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The impact of a Customs Union with the EU on internal migration in Turkey under the two alternative Harris-Todaro and wage curve settings

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**The Impact of a Customs Union with the EU on
Internal Migration in Turkey under the Two Alternative
Harris-Todaro and 'Wage Curve' Settings**

by

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ABSTRACT

The impact on internal migration of the recent Customs Union (CU) agreement between Turkey and the European Union (EU) has been studied with an intra-industry trade Applied General Equilibrium (AGE) model with intersectoral capital mobility, under two alternative specifications for the labour market: the traditional Harris-Todaro approach and the existence of a 'wage curve' in the urban sector. The numerical results show that, under both specifications, the CU leads to migration from rural to urban areas, despite agriculture remaining protected; causes a reduction of the urban unemployment rate and the urban-rural wage gap as suggested by theoretical studies; whilst raises the capital rent, a counter intuitive result with respect to the dual economy literature. Both scenarios suggest that internal migration is economically desirable, as it would contribute to a large rise in welfare. The study also shows that the proposal of uniformly subsidising the entire labour market maximises welfare, but the possibility that the high wage union sector can cream off more rents, and the large amount of financial resources required, make this policy unfeasible. It might be thought that the results of this kind of exercise would be highly sensitive to the assumptions made about the labour market. One of the contributions of this paper is to demonstrate that that is not the case.

KEYWORDS: Customs Union, Internal Migration, AGE analysis, Turkey.

JEL classification: D58, F14, F15, F17, R23.

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1. Introduction

Internal migration is a widespread phenomenon in Turkey. According to official statistics based on the 1990 census of population, four million people (8 per cent of the entire Turkish population in 1990) permanently migrated between 1985 and 1990. The region which attracted the largest amount of migration inflow is Marmara with a net migration of 840,652 individuals (78 per cent of whom settled in Istanbul).¹ Most people migrate from eastern to western Turkey and have virtually no schooling.² These migrants worked in villages as agricultural employees and, as a result, their job opportunities in the West are limited to manual work. Due to the recent CU agreement between Turkey and the EU, the pressure of

¹ The reasons for this large internal migration flow can be explained with the standard 'push' and 'pull' factors. The most important 'push' factors are: (i) the high share of population living in the sub-districts and villages (41% in 1990); (ii) the relative limited amount of cultivated area (less than 3 Hectares per agricultural worker in 1994); (iii) the low agricultural productivity (the value added per worker produced in agriculture was one fifth that produced in manufacturing in 1995); (iv) the poor contemporaneous and expected quality of life by remaining in the villages (for example the infant mortality rate is 7-8% in the eastern regions and around 5% in the western regions). Whilst, the most important 'pull' factors are: (i) the high demand of manufacturing labour as a result of the industrialisation process, especially in Istanbul and Izmir (almost 1,300,000 jobs have been created by manufacturing and services during 1988-1994); (ii) the higher manufacturing wages (the nominal manufacturing wage was on average twice as high as the nominal agricultural wage in the 1980's); (iii) the certainty of a continuous income and social security associated with a secure and formally regulated permanent job; (iv) the better quality of life in living in urban areas, associated with a far better access to subsidised public services, such as schools and health care. In addition, another important pull factor explaining the high migration flow in Turkey is the possibility for migrants to live in squatter settlements in the outskirts of cities (*Gecekondu*). The largest cities of Turkey, such as Istanbul, Izmir and Ankara are characterised by the squatter housing phenomenon. Thus, the possibility of living in *Gecekondu* allows villagers to migrate without incurring large costs.

² Although, in relative terms, the better educated individuals are more likely to search for a job with a higher return (Tunali, 1996).

unskilled labour on cities could exacerbate, because of improved employment opportunities in labour-intensive manufacturing, which have now a better access to the EU market. In fact, an early study shows that this preferential trading agreement will have a major impact on the reallocation of resources among sectors, favouring the expansion of manufacturing activities (De Santis, 1997). It is important to stress that, according to the CU protocol, agriculture continues to remain a sector which is excluded from the trade-enhancing options of the CU. This is because, given the system of protection, as defined by the European Common Agricultural Policy (CAP), and the size of Turkish agriculture (i.e. Turkish agriculture comprised 15% of GDP and employed 48% of civilian employment in 1995), any agreement on free trade in agriculture between the EU and Turkey was considered unacceptable by European policy-makers. Consequently, agribusiness activities (i.e. primary agriculture and food industries), for which Turkey has a comparative advantage, have not been included in the CU protocol. More precisely, the CU agreement between Turkey and the EU, which will be completely adopted by the Turkish government by the year 2001, consists mainly of the following three measures: (i) elimination of tariff barriers on mining and industrial products imported from the EU; (ii) adoption of the European common external tariff rates on mining and industrial products imported from the Rest of the World (RoW); (iii) elimination of export quotas in the form of

Voluntary Export Restraints (VERs) on textiles and wearing apparel shipped to the EU.³ Since the duties levied by the EU on Turkish (non-CAP) goods are zero, and the common external tariff rates are generally lower than the Turkish applied rates, one might argue that resources could be redirected from import-competing industries towards the widely protected agricultural activities so as to favour the migration flow from urban to rural areas and, as a result, reduce the pressure on cities. However, one needs to consider that firstly, most of the protected agribusiness industrial activities are located in urban areas; secondly, the elimination of VERs will favour the expansion of export-oriented industries, such as textiles and apparel, whose activities are located in urban areas; and finally, the interactions among sectors are difficult to capture. As a result, the impact of the CU agreement on Turkish internal migration is an important empirical question.

