



STRUCTURAL AND NON-STRUCTURAL  
ASPECTS OF UNEMPLOYMENT:  
A NAIRU ESTIMATION FOR TURKEY

Executive Summary



**TURKISH INDUSTRIALISTS' AND BUSINESSMEN'S ASSOCIATION**

# **STRUCTURAL AND NON-STRUCTURAL ASPECTS OF UNEMPLOYMENT: A NAIRU ESTIMATION FOR TURKEY**

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**June 1999**

**(TÜSİAD Publication No-T/99-6/259)**

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ISBN : 975-7249-85-8

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# FOREWORD

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*"Structural and Non-Structural Aspects of Unemployment: A NAIRU Estimation for Turkey" was prepared by Zafer Ali Yavan, who is an expert at State Planning Organisation. English version is the executive summary of the report authentic in Turkish, published by TÜSİAD on October 1997.*



### **Zafer Ali Yavan**

He was born in Ankara in 1962. Upon graduating from the Ankara Anatolian High School he received his Bachelors Degree from the Middle East Technical University, the Department of Operation Research and Statistics in 1985. He started an Ms. Degree program in the Department of Economics at the same university. However later in 1991 he had his Ms. Degree in Economics from the University of Salford, England.

His profession started in 1986 as an assistant economist in the General Directorate of Annual Programs and Finance, State Planning Organisation (SPO), followed later as an economist in the Department of Economic Modelling. Since October 1997, he has been holding the head position of the Department of Economic Modelling.

His professional interests involve Macroeconomic Theory, Monetary Economics, Labour Economics, Growth Accounting and Time Series Analysis. He has various publications in these areas both in Turkey and abroad. He has primarily studied on macro-modelling at the SPO and has contributed to the formation and development of the SPOMACRO model that SPO employs in policy and forecasting analysis. Within this framework, he has been involved in the project of "Quarterly Macroeconomic Model of Turkey" at the Economic Research Unit of the University of Pennsylvania and currently holds the responsibility of presenting the macro- econometric model of Turkey to the Project-LINK meeting. Furthermore, he lectures "Time Series Analysis" at the Middle East Technical University. He is married and has got one daughter.



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## **Executive Summary**

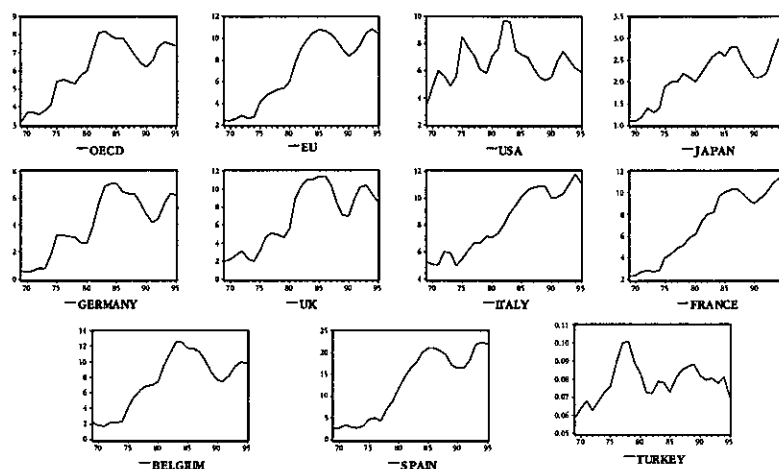
Unemployment is an important social and economic problem in a majority of the world economies, particularly over the last two decades. In almost all OECD and the EU countries, as well as in many developing countries, unemployment seems to have an increasing trend or a persistently high level. One of the most disturbing features of high rates of unemployment in these countries is the apparent tendency for unemployment, after rising during a cyclical downturn, to persist at or around the higher level even when economic activity picks up again. Undoubtedly, growth and/or efficient macroeconomic coordination help produce employment (i.e. reduces unemployment). Clearly, however, the demand management policies', and to a higher degree, the Keynesian money and fiscal policies' maneuver room has been considerably reduced. This inference is in fact true for almost every OECD and the EU country.

