Subcontracting in Manufacturing Industries

ISIC		Subcontracted Input Share		Subcontracted Output Share	
		1988–92	1993–97	1988–92	1993–97
31	Food	0.31	0.51	0.28	0.35
32	Textile	6.20	6.31	5.63	5.63
33	Wood products	1.28	0.93	0.69	0.48
34	Paper	2.14	1.84	1.32	1.27
35	Chemicals	0.65	0.92	0.67	0.58
36	Pottery, glass, cement	1.88	1.79	0.18	0.29
37	Basic metal	1.04	1.26	1.36	1.36
38	Engineering	2.17	1.62	0.77	0.87
39	Other manufacturing	3.36	3.65	0.97	2.89
	Manufacturing Sector	1.99	2.16	1.50	1.63

Textile and engineering subsectors with high subcontracting intensity

3211	Spinning, weawing and finishing	3.12	3.03	6.75	6.83
3212	Textile products exc. wearing apparel	6.67	12.37	3.37	4.24
3213	Knitting mills	11.22	10.80	3.03	4.08
3222	Wearing apparel, exc. fur and leather	16.17	15.56	6.31	6.79
3231	Tanneries and leather finishing	1.00	1.00	3.95	3.70
3813	Structural metal products	6.87	8.41	4.35	5.49
3823	Metal and wood working machinery	5.96	10.99	5.28	12.90
3841	Ship building and repairing	20.12	13.62	4.25	6.53
3851	Professional and scientific equipment	6.00	6.35	2.12	1.88

Source: Taymaz and Kılıçaslan (2000).

Let us now turn to consideration of the developments in unit labor costs defined as (w_i /PROD$_i$) where PROD$_i$ denotes the productivity of labor in sector i. The unit labour cost measured in terms of foreign currency units is then obtained as [w_i / (PROD$_i$*E)], where E denotes the exchange rate. Data on unit labor costs measured in foreign currency units are provided in Table A6.3. A close consideration of the data reveals that unit labor costs decreased during the 1980s up to 1988. Thereafter there is a sharp increase in unit labor costs. With devaluation in 1994, unit labor costs decreased again, but after 1995 the country reversed its economic policies. Unit labor cost started to increase until 1999 when the country signed the stand-by-agreement with the IMF. Thereafter the unit labor cost started to decrease again. The development of unit labor cost for the aggregate manufacturing sector is shown in Figure 6.3.

6. Conclusion

It is widely believed that enterprises tend to become reluctant to take on new employees when faced with relatively high labor costs and with associated high

firing costs. Employers become cautious about hiring new workers with contracts of indefinite duration, opting instead to rely on casual labor, subcontracting, or fixed-term contractual relationships. In Section 1 it was mentioned that the Turkish population increases on average at a rate of one million persons per year and that over time, Turkey must continuously create new jobs. In the past Turkey has successfully solved the unemployment problem through the existence of the large informal sector. Over time this sector has grown considerably through the lax enforcement of tax, social security, and labor laws. But lax enforcement of the laws has created different problems for the Turkish society. The economic units started to take it for granted that they could avoid the rule of law.

In addition, with increasing globalization, international pressure will also increase on Turkey to change its institutions, regulations, and legislation protecting workers in the formal sector. The current system of formal and informal sectors, with informal sector accounting for about 60 percent of total employment, does not seem to be sustainable in the long run. In particular, we may expect EU firms to complain about unfair trade practices by Turkey and the EU may ask Turkey to enforce its own labor laws, laws on the social security system, and tax laws.

When the country starts to enforce the tax, social security, and labor laws uniformly, the informal sector will experience a rise in labor costs leading to a decrease in the demand for labor and hence an increase in unemployment. In order to minimize the problems of unemployment, the policy makers have to change the current job security legislation in order to reduce firing costs, decrease the high social insurance contribution and tax rates, and eliminate whenever possible other payments. In short, measures should be designed to reduce the difference between the labor cost to producers and the amount received by labor after taxes and related charges. A system where even a worker on minimum wage receives only TL 58.4 out of every 100 TL paid as labor cost by the producer is not sustainable. Efforts should be made by the state to increase the contribution collection in the social insurance and tax systems. Furthermore, part-time contracts could be incorporated into the labor law. It should be emphasized that policy makers, when implementing the comprehensive labor market reforms, will have to consider the goals of attaining increased labor market flexibility, avoiding potential increase in unemployment, enforcing uniformly the tax, social security and labor laws throughout the country, decreasing the share of the informal sector in total employment, and any possible trade-offs between these goals.