In order to understand the direction of the migration flow and to determine its magnitude, I use an AGE model for Turkey, which is based upon the basic Harris-Todaro hypothesis that migration is induced by the expected urban-rural wage differential (Harris and Todaro, 1970). The AGE model incorporates VERs

³ In exchange, Turkey would have received 1.48 billions ECU in a five year period to compensate for a loss in tariff revenues. The financial flow from the EU has been blocked with a veto by Greece for political reasons related to the Cyprus issue. As a result, the Turkish government argues that the CU agreement is unfair, as Turkey would suffer from trade liberalisation. However, this argument does not stand up to empirical scrutiny. De Santis (1997) and Harrison, *et. al* (1997) have shown in a static framework that the CU agreement would lead to a slight increase in welfare, as resources are better reallocated among sectors.

and import tariffs at sectoral and regional level. It is characterised by (i) intra-industry trade in order to capture the *cross-hauling* phenomenon, rather than the quite strong assumption of specialised trade flows, which is typically made in theoretical two-sector models; (ii) the use of intermediate inputs to capture sectoral interdependencies, as suggested by Beladi and Marjit (1996); (iii) intersectorally capital mobility, as assumed by Corden and Findlay (1975), Hazari and Sgro (1992) and Chen and Choi (1994); and (iv) an extended Harris-Todaro migration equation, according to which migration takes place up to the point where the expected urban wage equates to the rural wage, adjusted for a parameter which reflects either the fact that the migrants' chance of finding an urban formal sector job is lower than for persons who are already in towns searching for work (Fields, 1975), or the farmers' risk aversion to migrate (Corden and Findlay, 1975; Lucas, 1997). In summary, the AGE model presented in this study cannot be regarded as a representation of a dual economy. Consequently, the theoretical results of the literature that, in a small open economy with capital mobility, trade liberalisation decreases the return to capital, increases the rural wage, decreases urban unemployment and raises welfare (Hazari and Sgro, 1992; Chen and Choi, 1994; Beladi and Marjit, 1996), are not necessarily valid.

The Harris-Todaro model is probably the most powerful approach in explaining internal migration in a general equilibrium setting. In Harris and

Todaro, the ultimate cause of urban unemployment is an institutionally determined urban minimum real wage, which is maintained above the clearing condition. In Turkey, the minimum wage is determined every year by the Minimum Wage Setting Commission. However, the net minimum wage is well below the base wage in both the formal private and public sectors (IMF, 1997). Consequently, the cause of Turkish urban unemployment cannot be found in the minimum wage legislation. Certainly, Turkey is not a dual economy à la Harris-Todaro. However, it must be stressed that the average real wage in Turkish manufacturing moved around a constant value during the period 1991-1995 (see Fig. 1, which shows the average monthly nominal wage rate in manufacturing deflated by either the monthly general wholesale price index or the monthly urban areas consumer price index). This statistical information does allow still for examining the impact of the CU agreement under the Harris-Todaro constant wage assumption.⁴

[Insert Figure 1]

The Harris-Todaro model implies a positive relationship between unemployment and urban wage. However, recent empirical studies have argued that the labour market, in developed countries (Blanchflower and Oswald, 1994) as

⁴ A survey discussing the urban labour market pathologies and the reasons beyond the labour market clearing condition failure can be found in Lucas (1997).

well as in developing countries (Hoddinott, 1996), is characterised by a 'wage curve', that is a negative relationship between the contemporaneous wage rate and unemployment.⁵ Given this debate, I have examined the impact of the CU agreement on Turkish internal migration by considering two alternative scenarios: the so called Harris-Todaro scenario with a sector-specific constant wage; and the so called 'wage curve' scenario which, conversely, is characterised by a negatively sloped relationship between the urban wage rate and urban unemployment.⁶

It is important to emphasise that the parameters of the model used in this study have been calibrated, a procedure which does not involve any testing procedure (Mansur and Whalley, 1984). Consequently, the numerical findings must be cautiously interpreted, and are valid only in the light of these two scenarios. Obviously, econometric studies are needed to understand the features of the labour market in Turkey.

The results of the simulations indicate that welfare would increase under both scenarios, and unemployment and the urban-wage gap would decrease in

⁵ Partridge and Rickman (1997) have recently challenged Blanchflower and Oswald's analysis by presenting new empirical evidence for the US, which supports the traditional view that a positive relationship exists between regional wages and regional unemployment.

⁶ Note that the unemployment rate in Turkey was in the range of 6.6%-9% in the period 1988-1995. In particular, the unemployment rate ranged between 10% and 13.7% in urban areas, and between 3.9%-5.9% in rural areas (SIS, 1997), which implies that official unemployment in Turkey is largely confined to the urban sector. However, it must be said that the disguised unemployment in rural areas is not captured by the official employment figures (IMF, 1997). This paper assumes that unemployment is an urban phenomenon.

accordance with the theory;⁷ whereas, migration would take place from rural to urban areas and capital rent would increase, in contrast with the dual economy literature.

The study also shows that the proposal suggested by Bhagwati and Srinivasan (1974) of uniformly subsidising the entire labour market maximises welfare in both scenarios, leading to full employment in the Harris-Todaro scenario, and an extremely low unemployment rate in the 'wage curve' scenario.

The study also consists of a further four sections. Section 2 defines the algebraic specification of the model. Section 3 describes the benchmark and the calibration of parameters. Section 4 explores the effects of the policy simulations, and the final section provides some conclusions.

2. Model specification

The trade model presented in this study is a static multi-sector AGE model for Turkey with perfect competition and constant returns to scale. The model is characterised by intra-industry trade as each tradeable commodity is exchanged in five different markets: the domestic market; the markets for imports from the EU,

⁷ It is usually argued, especially by some politicians, that a tariff reduction leads to an increase in unemployment. Conversely, in a Harris-Todaro framework, it is shown that trade liberalisation causes a decline in unemployment (Hazari and Sgro, 1992). If the urban manufacturing sector supplies a sizeable input for the rural sector, then a tariff fall can increase employment, even if the protected sector is labour intensive (Beladi and Marjit, 1996).

and the RoW; and the markets for export to the EU, and the RoW. This implies that although Turkey is assumed to be a price taker of international goods, domestic prices are endogenously determined. The AGE model specifies the effective trade barriers (i.e. tariffs and quota) with the EU and the RoW in the form of *ad valorem* tariff equivalent. With regard to the equilibrium conditions in goods and factors markets, the final demand and the intermediate demand of goods is equal to the domestic supply plus imports; the total capital demand is equal to the total capital supply; and the total labour demand is equal to the total labour force minus urban unemployment. The numeraire of the model is represented by the Laspeyre's price index of domestic goods.

To simplify the presentation, the specification of the model is divided into six components: production technology and factor demand, internal migration, the 'wage curve', treatment of traded goods and foreign sector closure, household revenues and consumption, government revenues and expenditure.