Over the last 2-3 decades, the structural-institutional component of unemployment rates has become more vital in determining the rate of total unemployment. Hence, in order to develop a feasible policy to decrease unemployment, one must first identify and partition the total rate of unemployment into the appropriate sub-components. Only then would policy makers balance the extent of direct and indirect employment as well as macroeconomic policies.

Economic literature, until recently, has referred to the terms structural unemployment and the "natural rate of unemployment" as though they implied the same rate. Nevertheless, today's economic literature adheres to a much more comprehensive depiction of equilibrium unemployment that comprises a variety of structural factors, which must be taken into consideration before proceeding with the NAIRU concept.



## UNEMPLOYMENT RATES BY COUNTRIES AND COUNTRY GROUPS



The notion of **hysteresis** has played a critical role in the explanation of the persistent high unemployment rates observed in the OECD and the EU countries. This notion, based on the degree of hysteresis, can be used to explain some elements of both structural and non-structural unemployment. This rather alternative view of structural unemployment purports that the structural unemployment rate depends, at least in the short term, on recent developments in actual unemployment. For example, a temporary negative demand shock that pushes up the actual unemployment rate may produce an increase in structural unemployment, persisting even after demand recovery. In other words, unemployment starts feeding itself in a dynamic manner. Full hysteresis arises when the equilibrium employment (and unemployment) rate depends totally on current employment (and unemployment). In such a framework, the Okun Curve postulate, which relates excess demand and the unemployment rate, as well as the expected flexible relationship between real wages and the unemployment rate, start to diminish.

Generally speaking, the hysteresis generating mechanism that has attracted widespread attention operates through changes in **human capital**. Consequently, extended periods of unemployment may result in a deterioration of skills and important attitudinal aspects of the work ethics and motivation of individual job seekers – when out of work, there are no opportunities for learning-by-doing and on-the-job-training. The loss of skills during unemployment may also lead to

Another explanation for the hysteresis focuses on the wage bargaining system of the employed **insiders**, and on the role of **adjustment costs**. When unions bargain mainly on behalf of the incumbent workforce, a temporary adverse shock to employment will tend to be self-perpetuating, as real wage demands are adapted to the now smaller number of employed insiders. **Loosely speaking, shifts in the employment composition in favour of groups facing little risk of unemployment may well effect the overall bargaining stance of unions and thus reduce the wage-moderating impact of a given rate of unemployment.** For insider effects to persist, the employed insiders must command some degree of market power. This could arise from several sources such as training costs or statutory seniority systems, as well as various forms of job security legislation.

Finally, over the last decade, the so-called, **efficiency wages** view has attracted much attention in explaining persistent unemployment. The efficiency wages hypothesis seeks to offer an explanation to the persistent real-wage (unemployment) rigidity in the presence of involuntary unemployment. The central assumption of this hypothesis is that higher real wages can, through various mechanisms (shrinking cost, turnover cost, adverse selection, sociological), result in higher labour productivity. **A major implication of this hypothesis is that wages, and hence labour markets, may be unresponsive to typical macroeconomic policies intended to lower the wages, because it is not in the firms' interests to do so. Therefore, a decline in real wages will produce a drop in both labour productivity and profits.** A special study on Turkey's private manufacturing sub-industries and the relationship of macro performance and the efficiency wages application can be found in Yavan 1996, which asserts that a strong "efficiency wage" approach seems to take place in these sectors.

Other factors that either directly or indirectly impact structural unemployment are: union density, employment taxes (tax wedge), unemployment benefits, skill mismatch, minimum wage applications and finally industrial organisation (imperfect competition). Surely, these factors may overlap in explaining structural unemployment. However, the main objective is to determine the most effective variables in explaining the structural unemployment. In the extended study, these factors are analysed on an institutional and economic basis. As demonstrated in the case of Turkey, the results are later utilised in an equilibrium unemployment framework based on the model outlined below.

Non-structural unemployment, which comprises cyclical unemployment, could

be simply defined as the part of unemployment that is originated from the mark-up errors of economic agents. Mark-up errors are deviations of various cost factors (wage, rental, intermediate input costs, etc.) from general price level increase. These are expected to be transient and correctable in the short-run. This part of unemployment cannot be obtained directly and is therefore inferred as a residual aggregate given the level of structural unemployment.