Figure 6.3: Unit Labor Cost in Manufacturing
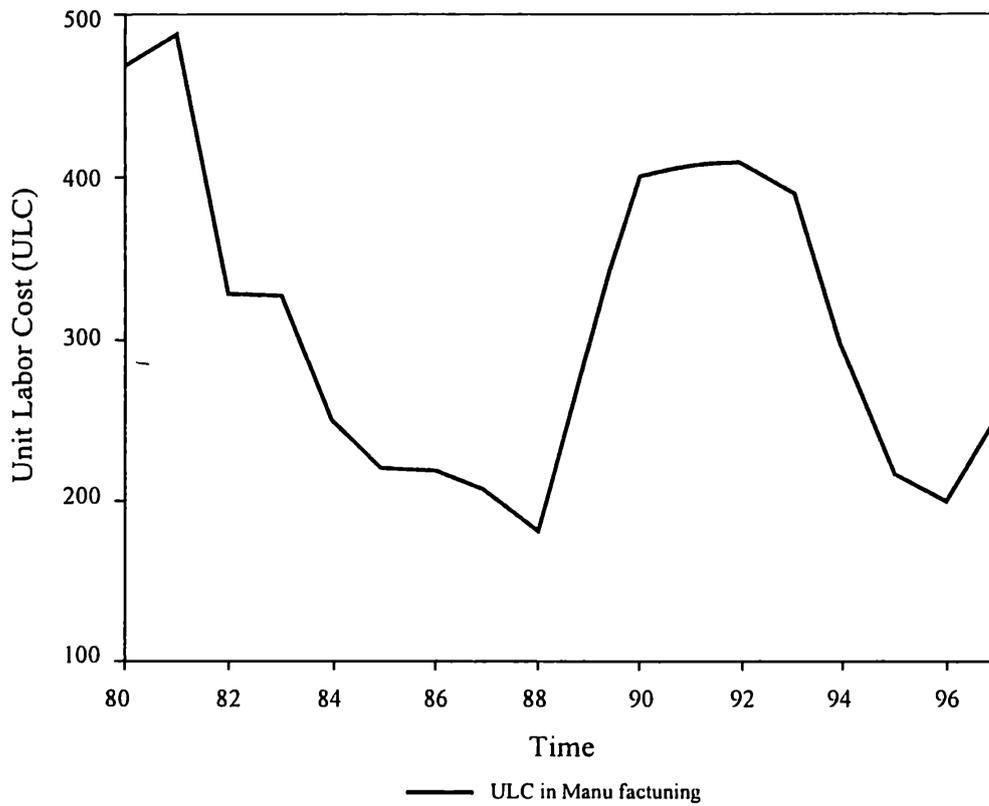
Table A6.1: Value Added, Employment, and Productivity in the Manufacturing Sector

ISIC		Value Added prices 1987–97	Share of VA in Total Manufacturing Value Added	Growth Rate of Value Added 1980–97	Employment in 1997	Employment in Total Manufacturing Employment	Share of Growth Rate of Emploment 1980–97	Productivity in 1997	Growth Rate of Productivity 1980–97
31	Manufacture of food, beverages and tobacco	3,358,175	11.97	4.95	177,493	15.56	3.77	18.92	5.44
3111	Slaughtering, preparing and preserving meat	240,353	0.86	9.06	12,511	1.10	4.65	19.21	5.29
3112	Manufacture of dairy products	162,607	0.58	11.79	6,085	0.53	3.73	26.72	9.19
3113	Canning and preserving of fruits and vegetables	311,326	1.11	9.51	19,672	1.72	-1.67	15.83	4.87
3114	Canning, preserving and processing of fish and crustaceans	35,178	0.13	12.27	1,807	0.16	-0.99	19.47	8.55
3115	Manufacture of vegetable and animal oils and fats	449,488	1.60	6.14	10,991	0.96	-0.77	40.90	7.81
3116	Grain mill products	122,156	0.44	3.33	9,249	0.81	-0.46	13.21	4.32
3117	Manufacture of bakery products	269,388	0.96	6.46	22,804	2.00	6.44	11.81	7.23
3118	Sugar factories and refineries	138,530	0.49	4.26	19,325	1.69	-0.63	7.17	4.72
3119	Manufacture of cocoa, chocolate and sugar confectionary	251,021	0.89	15.05	11,465	1.00	-1.19	21.89	8.61
3121	Manufacture of food products not classified elsewhere	378,857	1.35	4.90	23,120	2.03	0.07	16.39	6.08
3122	Manufacture of prepared animal feeds	130,239	0.46	9.22	6,253	0.55	2.08	20.83	6.70
3131	Distilling, rectifying and blending spirits	114,868	0.41	2.43	3,285	0.29	-4.08	34.97	0.35
3132	Wine industries	11,341	0.04	-2.74	487	0.04	2.65	23.29	3.26

3133	Malt liquors and malt	157,489	0.56	5.44	2,140	0.19	-4.95	73.59	9.53
3134	Soft drinks and carbonated waters industries	209,425	0.75	15.00	5,617	0.49	-4.95	37.28	12.35
3140	Tobacco manufactures	375,909	1.34	-0.77	22,682	1.99	1.56	16.57	4.19
32	Textile, wearing apparel and leather industries	4,811,661	17.15	8.02	398,871	34.96	-0.18	12.06	4.31
3211	Spinning, weaving and finishing textiles	2,194,975	7.83	4.93	162,408	14.24	9.31	13.52	5.11
3212	Manufacture of made-up textile goods except wearing apparel	392,045	1.40	15.87	35,164	3.08	0.84	11.15	4.25
3213	Knitting mills	721,359	2.57	13.52	65,164	5.71	-8.21	11.07	4.21
3214	Manufacture of carpets and rugs	186,899	0.67	7.71	12,118	1.06	-1.88	15.42	6.87
3215	Cordage, rope and twine industries	1,394	0.00	-4.92	349	0.03	13.43	3.99	3.28
3219	Manufacture of textiles not elsewhere classified	41,349	0.15	-6.92	2,828	0.25	11.97	14.62	-5.03
3221	Manufacture of fur and leather products	135,732	0.48	13.83	10,686	0.94	1.99	12.70	1.85
3222	Manufacture of wearing apparel, except fur and leather	919,983	3.28	18.98	90,484	7.93	0.11	10.17	5.38
3231	Tanneries and leather finishing	92,334	0.33	4.18	7,386	0.65	9.19	12.50	4.07
3232	Fur dressing and dyeing industries	...		16.67			2.41		12.35
3233	Manufacture of products of leather and leather substitutes	17,875	0.06	13.21	1,835	0.16	2.41	9.74	4.02
3240	Manufacture of footwear, except vulcanized or molded rubber or plastic footwear	107,716	0.38	7.49	10,449	0.92	-0.46	10.31	5.08
33	Manufacture of wood and wood products including furniture	324,027	1.16	7.25	25,371	2.22	-0.52	12.77	5.66