2.1. Technology and factor demand

The production technology is described by a two-stage nested separable CES function. At the first stage, sectoral production is generated as a Leontief function between raw-material inputs, which are assumed to be strictly complementary, and the value added, which is, at the second stage, a CES combination of labour and

capital. The demand for factor inputs is derived by solving the two-stage dual problem, such that producers behave competitively and the factor returns equal their marginal revenue product. More specifically, the labour demand in agriculture, L_a , and the labour demand in the remaining sectors of the economy, L_s , can be written as follows:

$$(1) \quad L_a = \Phi_a^{-1} \delta_a^{\xi_a} w^a^{-\xi_a} \left[\delta_a^{\xi_a} w^a (1-\xi_a) + (1-\delta_a)^{\xi_a} r (1-\xi_a) \right]^{\xi_a/(1-\xi_a)} Y_a,$$

$$(2) \quad L_s = \Phi_s^{-1} \delta_s^{\xi_s} w^s^{-\xi_s} \left[\delta_s^{\xi_s} w^s (1-\xi_s) + (1-\delta_s)^{\xi_s} r (1-\xi_s) \right]^{\xi_s/(1-\xi_s)} Y_s,$$

where $i = a \cup s$, Y_i denotes sectoral production, w^a and w^s the wage rates in rural and urban areas, r the capital rent, Φ_i and δ_i the shift and the share parameter of the CES sectoral production function, and ξ_i the sectoral elasticity of substitution among labour and capital.

It is assumed that factor inputs are mobile between sectors. Total capital demand always equates exogenous aggregate capital; whilst total labour demand, plus urban unemployment, U , are equal to the exogenously given labour force, \overline{TLF} ,

$$(3) \quad \overline{TLF} = \sum_a L_a + \sum_s L_s + U.$$

2.2. Internal migration

Harris and Todaro (1970) show that in equilibrium there is no incentive to migrate if the rural wage equates the expected urban wage. However, estimates of the earning gap for several developing countries suggest that an equilibrium would occur at large unemployment rates in urban areas.⁸ As a result, the Harris-Todaro approach has been extended by taking into account a parameter, λ , which reflects either the fact that migrants suffer more extensive periods of unemployment than already settled urban residents, who are also searching for work (Fields, 1977), or the risk aversion to migrate on behalf of rural workers (Corden and Findlay, 1975; Lucas, 1997). Thus, this extension allows for more realistic calculations of equilibrium unemployment rates. The extended Harris-Todaro migration equation takes the following form:

$$(4) \quad \lambda w^a = \frac{\sum_s L_s}{\sum_s L_s + U} w^s, \quad \lambda \geq 1.$$

⁸ According to recent estimates for Turkey (Bulutay, 1995), the nominal manufacturing wage was on average twice as high as the nominal agricultural wage in the 1980's. The Harris-Todaro model would therefore require an urban unemployment rate of 50% in equilibrium. However, the official statistics for Turkey suggest that the urban unemployment rate was around 11% in the same period.

2.3. The wage curve

As estimated by Blanchflower and Oswald (1994) for several developed countries, and by Hoddinott (1996) for Côte d'Ivoire, a low-income economy with a 1995 per capita GNP equal to one fourth that of Turkey, economies are characterised by a long-run negative relationship between the wage rate and unemployment, with an elasticity value approaching to - 0.1. As pointed out by Blanchflower and Oswald (1994), the Harris-Todaro concept of compensating differentials across regions is compatible with a negatively-sloped relationship between the contemporaneous wage rate and unemployment, because it is the 'permanent' value of pay which is positively related to unemployment in a long-run relationship. Unfortunately, no one has estimated this relationship for Turkey, nevertheless in the 'wage curve' scenario I assume that the urban wage rate and urban unemployment are linked by the following relationship:

$$(5) \quad w^s = \rho U^\varepsilon, \quad \varepsilon < 0, \rho > 0.$$

Note that the negative relationship between wage rate and unemployment can be theoretically explained with the 'efficiency wage' hypothesis or with bargaining models between firms and trade unions. Thus, (5) should not be treated as an *ad hoc* specification.⁹ Equations (1) - (5) endogenously determine w^a , w^s , L_a , L_s

⁹ For a detailed discussion, see Blanchflower and Oswald (1994).

and U . Obviously, the Harris-Todaro scenario implies w^s exogenous and the elimination of (5) from the system of the equations.

2.4. Treatment of traded goods and foreign sector closure

2.4.1. Imports

As far as the imports are concerned, on the supply side, the *small country* assumption is postulated with respect to both regions. On the import demand side, a three stage nested separable CES function is employed. Thus, it is assumed that buyers first decide between composite commodities, then decide between domestically produced goods and the composite imported commodities, and then choose between imports from the EU, M_i^{EU} , and imports from the RoW, M_i^{RoW} , with elasticity of substitution μ_i , according to the Armington specification, which states that products of different countries competing in the same market are imperfect substitutes:

$$(6) \quad M_i^{EU} = A_i^{-1} \left\{ \alpha_i^{-1} + \alpha_i^{\mu_i - 1} (1 - \alpha_i)^{\mu_i} \left[\frac{\overline{pwm}_i^{RoW} (1 + tm_i^{RoW})}{\overline{pwm}_i^{EU} (1 + tm_i^{EU})} \right]^{1 - \mu_i} \right\}^{\mu_i / (1 - \mu_i)} M_i^C,$$

$$(7) \quad M_i^{RoW} = A_i^{-1} \left\{ (1 - \alpha_i)^{-1} + \alpha_i^{\mu_i} (1 - \alpha_i)^{\mu_i - 1} \left[\frac{\overline{pwm}_i^{EU} (1 + tm_i^{EU})}{\overline{pwm}_i^{RoW} (1 + tm_i^{RoW})} \right]^{1 - \mu_i} \right\}^{\mu_i / (1 - \mu_i)} M_i^C,$$

where \overline{pwm}_i^{EU} and \overline{pwm}_i^{RoW} are the fixed world prices of similar imports produced by the EU and the RoW, respectively; and tm_i^{EU} and tm_i^{RoW} are the applied *ad valorem* regional import tariff rates, gross of the applied *ad valorem* Mass Housing Fund levies on EU and RoW commodities evaluated in terms of tariff equivalent;¹⁰ M_i^C denotes the composite imports; A_i and α_i are the shift and the share parameters of the CES import aggregation function.

The acceptance of the 1996 CU protocol implies that for mining and industrial products tm_i^{EU} has to be set equal to zero and tm_i^{RoW} has to be set equal to the European common external tariff. The modification of tariff rates leads to a change in relative prices, which will affect the demand of imports and, at the upper level, the demand of the domestically produced goods and the demand of composite goods.