It is important to note that non-structural unemployment, which is dependent on the hysteresis interaction, can be transformed into the structural part of unemployment and cause a "prolonged cyclical" unemployment. Deep and prolonged shocks of the macroeconomic process, though infrequent, may sometimes produce a systematic component for expectational error which otherwise is expected to be zero in the long run.

Such a setting usually results from the authorities' misconception of a structural unemployment evolution as if it were a demand oriented development. Artificially expanded economic activity accelerates inflation as well as all cost items to an unknown level and pushes economic agents, having different rigidity / flexibility, into a mark-up battle. This framework, depending on the length of the mark-up battle, leads to both, a deterioration in the investment behaviour of firms at large, and constrains employment behaviour.

The NAIRU/NAWRU (Non-accelerating inflation rate/wage rate of unemployment) approach, by exploiting the common property of demand and supply shocks, aims to capture the dynamic interaction between mark-ups of firms and workers to find an equilibrating unemployment rate which is compatible with no expectational errors (e.g. price mark-up over cost equals wage mark-up over price). Such unemployment, then, can only be explained by structural and institutional factors. The term NAIRU actually is an unfortunate one in that the reasoning of the methodology necessitates an unchanging inflation rate (stable inflation rate) rather than non-accelerating. The approach implies that in an unchanging inflation set-up, the systematic mark-up errors would not take place.

The mechanism behind this notion can be described as follows. When buoyant demand reduces unemployment in an economy, inflationary pressure develops. Firms start bidding against each other for labour and workers feel more confident in pressing wage claims. If the inflationary pressure is too great, inflation starts spiraling upwards – higher wage rises lead to higher price increases, leading to still higher wage rises and so on. This is the well-known wage-price spiral.

However, increasing inflation can be sustained only by continuous monetary injection. If monetary growth is stable with GDP growing at a constant rate, rising inflation will in due course lead to rising unemployment. Eventually, the higher unemployment will stop the rise of the inflation and both unemployment and inflation will stabilise. It is this level of unemployment, at which inflation stabilises that is defined as the equilibrium rate of unemployment, NAIRU or structural unemployment. The term equilibrium, within this context, is unrelated to the concept of "market clearing". It simply represents the long run steady state to which the system will return after a disturbance.

The consensus technology for NAIRU/NAWRU approach (which is well established in Layard et al, 1991) entails a reduced form model of a two equation system. With appropriate assumptions (which are not very restrictive indeed) labour and product market behaviour could be reduced to wage and price setting behaviour of the agents. (A similar stripped-down version could be found in LNJ.)

$$\text{Wage Eq.: } w = a_0 + a_1 \cdot p_e - a_2 \cdot u + a_3 \cdot Z + a_4 \cdot (kl);$$

$$\text{Price Eq.: } p = b_0 + b_1 \cdot w + b_2 \cdot nw - b_3 \cdot u - b_4 \cdot (kl);$$

Where,  $w$ ,  $nw$  are wage and non-wage costs,  $p$ ,  $p_e$  are prices and expected prices,  $kl$  is the capital-labour ratio to capture capital and labour productivity jointly,  $u$  is unemployment rate and finally  $Z$  is the structural factors which are thought to be influential on unemployment rate through the wage determination. (Wedge, mismatch, union coverage etc.) All variables are in log form and  $w$ ,  $nw$ ,  $p$  and  $p_e$  are rates of growth.

If the wage equation is substituted, assuming  $w = nw = p = p_e$  (no mark-up errors),  $a_1 = b_1 + b_2 = 1$  (homogeneity assumption) and  $a_4 = b_4$  in the long-run, the NAIRU expression can be captured as:

$$\text{NAIRU} = \{ a_0 + b_0 + a_3 \cdot Z \} / \{ a_2 + b_3 \}$$

Within the above context, then, NAIRU represents the unemployment rate that is consistent with no expectational error of agents, hence it could only be explained by  $Z$  factors and constants. While  $Z$  factors increase NAIRU, the higher the sum  $\{a_2 + b_3\}$ , the lower NAIRU;  $a_2$  and  $b_3$  represent the relative flexibility of labour and product markets respectively. More flexible markets are compatible with lower NAIRUS.