3311	Sawmills, planing and other wood mills	154,967	0.55	5.09	11,725	1.03	-1.20	13.22	5.61
3312	Manufacture of wooden and cane containers and small cane ware	9,240	0.03	8.55	820	0.07	5.84	11.27	7.73
3319	Manufacture of wood and cork products not elsewhere classified	2,985	0.01	-3.66	587	0.05	5.84	5.09	-2.45
3320	Manufacture of furniture and fixtures, except primarily of metal	156,836	0.56	12.62	12,239	1.07	0.02	12.81	6.79
34	Manufacture of paper, paper products, printing and publishing	842,927	3.01	8.11	32,964	2.89	-1.51	25.57	7.31
3411	Manufacture of pulp, paper and paperboard	106,813	0.38	4.27	5,946	0.52	0.06	17.96	5.78
3412	Manufacture of containers and boxes of paper and paperboard	158,055	0.56	7.96	9,790	0.86	1.94	16.14	5.80
3419	Manufacture of pulp, paper and paperboard articles n.e.c.	42,248	0.15	7.16	2,201	0.19	1.94	19.19	7.10
3421	Printing, publishing and allied industries	535,811	1.91	10.34	15,027	1.32	-0.64	35.66	8.40
35	Manufacture of chemicals, petrochemicals, coal, rubber and plastic products	8,015,911	28.58	6.07	106,781	9.36	-3.96	75.07	4.73
3511	Manufacture of basic industrial chemicals except fertilizers	169,485	0.60	0.36	4,238	0.37	1.97	39.99	4.32
3512	Manufacture of fertilizers and pesticides	303,224	1.08	4.82	6,677	0.59	2.36	45.41	6.58

Code	Description								
3513	Manufacture of synthetic resins, plastic materials and man-made fibers except glass	572,683	2.04	8.46	11,153	0.98	0.76	51.35	6.49
3521	Manufacture of paints, varnishes and lacquers	324,747	1.16	10.62	5,639	0.49	2.51	57.59	9.86
3522	Manufacture of drugs and medicines	675,592	2.41	11.52	14,752	1.29	2.59	45.80	8.73
3523	Manufacture of soap and cleaning preperations, perfumes, cosmetics and other toilet preperations	579,013	2.06	12.62	8,126	0.71	-1.17	71.25	10.11
3529	Manufacture of chemical products not elsewhere classified	199,179	0.71	9.22	6,310	0.55	-1.11	31.57	6.63
3530	Petroleum refineries	3,914,049	13.95	5.52	4,941	0.43	5.59	792.16	6.63
3541	Manufacture of asphalt paving and roofing materials	5,547	0.02	5.33	639	0.06	0.96	8.68	-0.26
3542	Manufacture of coke, coal and briquettes			-1.55			3.38		-0.01
3543	Compounded and blended lubricating oils and grease	...	...	-0.75	...	...	1.15	...	-1.70
3544	Liquid petroleum gas tubing	157,604	0.56	10.48	2,895	0.25	2.37	54.44	7.10
3551	Tire and tube industries	416,881	1.49	8.61	5,805	0.51	3.69	71.81	6.24
3559	Manufacture of rubber products not elsewhere classified	102,959	0.37	6.68	8,549	0.75	3.69	12.04	6.30
3560	Manufacture of plastic products not elsewhere classified	490,132	1.75	10.49	25,869	2.27	0.51	18.95	6.79
36	Manufacture of non-metallic mineral products except of products of petroleum and coal	1,899,797	6.77	7.59	74,086	6.49	0.51	25.64	6.86

3610	Manufacture of pottery, china and earthenware	167,579	0.60	9.54	7,336	0.64	0.06	22.84	9.03
3620	Manufacture of glass and glass products	401,536	1.43	7.62	13,480	1.18	0.78	29.79	7.56
3691	Manufacture of structural clay products	99,671	0.36	3.81	20,499	1.80	3.76	4.86	3.03
3692	Manufacture of cement, lime and plaster	824,079	2.94	7.46	12,013	1.05	-1.38	68.60	8.67
3699	Manufacture of non-metallic mineral products n.e.c.	406,932	1.45	7.84	20,758	1.82	-0.53	19.60	4.08
37	Basic metal industries	2,456,440	8.76	5.81	64,348	5.64	-0.53	38.17	7.20
3710	Iron and steel basic industries	2,174,893	7.75	6.53	50,631	4.44	-4.12	42.96	7.06
3720	Non-ferrous metal basic Industries	281,547	1.00	2.56	13,717	1.20	1.01	20.53	6.68
38	Manufacture of fabricated metal products, machinery and equipment, transport equipment, professional and scientific and controlling equipment	6,220,511	22.18	8.41	253,104	22.19	2.15	24.58	6.91
3811	Manufacture of cutlery, hand tools and general hardware	193,784	0.69	7.52	12,921	1.13	1.72	15.00	5.37
3812	Manufacture of furniture and fixtures, primarily of metal	115,352	0.41	6.65	7,106	0.62	-0.09	16.23	4.05
3813	Manufacture of structural metal products	269,285	0.96	6.70	15,293	1.34	-0.27	17.61	4.99
3819	Manufacture of fabricated metal products except machinery and equipment not elsewhere classified	525,477	1.87	6.85	25,834	2.26	-5.04	20.34	6.93
3821	Manufacture of engines and turbines	19,759	0.07	-0.93	895	0.08	-1.87	22.08	4.11