2.4.2. Exports and VERs

With regard to exports, on the demand side, the *small country* assumption implies the export demand functions to both regions to be infinitely elastic. Hence, the Turkish export production is totally absorbed by foreign trade partners at world

¹⁰ Turkey has levied this surcharge on imports since 1984, the year of the Housing Fund law approved by the Turkish Parliament to finance the government's low cost housing scheme for poor and middle-class income households. The Mass Housing Fund duty will be phased out in 1998 (GATT, 1994).

prices. However, for goods still subject to VERs, the domestic supply price of exports, pe_i^{EU} , is endogenously determined by the amount of output which is agreed to be exported. Hence,

$$(8) \quad pe_i^{EU} = \frac{\overline{pwe}_i^{EU}}{1 + qr_i^{EU}},$$

where \overline{pwe}_i^{EU} is the fixed price of exports prevailing in the EU market, and qr_i^{EU} represents the *ad valorem* export quota premium parameter on Turkish textiles and apparel. When qr_i^{EU} is zero, the domestic supply price vector of exports to the EU is equal to the price vector prevailing in the EU market.¹¹

On the supply side, the export supply functions to the EU, E_i^{EU} , and the RoW, E_i^{RoW} , are derived by maximising total export sale revenues subject to the export possibility frontier, E_i^C , which is defined by a constant elasticity of transformation (CET) function. Hence,

$$(9) \quad E_i^{EU} = B_i^{-1} \left[\beta_i + \beta_i^{\eta_i+1} (1 - \beta_i)^{-\eta_i} \left(\frac{pe_i^{EU}}{\overline{pwe}_i^{RoW}} \right)^{-(\eta_i+1)} \right]^{\left(\frac{\eta_i}{\eta_i+1} \right)} E_i^C,$$

¹¹ Note that the sectors subject to VERs until year 2001 are only textiles and apparel. The quota premium for other sectors is zero.

$$(10) \quad E_i^{RoW} = B_i^{-1} \left[(1 - \beta_i) + \beta_i^{-\eta_i} (1 - \beta_i)^{\eta_i + 1} \left(\frac{\overline{pwe}_i^{RoW}}{pe_i^{EU}} \right)^{-(\eta_i + 1)} \right]^{\left(\frac{\eta_i}{\eta_i + 1} \right)} E_i^C,$$

where \overline{pwe}_i^{RoW} is the fixed price of exports prevailing in the RoW market, η_i the elasticity of transformation, B_i and β_i the shift and the share parameters of the CET export aggregation function. The composite export, E_i^C , is in turn derived by maximising total sales (domestic sales, plus export sales) subject to the production possibility frontier, which is a transformation function of the domestic good and the composite export with constant elasticity.

The rents from VERs, VER_i^{EU} , which are allocated to the Turkish exporting sectors,¹² and then transferred to households, are proportional to the agreed quota premium and the level of exports:

$$(11) \quad VER_i^{EU} = qr_i^{EU} pe_i^{EU} E_i^{EU}.$$

The EU does not levy any tariff on Turkish mining and manufacturing exports, but it imposes quota restrictions on Turkish textiles and apparel. With the implementation of CU agreement, qr_i^{EU} is zero, the quota rents disappear and

¹² Since the Turkish government does not officially recognise any quota restriction, VERs agreements could only be made with Turkish industry associations (GATT, 1994). Thus, the rents from VERs accrued to the exporting firms which were able to obtain the export quota documents for deliveries to the EU.

$pe_i^{EU} = \overline{PWE}_i^{EU}$. This will affect sectoral exports and domestic production decisions.

2.4.3. Foreign sector closure

The current account deficit, \overline{CA} , is exogenously specified. Thus, the equilibrium in the balance of payments is:

$$(12) \quad \sum_i \left(\overline{pwe}_i^{EU} E_i^{EU} + \overline{pwe}_i^{RoW} E_i^{RoW} \right) + \overline{CA} = \sum_i \left(\overline{pwm}_i^{EU} M_i^{EU} + \sum_i \overline{pwm}_i^{RoW} M_i^{RoW} \right)$$

2.5. Household revenues and consumption

Since the Turkish government did not take part in the VERs arrangements with the EU, the rents accrued directly to the private companies, who then redistributed them to shareholders in the form of dividends. As a consequence, the source of private income, HR , originates from wage payments, returns to capital, plus rents from VERs. In addition, the representative household pays lump-sum taxes to the government, THG , which are endogenously specified to perform a revenue neutral tariff reform. Then,

$$(13) \quad HR = \sum_a w^a L_a + \sum_s w^s L_s + \sum_i VER_i^{EU} - THG.$$

Since the model is static, the household utility function is defined only on composite commodities. Because of lack of data on the values of the elasticity of substitution among commodities for each household group, consumer preferences have been described simply by Cobb-Douglas utility functions. The household consumption behaviour is therefore represented by the following Marshallian demand functions:

$$(14) \quad C_i = \gamma_i \frac{HR}{p_i}, \quad \sum_i \gamma_i = 1,$$

where γ_i denotes household budget shares and p_i the price of composite commodities.

2.6. *Government revenues and expenditure*

The government levies various taxes in order to finance its expenditures: a direct tax on household income; duties on imported goods; indirect taxes on goods and services, and lump-sum taxes. The government is a separate consuming agent; however its consumption decisions are not affected by price changes. In fact, public expenditure is represented by an exogenous consumption of goods and services in real terms. The endogenous lump-sum taxes guarantee that total public revenues remain constant.

3. Benchmark and calibration

The theoretical model outlined above requires a benchmark data-set to calibrate unknown parameters, such that the observed value of endogenous variables constitutes an equilibrium of the numerical model (Mansur and Whalley, 1984).

The benchmark used for this study is based upon a data-set employed and described in detail in De Santis (1997). Its main source is a 1990 Social Accounting Matrix for Turkey (De Santis and Ozhan, 1995, 1997), which is in turn mainly based upon the official 1990 Input-Output (I-O) table for Turkey (SIS, 1994b). Activities and commodities are disaggregated into 20 different types and classified according to the I-O table classification.¹³ The accounts for imports and exports are disaggregated to model the relations with the EU and the RoW.¹⁴

Table 1 shows the share of labour and capital in output, and the intensity of factors in production. The I-O table for Turkey defines the cost of labour in terms of wages and salaries (i.e. compensation of employees) and the operating surplus as a balancing residual. This implies that agriculture, which is dominated by self-employed and unpaid family labour, would be characterised by an underestimated

¹³ The 1990 Input-Output table for Turkey comprises 64 sectors. Since the formation of the CU between Turkey and the EU involves only mining and manufacturing commodities, I have mainly aggregated the sectors subject to the CAP, mining and services. Mining has been aggregated because it is a very small sector in terms of share in the GDP, labour force employed and volume of trade.