The wage and price equations on the other hand, could be treated as labour

demand and supply equations as well, since log employment is approximately equal to  $1-u$ ;  $1-u$  could be the dependent variable of the wage equation and the wage mark-up on the right hand side. In this case, NAIRU could be interpreted as the natural rate of unemployment.

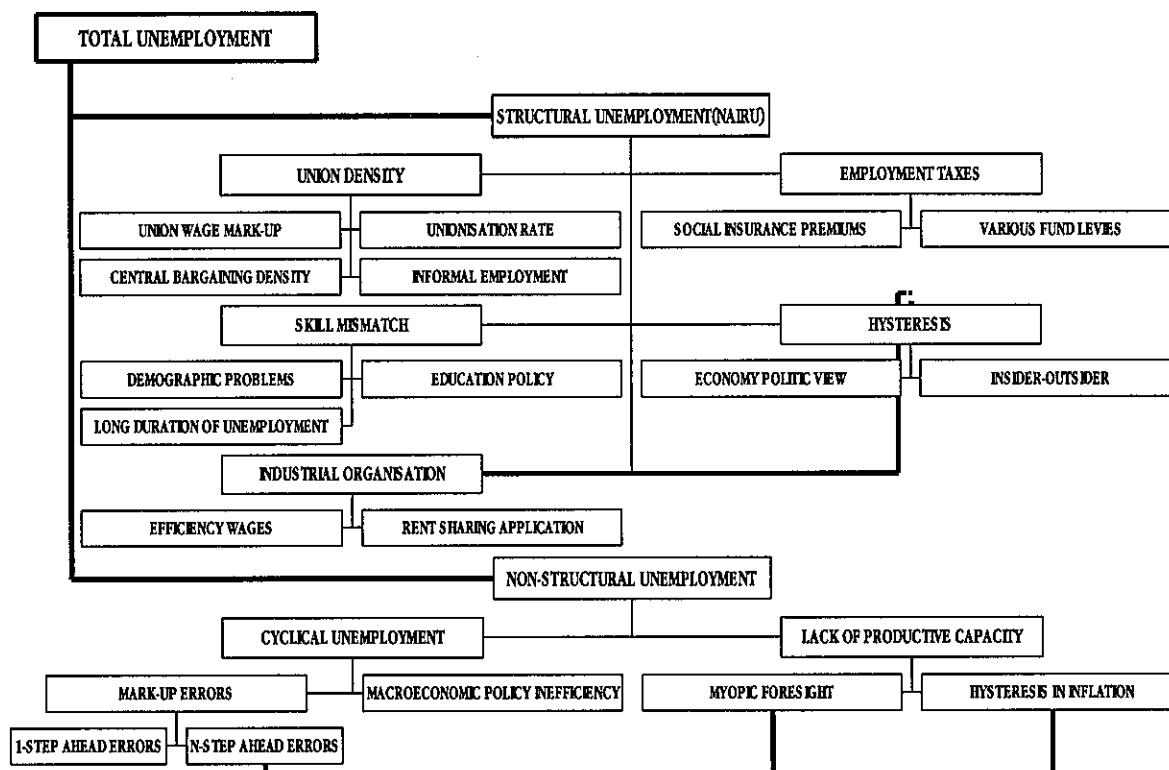
The consensus approach given above assumes a stationary unemployment rate. However, given the non-stationary aspect of the unemployment for almost every OECD country and for Turkey as well, the above framework can not be exercised without some modifications. To this end, in the study, the standard NAIRU technology is modified to include the variability of unemployment rates.

One important modification of the standard NAIRU technology is the necessity to account for the costs and price increase (inflation) processes that have prevailed in Turkey's economy over the last 25 years.

As scrutinised thoroughly in the study, Turkey's inflation and all related cost increases over the last 25 years have a deterministic trend – they neither converge to a constant rate, as is the case in many of the developed economies; nor do they diverge and explode, as observed in the case of some South-American economies. From this standpoint, it seems that no modification is necessary since economic agents' mark-up errors are white noise (zero mean and finite variance) regardless around a trend or a constant. However, as summarised in this article, this unique characteristic of Turkey's inflation process plays a crucial role in explaining the unemployment evolution in Turkey).