3822	Manufacture of agricultural machinery and equipment	178,636	0.64	2.11	9,293	0.81	-1.60	19.22	3.72
3823	Manufacture of metal and wood-working machinery	51,179	0.18	1.37	3,883	0.34	-0.99	13.18	3.24
3824	Manufacture of special industrial machinery	153,694	0.55	1.15	11,466	1.01	1.33	13.40	2.75
3825	Manufacture of office, computing and accounting machinery	22,215	0.08	6.72	1,076	0.09	2.39	20.65	7.71
3829	Machinery and equipment except electrical n.e.c.	831,627	2.96	11.07	26,925	2.36	0.88	30.89	9.75
3831	Manufacture of electrical industrial machinery and apparatus	485,846	1.73	7.77	15,453	1.35	7.55	31.44	6.89
3832	Manufacture of radio, television and communication equipment and apparatus	503,829	1.80	11.87	15,151	1.33	0.18	33.25	7.33
3833	Manufacture of electrical appliances and housewares	124,580	0.44	16.16	8,893	0.78	2.36	14.01	8.61
3839	Manufacture of electrical apparatus and supplies n.e.c.	366,340	1.31	4.13	18,897	1.66	-4.64	19.39	3.95
3841	Shipbuilding and repairing	103,858	0.37	1.07	4,657	0.41	4.11	22.30	5.70
3842	Manufacture of railroad equipment			0.81			4.17		3.79
3843	Manufacture of motor vehicles	1,908,685	6.81	11.00	56,937	4.99	26.66	33.52	6.88
3844	Manufacture of motorcycles and bicycles	37,128	0.13	10.62	2,359	0.21	1.66	15.74	6.44
3845	Manufacture of aircraft			84.67		...	8.50	...	20.63
3849	Manufacture of transport equipment n.e.c.	930	0.00	3.66	161	0.01	10.69	5.78	6.39

Code									
3851	Manufacture of professional and scientific, and measuring and controlling equipment, n.e.c.	48,762	0.17	18.61	3,153	0.28	-5.28	15.47	6.81
3852	Manufacture of photographic and optical goods			11.63			11.60		8.52
3853	Manufacture of watches and clocks	...	...	0.88	...	...	3.08	...	5.30
3854	Other	94,418	0.34	28.74	2,685	0.24	3.08	35.17	17.13
39	Other manufacturing industries	118,829	0.42	7.33	7,851	0.69	11.45	15.14	4.25
3901	Manufacture of jewelery and related articles			14.76			1.96		3.31
3902	Manufacture of musical instruments						11.95		
3903	Manufacture of sporting and athletic goods			11.95			1.17		9.99
3909	Manufacturing industries not elsewhere classified	73,838	0.26	5.75	5,225	0.46	1.44	14.13	4.57
3	Manufacturing Industry	28,048,277	100.00	6.95	1,140,869	100.00	-0.49	24.59	5.51

Source: Data provided by State Institute of Statistics on diskettes, (1999).

Table A6.2: Real Wage Rate

	Food, Beverages and Tobacco 31	Textile, Wearing Apparel and Leather Industries 32	Wood and Wood Products 33	Paper and Paper Products 34	Chemicals, Petrochemicals, Coal, Rubber and Plastics 35	Non-metallic Mineral Products 36	Basic Metal Industries 37	Fabricated Metal Products 38	Other Manufacturing Industries 39	Manufacturing Industry 3
1980	1,085,820.9	888,541.1	830,013.5	1,526,383.0	1,639,678.6	1,052,454.1	1,798,950.1	1,324,017.1	793,398.7	1,214,779.8
1981	1,203,814.8	1,050,277.6	882,427.0	1,391,232.4	1,639,261.8	1,139,050.0	1,938,703.0	1,313,956.9	736,458.2	1,294,023.2
1982	1,175,331.7	984,628.6	848,459.3	1,573,141.5	1,655,620.1	1,312,755.0	1,847,997.0	1,378,202.6	666,902.8	1,296,941.1
1983	1,137,338.3	961,754.3	812,839.9	1,454,833.2	1,572,809.8	1,196,776.5	1,752,449.8	1,345,847.2	801,553.3	1,242,311.9
1984	970,646.3	860,280.1	741,334.4	1,240,617.0	1,430,567.6	1,124,684.2	1,530,893.8	1,228,349.3	758,131.1	1,105,095.7
1985	908,169.2	811,196.0	649,409.4	1,176,636.9	1,351,994.5	1,183,659.0	1,384,213.1	1,195,313.5	707,135.0	1,053,411.6
1986	858,879.3	821,679.2	644,666.8	1,109,575.9	1,374,778.6	1,024,618.1	1,381,583.2	1,138,083.5	720,777.9	1,023,167.9
1987	908,455.9	861,192.1	711,557.0	1,242,895.4	1,499,576.8	1,071,039.1	1,438,769.5	1,265,463.0	770,242.1	1,097,692.4
1988	792,842.9	854,240.4	688,506.6	1,096,573.7	1,472,278.3	1,069,962.0	1,338,081.5	1,174,898.0	765,668.3	1,034,701.0
1989	1,078,019.3	937,292.6	858,585.2	1,625,350.2	1,956,754.8	1,334,426.4	1,925,014.7	1,429,656.1	894,528.6	1,298,490.2
1990	1,392,610.3	1,013,488.8	1,037,091.1	1,857,583.2	2,419,700.1	1,874,662.9	2,229,553.2	1,748,489.0	1,061,896.1	1,573,093.4
1991	1,795,757.2	1,389,038.1	1,405,647.0	2,193,882.8	2,997,932.6	2,037,108.6	3,480,985.3	2,215,945.1	1,173,174.7	2,048,514.5
1992	1,905,083.6	1,146,014.5	1,281,293.8	2,140,803.0	2,965,818.1	2,075,591.9	3,352,992.4	2,127,480.4	1,127,446.6	1,939,179.6
1993	1,953,745.9	1,193,370.8	1,390,302.9	2,112,563.7	2,995,017.3	2,052,892.2	3,266,111.3	2,224,481.0	1,060,476.7	1,973,693.3
1994	1,633,436.0	922,132.5	1,066,618.9	1,729,460.1	2,599,255.1	1,604,330.8	2,713,725.5	1,732,092.5	784,321.3	1,584,619.2
1995	1,428,871.0	896,487.8	887,062.5	1,604,042.1	2,508,752.7	1,595,598.7	2,082,006.3	1,734,076.3	762,860.6	1,466,113.6
1996	1,327,145.0	935,989.9	896,645.1	1,563,677.2	2,265,967.9	1,576,271.5	2,265,002.8	1,678,977.2	810,478.9	1,419,170.8
1997	1,407,655.7	960,654.7	836,413.8	1,749,595.9	2,386,626.6	1,599,700.8	2,268,463.8	1,729,788.1	972,063.0	1,469,670.5