¹⁴ The EU is composed of 15 countries: 12 members existing in 1990, plus the new members Finland, Austria and Sweden.

ratio between labour and capital.¹⁵ In fact, according to the 1990 I-O table, the ratio between operating surplus and compensation of employees in agriculture, animal husbandry, forestry and fisheries is on average equal to 7.9. Since this would bias the results of the policy experiments, I have calculated the total farmers' earnings in Turkish agriculture for the year 1990, by using as a basis the average nominal wage in agriculture estimated by Bulutay for the year 1989 (Bulutay, 1995).¹⁶ The new estimate for the primary sector as a whole is reported in Table 1, under the heading of 'agriculture'. It appears that the labour intensive sectors are agriculture, beverage-tobacco, transport equipment, electricity-gas-waterworks, construction and other services. Whereas the most important capital intensive sectors are leather-fur products, petroleum-coal products, metal products, and transport-communication. Although this might be counter intuitive for leather-fur products, it must be stressed that this sector is very small. According to the benchmark data set used for this study, leather-fur products comprised only 0.26% of Turkey's GDP at factor cost (SIS, 1994b) and 0.21% of Turkish civilian employment (SIS, 1994a) in 1990. Thus, this statistical outlier, which might be due to the large profits made by this sector in 1990, should not bias the results of the simulations.

¹⁵ Bulutay (1995) argues that self-employed and unpaid family labour comprise almost 95% of the employed persons in Turkish agriculture.

¹⁶ I have also considered the fact that the index of prices received by farmers increased by 62.8% from 1989 to 1990 (SPO, 1996), and that the full time equivalent work in agriculture is 41% of the entire time, as has been estimated for similar European Mediterranean countries (EC, 1996).

Table 1 Factor intensity in Turkey, 1990

<i>Sectors</i>	Share of labour earnings in production	Share of capital earnings in production	Factor intensity (Capital/Labour)	Relative factor intensity
<i>Agriculture</i>	0.326	0.352	1.08	0.64
<i>Mining</i>	0.266	0.504	1.89	1.11
<i>Food processed products</i>	0.073	0.142	1.95	1.11
<i>Beverages and tobacco</i>	0.223	0.328	1.47	0.86
<i>Textiles</i>	0.071	0.240	3.38	1.99
<i>Wearing apparel</i>	0.062	0.225	3.63	2.14
<i>Leather and fur products</i>	0.022	0.339	15.41	9.06
<i>Footwear</i>	0.075	0.197	2.63	1.55
<i>Wood and wood products</i>	0.075	0.255	3.40	2.00
<i>Chemical products</i>	0.100	0.262	2.62	1.54
<i>Petroleum and coal products</i>	0.021	0.263	12.50	7.35
<i>Non-metallic mineral products</i>	0.127	0.294	2.31	1.36
<i>Metal products</i>	0.096	0.124	12.92	7.60
<i>Machinery</i>	0.107	0.272	2.54	1.49
<i>Transport equipment</i>	0.158	0.164	1.04	0.61
<i>Electricity, gas and waterworks</i>	0.267	0.427	1.60	0.94
<i>Construction</i>	0.229	0.187	0.82	0.48
<i>Trade, restaurants and hotels</i>	0.175	0.544	3.11	1.83
<i>Transport and communication</i>	0.079	0.548	6.94	4.08
<i>Other services</i>	0.500	0.336	0.67	0.39
<i>Average</i>	0.204	0.346	1.70	1.00

Source: De Santis (1997) for agriculture, and De Santis and Ozhan (1995) for other sectors.

As I have already mentioned, Bulutay (1995) estimates that the nominal agricultural wage was half the nominal manufacturing wage in the 1980's. This estimate, plus the fact that the unemployment rate in Turkish urban areas is 11%,

allows me to endogenously calibrate λ , which is needed for the Harris-Todaro migration equation. The parameter λ is calibrated to be equal to 1.78, in accordance with the theory which requires in the case of risk aversion $\Pi w^s > w^a$, where Π is the probability of obtaining a formal sector urban job (Lucas, 1997). The tariff collection rates have been derived by using an unpublished document of the SIS and an unpublished thesis (Kose, 1995), whose aggregate values are consistent with the data reported by the I-O table at sectoral level. The quota premium and the European common external tariff have been selected respectively from Harrison, *et al.* (1997) and the Commission of the European Communities (1990). Since the EU imports a large number of differentiated commodities from non-member countries, which are subject to a large range of different duties, the mode has been employed in this study as the average European common external tariff. The duties levied by the EU on Turkish goods are zero.

With regard to the elasticity values, the factor substitution elasticities, the Armington trade elasticities, and the elasticities of transformation have been selected from Harrison, *et al.* (1992), and some of them have been adjusted for differences in sectoral aggregation. With regard to the elasticity of the 'wage curve', because of the lack of data, I assume that the evidence reported by Blanchflower and Oswald (1994) for several developed countries, and by

Hoddinott (1996) for Côte d'Ivoire, is also valid for Turkey. Thus, ε_i is set equal to - 0.1.

4. The revenue-neutral tariff reform scenarios

4.1. The impact of the CU agreement

According to the regional economic integration agreement between Turkey and the EU, the member countries remove tariffs and quotas on mining and manufacturing commodities which circulate within the CU, and apply a common external tariff on these commodities from outside the CU. As a result, nominal protection rates on goods subject to the European CAP (that is, agricultural and food processed commodities) remain unchanged. A lump sum tax has been used as a policy instrument manoeuvrable by policy-makers to perform a revenue-neutral tariff reform.

Table 2 reports the economic impact of policy simulations on welfare, sectoral output, employment and capital, under both the Harris-Todaro scenario and the 'wage curve' scenario. The results of the policy simulations are extraordinarily similar under these alternative hypothesis for the labour market.