Below, is the schematic overview of the study, which will help readers understand the procedure of analysis. The results of the study will subsequently be summarised.

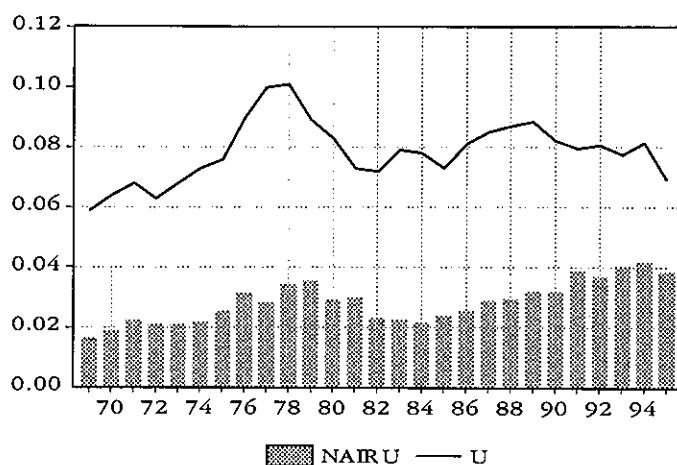
## ANALYSIS OF TOTAL UNEMPLOYMENT



For Turkey's case and along the lines of the above-summarised modified-NAIRU approach, the following results are obtained:

The NAIRU for the period 1969-95 comes as a function of **employment taxes, union wage mark-up, skill mismatch and the minimum mark-up (imperfect competition)**. NAIRU is an increasing series; it takes values 1.5-3.0 percent in pre-1980 period, decreases to 2.0 percent between 1980-1988 period and the increases with a higher pace to around 4 percent in 1990's.

### NAIRU AND REALISED UNEMPLOYMENT RATES



It appears that the mean reverting feature of the NAIRU becomes more and more difficult and vanishes after mid 1980's. However, the more important and provoking result is that, within the sample period, the actual unemployment rate does not intersect with the NAIRU. A significant differential between the actual unemployment and the structural unemployment has protracted for the entire period. Further, the non-structural part of the unemployment is of non-stationary character and dominates the actual unemployment rate path. This result readily supports the hysteresis explanation of high and persistent unemployment. However, detection of hysteresis per se is of hardly any assistance in the formulation of economic policy. Therefore, we proceed with analysing the non-structural aspect of the unemployment and attempt to make an explanation for the hysteresis domination.

The economic agents in Turkey, despite the existence of trend movement, make zero-sum and fixed variance expectational errors around price and wage inflation processes; but all of the nominal processes have an evident and similar deterministic trend in the Turkish case.

Existence of the deterministic trend, while maintaining the expectational errors to be zero-sum in the short-term, brings a hysterical atmosphere for the n-step ahead world. The increasing inflation process, regardless of a deterministic trend or a stochastic trend, is subject to intervention by the authorities in order to decrease and/or stabilise inflation. However, the standard anti-inflationary policy options (monetary / fiscal contractions or nominal anchor policies) are unrelated to the built-in deterministic trend of the inflationary process. Whilst the extent of the appropriateness of such policies can only be effective on the movement of

inflation around its deterministic trend, policy makers' attempts to decrease inflation via standard macroeconomic policies keep unemployment always above its equilibrium level. Moreover, as is the case in supply shocks, this option further strengthens the deterministic trend of wage/price inflation since inevitable output contractions are often accompanied with mean shifts in the inflation process. In accordance, the investment behaviour of firms is bound to be myopic and employment, to a large extent, is capacity constrained (lack of sufficient capital).

To validate this explanation, an uncertainty variable (relative price variability) is constructed and is correlated with the non-structural part of the unemployment. We find some similarities between the paths of uncertainty growth and non-structural unemployment. Furthermore, the explanatory power of the uncertainty variable in non-structural unemployment growth and in the private investment behaviour are statistically tested and the existence of significant interaction is accepted. **It is concluded that the non-structural component of unemployment and the unemployment itself, even when the most appropriate macro policy mix is applied, can not be decreased without eliminating the deterministic trend of inflation in the Turkish economy, or equivalently, decreasing the hysterical uncertainty, and increasing the credibility of the disinflation programs.**

### **Concluding Remarks**

High and persistent unemployment is acute in many of the OECD countries and the EU at large. The persistence and even increasing feature of the unemployment in these countries is often justified by the increasing structural unemployment. Dominant structural factors concentrate around the long duration of unemployment and the generosity of unemployment benefits, which may in fact work inter-actively. In the Turkish case, although structural unemployment is increasing towards the end of the period, it is low and does not dominate the actual unemployment rate.