Source: Author's calculations from data provided by State Institute of Statistics on diskettes, (1999).

245

Labor Market Flexibility in Turkey

Table A6.3: Unit Labor Cost in Foreign Currency Units

ISIC	Commodity	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
31	Manufacture of food, beverages & tobacco	469.9	489.4	326.1	326.7	247.0	219.4	218.2	206.6	181.3	292.1	400.3	407.6	410.2	390.9	289.3	216.1	198.9	255.3
3111	Slaughtering, preparing & preserving meat	532.6	514.1	370.1	426.1	361.5	316.2	363.4	469.4	459.3	497.2	627.8	763.6	608.9	548.6	261.7	190.9	284.2	204.4
3112	Man. of dairy products	698.4	557.5	555.8	384.7	292.1	275.2	262.7	228.1	247.0	295.8	461.3	325.6	296.6	329.7	310.8	181.7	140.3	146.9
3113	Canning & preserving of fruits & vegetables	302.6	382.1	308.9	323.9	227.1	255.0	233.1	214.6	159.8	218.9	330.6	337.3	307.7	344.6	180.2	232.4	166.2	186.4
3114	Canning, preserving & processing of fish & crustacea	137.0	327.3	219.7	215.9	258.5	165.0	99.3	158.7	185.1	245.7	318.7	338.8	231.1	335.3	135.7	73.1	128.6	231.2
3115	Man. of veg. & animal oils & fats	299.9	323.3	334.5	249.7	170.9	243.3	216.1	183.7	180.6	229.9	342.3	301.4	235.4	235.7	170.1	127.2	178.6	148.8
3116	Grain mill products	312.5	449.6	313.5	346.9	184.1	231.6	328.9	290.3	241.9	258.3	500.2	372.8	269.8	310.5	226.9	151.6	185.1	194.6
3117	Man. of bakery products	612.5	831.5	653.2	441.8	298.9	396.0	410.7	302.3	370.6	360.9	538.6	480.2	457.7	523.0	302.6	252.1	208.2	268.7
3118	Sugar factories & refineries	574.7	441.8	468.7	824.2	859.0	394.4	492.1	473.7	341.8	584.9	699.1	603.6	719.0	524.7	513.8	487.7	439.3	1,089.8
3119	Man. of cocoa, chocolate & sugar confectionary	259.6	325.8	320.5	305.6	261.6	330.7	236.6	207.9	246.7	386.8	560.0	502.3	368.0	265.3	203.0	142.9	188.0	230.7
3121	Man. of food products not classified elsewhere	592.5	573.4	714.0	443.8	468.7	331.1	319.5	294.2	236.0	397.6	588.7	752.9	730.3	752.8	419.1	374.3	310.3	304.1
3122	Man. of prepared animal feeds	398.2	571.0	568.2	443.1	306.5	356.9	198.9	213.4	246.3	391.8	625.8	625.4	501.7	454.2	253.6	136.9	166.3	168.7
3131	Distilling, rectifying & blending spirits	114.9	116.8	95.6	74.0	59.6	38.9	48.3	42.2	40.1	62.6	103.4	117.9	121.1	146.9	150.1	139.0	44.5	157.1
3132	Wine industries	373.9	557.4	420.2	331.7	332.3	264.2	386.8	162.2	212.0	308.0	591.0	809.3	495.8	951.0	817.8	429.0	339.9	250.1
3133	Malt liquors & malt	350.1	324.8	291.9	268.2	194.0	199.7	171.9	129.1	112.4	193.0	264.1	222.0	265.2	258.5	125.6	126.6	123.3	135.9
3134	Soft drinks & carbonated waters industries	548.2	801.6	518.9	481.9	363.8	300.0	279.7	248.2	220.7	316.6	291.3	470.1	347.8	259.3	173.0	174.1	144.8	136.8
3140	Tobacco manufactures	658.2	692.8	218.5	256.7	185.7	145.3	133.1	128.6	96.4	234.1	287.9	320.0	389.8	389.2	427.0	231.2	192.1	367.6
32	Textile, wearing apparel & leather industries	460.2	652.5	505.5	418.5	330.7	338.9	348.5	280.4	319.3	420.8	493.7	597.5	432.9	454.1	242.6	239.1	276.6	273.3
3211	Spinning, weaving & finishing textiles	471.4	707.1	544.6	450.4	362.4	359.6	368.8	293.2	336.9	443.2	523.2	691.8	492.7	543.7	268.0	257.7	310.8	299.2
3212	Man. of made-up textile goods except wearing apparel	364.3	860.1	420.2	301.1	369.2	476.1	461.9	245 .0	325.5	460.2	415.9	407.8	375.0	469.2	190.7	229.2	234.6	221.3
3213	Knitting mills	321.3	409.3	278.4	385.9	278.2	306.4	271.3	261.8	244.1	375.8	398.0	454.5	308.7	331.5	187.4	197.0	242.5	259.3
3214	Man. of carpets & rugs	342.7	403.4	451.8	350.4	326.1	350.3	304.4	327.7	329.3	454.7	471.1	646.1	450.4	375.9	208.6	244.9	253.6	205.2
3215	Cordage, rope & twine industries	733.7	650.3	653.8	645.5	534.2	446.9	461.3	412.0	599.0	571.4	742.8	705.3	662.3	776.9	451.6	480.9	598.5	569.5
3219	Man. of textiles not elsewhere classified	239.9	260.8	208.1	151.1	122.5	88.5	187.4	133.0	221.5	355.9	589.2	733.8	408.3	491.0	456.1	160.2	186.2	215.8
3221	Man. of fur & leather products	315.0	302.3	366.3	124.4	135.8	204.4	184.6	157.0	212.5	276.7	339.6	325.2	275.9	293.0	172.4	170.6	161.3	181.5
3222	Man. of wearing apparel, except fur & leather	509.5	436.3	430.1	342.5	227.9	318.7	355.3	260.9	283.3	377.7	452.6	460.1	348.8	349.2	216.5	216.5	244.0	274.3
3231	Tanneries & leather finishing	661.9	568.3	484.8	420.9	319.3	273.1	286.1	231.5	354.2	332.5	632.5	474.0	467.8	358.3	433.3	417.8	252.8	214.5
3232	Fur dressing & dyeing industries	...		...					...	371.5	484.9	490.8	...	...	...	...		199.6	225.8
3233	Man. of products of leather & leather substitutes	155.8	...	337.8		133.2	158.2	275.7		191.2	202.6	318.2					253.9	235.6	211.2
3240	Man. of footwear, except vulcanized or moulded rubber or plastic footwear	623.7	926.0	771.9	666.8	428.6	604.8	460.9	527.3	588.3	608.8	841.3	744.3	622.0	682.7	351.6	242.7	399.4	334.2