Table 2 The impact of the CU on welfare, GNP, output, labour and capital demand

	Harris-Todaro scenario			'Wage curve' scenario		
<i>Hicksian equivalent income variation</i> (Billion 1990 TL)	5224.9			4778.7		
<i>Hicksian equivalent income variation index</i>	0.016			0.014		
<i>Aggregate output</i>	0.016			0.019		
<i>GNP in real terms</i>	0.010			0.009		
<i>Real GNP in rural sector</i>	-0.103			-0.028		
<i>Real GNP in urban sector</i>	0.030			0.015		
<i>Lump-sum taxes / GNP</i>	0.029			0.029		
<i>Sectors</i>	<i>Output</i>	<i>Labour</i>	<i>Capital</i>	<i>Output</i>	<i>Labour</i>	<i>Capital</i>
<i>Agriculture</i>	-0.073	-0.062	-0.084	-0.006	-0.007	-0.006
<i>Mining</i>	-0.051	-0.041	-0.056	0.004	0.009	0.002
<i>Food processed products</i>	-0.102	-0.080	-0.113	-0.006	0.004	-0.012
<i>Beverages and tobacco</i>	-0.076	-0.057	-0.088	0.009	0.018	0.003
<i>Textiles</i>	0.271	0.306	0.260	0.283	0.298	0.278
<i>Wearing apparel</i>	0.846	0.895	0.829	0.846	0.867	0.838
<i>Leather and fur products</i>	0.435	0.483	0.432	0.693	0.718	0.691
<i>Footwear</i>	2.094	2.174	2.064	2.057	2.092	2.044
<i>Wood and wood products</i>	0.132	0.162	0.123	0.010	0.022	0.007
<i>Chemical products</i>	-0.134	-0.110	-0.144	-0.097	-0.086	-0.101
<i>Petroleum and coal products</i>	0.061	0.076	0.060	0.022	0.028	0.022
<i>Non-metallic mineral products</i>	-0.006	0.027	-0.011	-0.017	-0.005	-0.021
<i>Metal products</i>	-0.150	-0.133	-0.163	-0.058	-0.050	-0.065
<i>Machinery</i>	-0.016	0.015	-0.028	-0.071	-0.058	-0.076
<i>Transport equipment</i>	-0.131	-0.102	-0.158	0.008	0.023	-0.006
<i>Electricity, gas and water</i>	0.028	0.074	-0.008	-0.016	0.003	-0.028
<i>Construction</i>	0.000	0.034	-0.041	0.000	0.015	-0.019
<i>Trade, restaurants and hotels</i>	0.068	0.117	0.052	0.007	0.027	0.001
<i>Transport and communication</i>	0.002	0.068	-0.007	-0.044	-0.017	-0.048
<i>Other services</i>	-0.002	0.029	-0.047	-0.003	0.014	-0.020

More precisely, the partial trade liberalisation policy favours a positive re-allocation of resources in Turkey: aggregate output, measured by the Laspeyre's quantity index, increases by 1.6%-1.9%, and GNP rises by 0.9%-1% in real terms. The efficiency gain generates an increment on welfare, measured by the Hicksian equivalent income variation, equal to 1.4%-1.6%, which is a large estimate if compared with previous findings, where welfare would increase by 0.4% under wage flexibility and 0.8% in a context of real wage rigidity (De Santis, 1997).¹⁷ The welfare benefits of this regional trade agreement are estimated to be equal to 1.8-2 billion 1990 US dollars.¹⁸ This implies that movements of labour among Turkish regions are economically desirable, in accordance with recent theoretical findings (Chen and Choi, 1994) and, most importantly, regardless of the assumptions postulated for the labour market.

Turkey will face a large reallocation of resources. The major growth sectors, for which Turkey has a comparative advantage, are textiles (27.1%-28.3%), wearing apparel (84.6%), leather-fur products (43.5%-69.3%), and footwear (205.7%-209.4%). Given the ex-ante high applied tariff rates on wearing apparel

¹⁷ It must be stressed that, in my previous work (De Santis, 1997), I used the indirect tax rate to perform a revenue neutral tariff reform. In other words, an alternative distortion is brought into the economy. However, this must be regarded as a second best policy, as domestically produced goods and imports from the EU are treated equally after the tariff reform. This assumption contributes in part to the lower estimates of the welfare gain.

¹⁸ The average conversion factor for 1990 is an estimate of the IMF: 2608.6 Turkish Lira for 1 US dollar (IMF, 1995).

and footwear imported from the EU, one would expect an increase of imports of these goods, and eventually a contraction of their production, as their domestic production is imperfect substitute to imports. However, despite the large rise of imports of wearing apparel and footwear from the EU, output contraction does not occur; quite the opposite, these sectors record a large growth, firstly, because imports are diverted (imports from the RoW decline), and secondly, because wearing apparel is characterised by a high positive revealed comparative advantage (RCA), since exports of this industry comprise 9.4% of total exports.¹⁹ The large expansion of textiles, wearing apparel, leather-fur products and footwear generates a large demand of factor inputs. Thus, the second striking result of the simulations is that, despite the protection of the primary sector, the CU favours the migration from rural to urban areas (Table 3). Output growth in textiles, wearing apparel, footwear, leather-fur products, activities which are located in urban areas, is the source of the rural-urban migration flow. Despite the large reallocation of resources within the economy, the impact on the gap between the urban wage rate and the rural wage rate is found to be small.

¹⁹ In support of this finding, it is important to consider a study by Celasun (1994), which measures the RCA for 26 Turkish industries for the period 1987-89. This study shows that the sector having the highest positive RCA value is textiles-clothing-shoes.

Table 3 The impact of the CU on migration, unemployment, wages and capital rent

	Harris-Todaro scenario	'Wage curve' scenario
Rural workers	- 615,294	- 165,320
Urban workers	688,242	332,131
Unemployment pool	- 72,948	- 166,811
Capital rent	0.039	0.033
Urban wage	0.000	0.016
Rural wage	0.013	0.035
Urban-rural wage gap	- 0.013	- 0.018

Hence, it is the higher demand of labour in urban areas which is the key 'pull' factor influencing the decision by rural workers to migrate.²⁰ It is important to emphasise that the theoretical literature, which is based on a two-sector dual economy, predicts an increase in the demand of agricultural labour and urban-rural migration, as a result of tariff reduction in protected manufacturing activities. The opposite result obtained in this paper is mainly due to the intra-industry trade

²⁰ This finding is consistent with the current view in Turkey. Bulutay (1995) argues that the creation of jobs by firms in the largest Turkish cities is the main 'pull' factor of the rural-urban migration phenomenon after 1950. He points out that the gap between the urban wage rate and the rural wage rate is not a fundamental explanatory variable of internal migration in Turkey simply because this gap always existed and, in the last decades, tended to decline, rather than widen.

assumption, which allows all sectors to be treated simultaneously as exportables and importables, rather than being limited to consider agriculture as the only exportable activity.