However, policy makers must learn from the EU and the OECD experience on the determinants of high structural unemployment since it is relevant to the Turkish case as, for example, some studies for unemployment benefit system got under way over the last decade. 2 million civil servants are employed in the public sector. This sector can be characterised by a continuously decreasing productivity rate and an enormously increasing wage share, at least over the last 25 years. It can comfortably and ironically be stated that Turkey already has a generous



sector can be characterised by a continuously decreasing productivity rate and an enormously increasing wage share, at least over the last 25 years. It can comfortably and ironically be stated that Turkey already has a generous unemployment benefit system. Therefore, unemployment benefit system proposals must be reconsidered without eliminating this low-productivity public sector employment problem.

A final and crucial evaluation must be performed. Due to the high level of employment tax in Turkey; the effective employment tax rate which is significantly much higher than the OECD average, is applied to the formal employment, accounting for a relatively small portion of the total employment. On the other hand, this rate is one of the most important determinants of structural unemployment. The policy makers' priority for taxing the formal sector and letting the informal sector absorb shocks must be reversed by lowering employment taxes across the board. This, while decreasing structural unemployment, will also increase the informal employers'/employees' willingness to be registered.

#### Short-Listed References

- (1) Amable, B., Henry, J., Lordan, F. and Topol, R. (1993) Unit-Root in the Wage-Price Spiral is not Hysteresis in Unemployment, *Journal of Economic Studies*, Vol. 20, pg. 124-36
- (2) Bean, C. (1994) European Unemployment: A Survey, *Journal of Economic Literature*, Vol: 32, pg. 553-619
- (3) Bulutay, T., (1995) Employment, unemployment and wages in Turkey, ILO Publication
- (4) Cromb, R. (1993) A Survey of Recent work on the NAIRU, *Journal of Economic Studies*, Vol 20, pg. 27-51
- (5) Cross, R. (1993) The NAIRU as a Theory of Equilibrium Unemployment, *Journal of Economic Studies*, Vol 20, pg. 117-23
- (6) Elmeskov, J. and MacFarlan, M. (1993) Unemployment Persistence, *OECD Economic Studies*, No:21/Winter, pg. 59-88
- (7) Jackman, R., R. Layard and S. Nickell (1996) Structural Aspects of OECD Unemployment, *OECD Conference Paper*, Conference: Interactions between Structural Reform, Macroeconomic Policies and Economic Performance, 18-19 January, Paris
- (8) Layard, R., Nickell, S.J. and Jackman, R. (1991) *Unemployment: Macroeconomic Performance and the Labour Market*, Oxford University Press, Oxford
- (9) Scarpetta, S. (1996) Assessing the Role of Labour Market Policies and Institutional Settings on Unemployment: A cross-country study, *OECD Economic Studies* (forthcoming)
- (10) Tyrvaenen T. (1995) Wage Determination in the Long Run: Real Wage Resistance and Unemployment: Multivariate Analysis of Cointegration Relations in 10 OECD Economies, *OECD Job Study*, Working Paper
- (11) Turner, D., and Rauffet, S. (1994) The Effect of the Wedge and Productivity on the NAIRU in five Major OECD Countries, Working Paper, No:38, ESRC Macroeconomic Modelling Bureau, Warwick University, (November)
- (12) Yavan, Z.A. (1997), Evaluation of Efficiency Wages Hypothesis and Testing For the Turkish Private Manufacturing Industries, *Employer's Journal*, Vol: XXXV, NO: 8, May 1997
- (13) Yavan, Z.A. (1996), Unemployment in Turkey: Structural and Non-structural Aspects, Paper presented to OECD Working Party No:1 Meeting, October 1996