Code	Description																		
33	Man. of wood & wood products including furniture	485.3	659.5	569.4	452.4	371.5	290.2	321.9	247.5	269.0	416.7	533.3	672.3	502.1	487.5	409.2	225.2	249.0	224.8
3311	Sawmills, planing & other wood mills	504.7	824.1	629.1	460.1	391.4	404.4	298.4	228.3	284.0	439.6	594.0	802.9	563.6	525.7	555.1	237.6	262.2	251.8
3312	Man. of wooden & cane containers & small cane ware	593.2	556.4	821.7	735.9	378.6	387.7	358.8	294.6	268.8	311.1	788.9	317.6	302.6	678.8	389.0	338.0	225.1	188.5
3319	Man. of wood & cork products not elsewhere classified	228.3	294.6	433.5	575.1	369.1	344.7	449.8	243.7	387.8	588.8	556.3	530.4	566.4	648.5	439.7	358.4	351.7	409.2
3320	Man. of furniture & fixtures, except primarily of metal	427.4	345.1	372.2	393.5	313.4	152.6	389.1	311.2	230.4	356.5	392.0	425.2	372.5	399.8	240.6	201.0	234.0	196.7
34	Man. of paper, paper products, printing & publishing	679.6	674.9	557.5	435.3	360.6	305.6	338.4	295.9	264.4	429.2	494.6	569.4	512.9	374.2	236.3	239.4	227.5	234.8
3411	Man. of pulp, paper & paperboard	852.0	1,100.7	724.6	493.5	389.1	294.5	347.5	287.5	278.2	414.2	693.1	734.2	925.8	707.5	406.0	292.7	370.3	440.6
3412	Man. of containers & boxes of paper & paperboard	434.8	473.6	422.1	411.0	321.5	312.2	360.8	302.4	197.5	349.9	408.3	585.3	412.9	373.5	177.9	155.7	240.1	323.7
3419	Man. of pulp, paper & paperboard articles n.e.c.	254.4	359.5	360.7	381.6	409.2	284.6	265.8	198.7	186.6	371.3	293.5	362.0	416.6	500.1	205.2	164.9	151.9	243.5
3421	Printing, publishing & allied industries	679.3	499.4	477.3	394.6	339.7	318.7	333.2	323.9	302.5	493.3	423.1	467.5	353.1	227.1	163.6	250.8	174.2	166.9
35	Man. of chemicals, petro-chemicals, coal, rubber & plastic products	188.6	139.1	128.3	132.4	127.8	121.5	80.2	119.4	101.6	153.0	203.8	241.0	205.2	208.0	138.0	107.8	112.3	109.1
3511	Man. of basic industrial chemicals except fertilizers	228.0	487.7	355.9	299.1	201.8	212.1	218.8	201.5	252.0	433.6	577.2	618.1	604.8	421.9	301.1	247.0	239.2	186.1
3512	Man. of fertilizers & pesticides	513.3	356.2	267.6	409.4	325.3	303.6	325.4	240.7	141.0	249.7	450.1	363.4	311.9	369.4	330.9	269.2	184.9	202.8
3513	Man. of synthetic resins, plastic materials & man-made fibres except glass	240.9	526.1	337.7	252.1	242.6	334.1	152.7	120.2	80.8	184.2	365.9	652.1	305.2	550.4	187.0	142.3	206.1	203.9
3521	Man. of paints, varnishes & lacquers	444.9	523.8	240.5	349.4	246.0	234.1	240.8	155.1	215.4	305.0	357.4	720.2	336.2	246.3	140.1	146.3	197.3	132.3
3522	Man. of drugs & medicines	370.3	410.1	434.4	363.4	281.5	246.6	285.0	237.2	245.0	297.2	351.7	344.7	356.2	307.8	197.8	219.4	231.4	251.3
3523	Man. of soap & cleaning preperations, perfumes, cosmetics & other toilet preperations	278.6	180.2	245.7	319.5	197.2	158.1	191.0	184.8	186.7	254.9	342.1	309.0	269.2	240.9	167.4	105.9	111.5	114.7
3529	Man. of chemical products not elsewhere classified	426.8	511.5	474.1	392.6	352.3	293.0	265.9	294.9	262.9	274.4	459.5	555.8	452.4	417.7	248.1	217.7	241.3	250.9
3530	Petroleum Refineries	57.8	32.1	32.6	21.5	16.0	17.1	9.3	19.9	14.4	27.0	28.9	40.3	36.6	40.8	32.1	19.8	13.7	16.2
3541	Man. of asphalt paving & roofing materials	345.9	230.9	536.0	400.4	392.5	288.6	333.6	827.1	348.7	617.0	703.6	792.2	889.6					339.6
3542	Man. of coke coal & briquettes	1,183.7	1,434.5	...	...	...	640.1	596.1	845.1	690.7	654.7	918.6	1,841.9	3,065.2					...
3543	Compounded & blended lubricating oils & grease	79.8	134.2	112.6	77.3	72.7	87.9	11.3	38.2	70.7	136.6	200.4	354.9	199.5	232.5	148.7	158.7	147.9	...
3544	Liquid petroleum gas tubing	265.0	402.6	...	...	...	245.8	177.0	250.1	244.1	234.1	265.8	332.6	311.2	267.0	205.4	111.9	144.4	187.8
3551	Tyre & tube industries	307.1	381.8	355.6	289.9	207.6	171.2	282.0	211.2	192.0	300.9	485.3	514.7	439.4	452.6	358.2	259.8	246.1	206.0
3559	Man. of rubber products not elsewhere classified	458.7	579.9	669.2	469.4	369.6	343.0	340.6	303.0	326.1	445.6	557.1	494.9	406.0	417.8	210.7	237.8	315.6	318.0
3560	Man. of plastic products not elsewhere classified	350.9	560.2	403.4	398.5	319.4	329.3	288.8	227.4	251.3	409.7	441.4	462.6	380.5	327.8	185.5	162.9	180.9	220.8
36	Man. of non-metallic mineral products except of products of petroleum & coal	386.3	416.6	441.0	363.8	338.8	335.8	244.7	199.5	229.3	346.4	442.4	483.4	413.3	336.3	215.6	216.4	221.7	214.1
3610	Man. of pottery, china & earthenware	469.1	726.2	608.1	414.6	334.1	468.4	167.1	143.4	200.8	311.8	339.6	333.1	324.8	332.2	168.1	197.5	230.2	234.7
3620	Man. of glass & glass products	403.2	591.4	423.4	379.6	327.5	318.4	281.5	231.6	244.6	417.4	532.7	731.7	546.0	436.2	287.4	272.4	304.7	330.2
3691	Man. of structural clay products	514.6	722.9	802.6	621.2	433.4	410.4	426.5	263.1	339.4	416.9	809.1	725.3	611.7	581.8	370.7	299.4	454.7	449.2
3692	Man. of cement, lime & plaster	310.8	285.0	314.5	277.5	328.4	285.6	230.1	175.5	184.9	261.2	366.3	386.4	336.0	246.4	173.2	161.1	170.6	122.9