To better understand why the Harris-Todaro economy and the 'wage curve' economy lead to the same outcome regarding the direction of the impact on variables, consider the following analysis. As I have pointed out, the implementation of the CU protocol favours the expansion of some urban sectors, which have a high positive RCA. This leads to the expansion of urban labour demand and, as a result, to lower unemployment. Under the 'wage curve' hypothesis, the urban wage rate has to increase. Thus, as a consequence of the CU agreement, the expected urban wage rate rises under both assumptions postulated for the labour market. The gap between the expected urban and rural wage rates is eliminated through rural-urban migration and a rise in the rural wage rate.

Another striking result is that the impact of the CU agreement on migration varies enormously among the two scenarios. If the urban wage rate is fixed, the CU leads to the migration of 615,294 rural workers (6.4% of the Turkish agricultural labour force), and the creation of 688,242 new urban jobs. Consequently, the unemployment rate declines from a benchmark value of 11% to 9.8%. By contrast, if the urban wage rate responds to the unemployment level, then the CU would still favour the rural-urban migration flow, but the pressure on cities is estimated to be

small (165,320 individuals). Furthermore, the creation of new urban jobs is moderated by an urban wage increase of 1.6%, and the unemployment rate declines to 9.4%. The different magnitude of the migration flow explains why real GNP in urban areas increases by 3% in the Harris-Todaro scenario and by 1.5% in the 'wage curve' scenario, whereas real GNP in rural areas contracts by 10.3% in the Harris-Todaro scenario and by 2.8% in the 'wage curve' scenario. The Harris-Todaro scenario yields results which give rise to concerns referring to the exodus from rural areas and the pressure upon the cities. If, as a consequence of the CU agreement, migrant workers are followed by their families, 2-3 million potential migrants would move from rural areas.²¹ Furthermore, since this flow is determined by the higher demand of labour, it is likely that migrants will settle in the industrialised cities of Turkey, such as Istanbul and Izmir. These cities, already congested, might not be able to absorb this huge number of people.²² Thus, although pull-factors induced movements of population among regions are economically desirable, a population pressure of these dimensions would be so large that the benefits of migration would be exceeded by the negative externalities and the related urban costs of migration, such as congestion, pollution and crime.

²¹ According to official statistics in 1990 the average size Turkish household consisted of 5.05 individuals.

²² According to the 1997 General Population Register results, the Turkish population is 62,610,252 inhabitants. 9 million inhabitants (14,47%) live in Istanbul and 3 million inhabitants (4,91%) live in Izmir.

However, if the Turkish urban labour market is characterised by a 'wage curve', the results of the simulations indicate that policy-makers should not worry about the impact on internal migration; quite the opposite, they should welcome the migration flow from rural areas, in order to avoid an excessive increase of the urban real wage rate, due to the expansion of urban labour demand. Certainly, econometric studies can give an important insight in understanding the features of the Turkish urban labour market, which are essential for the adoption of appropriate measures by policy-makers.

An additional interesting result is related to the impact on capital rent. The theory argues that, under capital mobility, trade liberalisation results in a decline in the return to capital, because the elimination of a tariff reduces the domestic price of the imported good. Under perfect competition and constant returns to scale, the rental on capital must decline as the urban wage is fixed to meet the unit cost condition. But this is true only in the absence of intermediate inputs and if goods are homogenous. Conversely, if goods are differentiated and industries employ intermediate inputs, then this direct implication does not necessarily hold. In fact, the trade model used in this study indicates that, as a result of the CU agreement, capital rent increases by 3.9% in the Harris-Todaro scenario and by 3.3% in the 'wage curve' scenario.

In summary, both scenarios suggest that the CU agreement brings about a rise in welfare, a migration flow from rural to urban areas, the reduction of the urban unemployment rate, a slight decline of the urban-rural wage gap and an increase of the common capital rent. Thus, the results of the intersectoral intra-industry trade model for Turkey are consistent with the recent results of the theoretical dual economy literature regarding welfare, unemployment and the wage gap, whilst they are counter intuitive as far as the impact on migration and the capital rent are concerned.

4.2. The adoption of an optimal policy

I shall now examine the impact of a policy intervention, which is typically suggested to enhance the welfare of a nation in the presence of internal migration and urban unemployment. Bhagwati and Srinivasan (1974) in a Harris-Todaro context and, successively, Corden and Findlay (1975) in an intersectoral mobile capital framework, both argue that the first best option is the elimination of the causes of the urban wage rigidity. However, if this is not attainable, a uniform wage subsidy financed by non-distorting taxes is the correct policy action to reduce unemployment and increase welfare. As strongly emphasised by Corden and Findlay (1975), the subsidising of the whole labour force would require a huge amount of financial resources, which might not be available in a non-distorting

way. In practice, countries with a weak domestic tax base might use indirect taxation, or even protective trade policies, to subsidise the labour costs. Obviously, this would not be an optimal policy intervention. For this practical reason, Corden and Findlay (1975) argue against the optimal subsidising policy. There is also a theoretical motivation why a uniform wage subsidy may not be an optimal policy intervention. Bhagwati and Srinivasan (1974) assume that the wage rate in the high-wage sector remains fixed. However if, after the subsidising policy, the union sector can re-agree the employment conditions for their members, then the wage rate in the urban sector might rise to cream off more rents. As a result, the claim that one should subsidise a union sector to restore first best efficiency is not necessarily valid. In addition, the adoption of the Bhagwati and Srinivasan's subsidy requires knowledge of the marginal product of labour when labour is optimally distributed, but this is not observable. An advantage of this AGE model for Turkey is that I can compute a set of uniform subsidies, which affect the distribution of labour among sectors; thus I can identify the subsidy that maximises welfare, when the union sector cannot cream off more rents.