Labor Market Flexibility in Turkey

Code	Industry																	
3699	Man. of non-metallic mineral products n.e.c.	454.1	307.0	647.0	402.8	321.8	315.8	238.4	252.7	320.5	492.7	663.9	681.5	492.5	436.3	269.9	292.6	160.4	218.3
37	Basic metal industries	572.3	778.9	718.9	487.6	346.9	341.3	341.1	259.1	221.8	350.3	682.1	886.7	774.3	584.3	292.4	281.6	308.1	203.9
3710	Iron & stee basic industries	604.2	760.9	736.7	490.1	343.1	326.7	346.1	256.6	218.6	354.8	770.4	920.7	809.4	569.9	285.1	304.6	312.7	189.8
3720	Non-ferrous metal basic industries	486.4	850.1	663.7	478.8	359.9	399.0	325.2	267.6	234.3	335.6	469.3	743.7	625.1	671.8	345.0	202.3	282.5	313.3
38	Man. of fabricated metal products, machinery & equipment, transport equipment, professional & scientific & controlling equipment	522.4	604.8	502.6	423.1	338.2	349.8	315.0	288.1	286.0	404.8	480.3	524.2	433.8	412.1	285.1	248.0	253.3	241.5
3811	Man. of cutlery, hand tools & general hardware	366.5	465.9	362.2	341.6	310.9	325.6	319.3	266.1	268.0	359.8	461.9	516.1	361.9	401.3	237.9	226.7	249.1	263.4
3812	Man. of furniture & fixtures, primarily of metal	319.1	357.5	361.3	399.5	229.6	246.0	259.3	161.8	403.7	396.8	555.4	568.8	413.0	471.4	276.6	216.0	161.4	194.9
3813	Man. of structural metal products	400.0	749.2	536.4	539.8	393.8	362.9	319.4	296.4	365.0	431.3	442.6	566.1	476.5	465.4	317.7	216.1	247.5	221.2
3819	Man. of fabricated metal products except machinery & equipment not elsewhere classified	411.6	587.3	527.7	445.4	366.4	344.7	330.1	271.8	259.4	349.0	458.3	475.0	389.8	394.7	286.1	210.3	238.0	260.6
3821	Man. of engines & turbines	678.7	436.6	568.5	437.9	338.2	416.5	524.8	290.5	247.7	490.1	513.7	...	790.1	876.2	543.3	364.3	351.8	271.4
3822	Man. of agricultural machinery & equipment	576.7	699.0	454.4	413.9	292.4	372.0	409.1	403.1	327.0	711.5	580.3	948.4	767.1	854.0	663.6	224.5	376.6	312.7
3823	Man. of metal & wood working machinery	568.7	742.1	547.4	503.5	421.8	474.5	487.3	458.5	477.7	636.2	783.9	908.9	895.6	917.4	421.6	316.9	224.6	314.1
3824	Man. of special industrial machinery	442.1	490.5	444.8	578.4	479.4	553.4	368.1	376.5	442.5	759.7	730.7	754.6	730.0	679.9	369.4	389.5	317.8	323.0
3825	Man. of office, computing & accounting machinery	733.8	599.3	748.3	927.0	675.5	418.7	377.6	351.8	393.9	423.3	360.1	...	335.3	280.0	361.1	185.2	123.1	222.9
3829	Machinery & equipment except electrical n.e.c.	576.7	854.8	682.0	496.2	421.5	350.8	307.1	312.0	266.6	343.2	364.7	438.9	332.2	339.1	190.4	210.7	221.3	213.0
3831	Man. of electrical industrial machinery & apparatus	415.3	487.2	535.9	456.9	384.9	354.2	374.8	318.1	298.0	445.5	561.8	453.9	416.3	476.5	340.9	275.0	285.8	257.4
3832	Man. of radio, television & communication equipment & apparatus	575.3	648.4	442.0	336.2	218.0	213.9	174.6	150.3	224.3	316.3	381.0	390.7	384.5	369.5	229.9	235.3	240.9	264.3
3833	Man. of electrical appliances & housewares	431.7	528.8	327.0	585.3	443.1	400.3	398.3	398.6	283.8	314.3	192.8	405.4	282.3	275.7	174.7	144.9	157.7	242.9
3839	Man. of electrical apparatus & supplies n.e.c.	352.1	390.2	376.8	324.4	249.8	298.4	274.1	281.3	282.1	392.7	532.3	590.6	471.0	405.6	217.0	192.8	243.3	275.6
3841	Shipbuilding & repairing	814.9	599.7	598.4	775.1	527.9	892.7	615.7	636.1	641.9	875.1	1,156.3	1,153.4	872.1	885.0	655.5	440.4	417.0	332.6
3842	Man. of railroad equipment	1,035.0	1,129.4	1,297.1	1,159.8	745.3	766.1	1,602.5	2,146.7	1,233.2	2,253.2	1,441.8	1,354.7	1,095.3	1,417.9	1,211.8	...	...	...
3843	Man. of motor vehicles	530.2	553.7	399.4	308.6	288.1	314.1	301.0	273.7	238.4	351.8	454.1	482.7	400.1	337.7	275.1	255.0	233.1	199.5
3844	Man. of motorcycles & bicycles	444.7	664.3	882.7	535.2	381.1	492.4	416.0	354.0	...	...	...	391.0	433.3	480.0	344.5	303.3	290.7	341.1
3845	Man. of aircraft									684.0	759.7	...	...	...	...	...	...	...	...
3849	Man. of transport equipment n.e.c.	235.4	429.7	344.2	958.4	459.5	495.6	756.7	341.0	...	...	...	...	...	...	...	...	264.9	288.8	322.7
3851	Man. of professional & scientific, & measuring & controlling equipment, n.e.c.	328.2	911.5	511.6	515.0	531.8	555.1	509.8	418.6	463.6	568.7	721.0	911.7	589.1	577.5	270.6	278.8	437.0	311.9
3852	Man. of photographic & optical goods	316.1	311.7	392.7	338.8	287.0	314.5	277.5	243.0	404.6	225.6	334.7	344.7	...	260.6	182.0	216.7	...	...
3853	Man. of watches & clocks	520.3	490.2	530.4	315.4	268.1	400.0	397.7	446.0	429.5	494.2	...		...	·371.3	291.5	324.1	...	...
3854	Other	504.3	826.8	447.9	564.0	260.1	458.1	367.3	231.3	217.9	246.4	...	396.0	193.0	206.9	190.4	99.4	135.5	103.3
39	Other manufacturing industries	409.0	526.6	401.3	323.4	300.5	214.6	310.6	338.1	404.5	382.5	454.2	521.9	444.1	510.7	266.9	245.9	233.9	220.4
3901	Man. of jewellery & related articles	...	227.4	309.2	209.1	239.8	228.4	283.3	249.8	270.1	280.4	412.4	...	658.3	545.1	295.5	317.2	207.9	...
3902	Man. of musical instruments	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3903	Man. of sporting & athletic goods	...	...	...	...	...	683.3	...	...	...	595.4	...	...	...	543.8	459.4	...	...	...
3909	Manufacturing industries not elsewhere classified	413.7	549.4	410.7	334.8	303.5	210.0	315.6	346.8	420.4	389.6	457.9	536.9	404.1	502.7	258.1	225.8	241.8	269.0
3	Manufacturing Industry	409.5	449.1	373.2	319.8	267.2	257.4	216.7	220.2	209.7	306.0	399.0	459.5	388.8	368.8	233.6	199.0	208.9	205.2