The simulations reported in this section have been performed under the Bhagwati and Srinivasan's assumptions that Turkey would be able to finance the subsidising program with lump-sum taxes and the union sector does not intervene (see Table 4). Under these strong hypotheses, the optimal *ad valorem* subsidy rates

are equal to 10% (34.5%) of the rural wage rate in the rural sector and 5.6% (19.1%) of the urban wage rate in the urban sector in the Harris-Todaro ('wage curve') scenario. Given the effects of the trade agreement, this policy intervention would increase welfare by a further 3% (3.9 billion of 1990 US dollars) in the Harris-Todaro scenario, and by further 1.6% (2.1 billion of 1990 US dollars) in the 'wage curve' scenario. This implies that both the CU agreement and the uniform wage subsidy policy would raise welfare by 6 billion US dollars at 1990 rates in the Harris-Todaro scenario and 3.9 billion US dollars at 1990 rates in the 'wage curve' scenario.²³ However, it would require additional lump-sum taxes equal respectively to 2.6% and 12.3% of the GNP.

The subsidising of the entire labour market would largely contract the urban-rural wage gap, and would also reverse the direction of the migration flow from urban to rural areas. In fact, given the CU effects on migration, this policy intervention, by modifying the cost of labour in rural and urban areas, would lead to a re-migration flow of 809,009 workers in the Harris-Todaro scenario, and 1,171,089 workers in the 'wage curve' scenario. The reallocation of labour has a substantial impact on sectoral output and GNP. In particular, real GNP in rural areas would increase by 14.9% in the Harris-Todaro scenario and by 11.9% in the

²³ The result that the social cost of trade distortions in the presence of the Harris-Todaro labour market distortions is approximately double their cost when these labour distortions are ignored, was also found by Clarete and Whalley (1988) in a AGE trade model for the Philippines.

'wage curve' scenario, whilst real GNP in urban areas would slightly contract under both assumptions postulated for the labour market. The optimal subsidising policy would lead to full employment in the Harris-Todaro scenario and to a very low unemployment rate equal to 1.2% in the 'wage curve' scenario.

Table 4 The impact of the CU and optimal uniform wage subsidy on welfare, GNP, migration, unemployment, wages and rent

	Harris-Todaro scenario	'Wage curve' scenario
<i>Hicksian equivalent income variation (Billion 1990 TL)</i>	15,123.9	10,150.7
<i>Hicksian equivalent income variation index</i>	0.045	0.030
<i>Aggregate output</i>	0.031	0.029
<i>GNP in real terms</i>	0.030	0.020
<i>Real GNP in rural sector</i>	0.046	0.091
<i>Real GNP in urban sector</i>	0.027	0.008
<i>Lump-sum Taxes / GNP</i>	0.055	0.152
<i>Optimal ad valorem rural wage subsidy rate</i>	0.100	0.345
<i>Optimal ad valorem urban wage subsidy rate</i>	0.056	0.191
<i>Rural workers</i>	193,716	1,005,769
<i>Urban workers</i>	1,030,424	93,617
<i>Unemployment pool</i>	- 1,224,140	- 1,099,386
<i>Capital rent</i>	0.029	0.031
<i>Urban wage</i>	0.000	0.255
<i>Rural wage</i>	0.124	0.393
<i>Urban-rural wage gap</i>	- 0.110	- 0.099

It is clear that a uniform wage subsidy would have an extensive impact on the Turkish economy, which is far greater than the impact of the CU agreement, in particular with regard to welfare and unemployment. However, it would require a large subsidising program financed by non-distorting taxes, which is not feasible. As Corden and Findlay (1975) pointed out, a policy intervention of this kind is a far-fetched proposal, because this solution is simply rendered impracticable by the need to finance a universal subsidy.

5. Conclusion

Internal migration is an important population phenomenon in Turkey. Tens of thousands of individuals migrate every year from eastern to western Turkey, in order to improve their quality of life and that of their children. The 1996 CU agreement between Turkey and the EU will have an impact on the migration flow; however, it is not clear if it will further increase the number of individuals who engage in rural-urban migration, or if this migration will change direction, since agriculture is still widely protected by the trade agreement. I have computed the direction of the migration flow and its dimension by applying a general equilibrium analysis and by focusing on two key pull factors: the demand of labour in urban areas and the wage gap between the place of destination and the place of

origin. The model is based upon the Harris-Todaro job search hypothesis. However, it considers two alternative explanations for unemployment in urban areas, which result in two scenarios: the Harris-Todaro scenario, which is characterised by a constant urban wage rate; and the 'wage curve' scenario, where the urban wage rate is flexible and adjusted to urban unemployment.

It might be thought that the results of this kind of exercise would be highly sensitive to the assumptions made about the labour market. One of the contributions of this paper is to demonstrate that that is not the case. Whether a Harris-Todaro approach or 'wage curve' approach is taken, it is shown here that the CU agreement leads to: (i) a large welfare gain equal to 1.4%-1.6% of consumer income; (ii) a migration flow from rural to urban areas, due to the large expansion of manufacturing sectors, such as textiles, wearing apparel, footwear, leather-fur products, for which Turkey has a comparative advantage; (iii) a fall in the urban unemployment rate of 1-2 percentage points; (iv) a slight decline in the urban-rural wage gap; (v) an increase in the capital rent by 3.3%-3.9%. The results regarding welfare, unemployment and the wage gap are consistent with the dual economy literature, whereas the results on migration and capital rent are counter intuitive, because the AGE model of this study embodies intermediate inputs, which allow for intersectoral interdependencies; assumes product differentiation to

determine endogenously domestic prices; and assumes intra-industry trade, rather than considering agriculture as the only exportable sector.

The results also indicate that the number of workers abandoning the rural areas differ substantially among the two scenarios. The estimate is very large in the Harris-Todaro scenario. In fact, if migrant workers are followed by their families, then 2-3 million individuals (around 50%-75% of the migration flow, which has been recorded between 1985 and 1990) would move from the rural areas. Pull-factors induced movements of population among Turkish regions are economically desirable. However, since this flow is determined by the higher demand of labour, it is likely that migrants will settle in industrialised cities, such as Istanbul and Izmir. The number of migrants would be too large to be easily absorbed by these cities with the result that the negative externalities and the related urban costs of migration may exceed the economic benefits. In addition, according to the OECD (1996), 4,100,000 million Turkish workers (21 per cent of total employment) were in the informal non-agricultural sector in 1993. Many migrants fail to find work in the factories, and they often are forced to enter the informal urban sector. There, they work as artisans, petty traders, taxi drivers, shoeshine boys, or day labourers with the hope of being employed in the formal sector employment in manufacturing or construction. If this feature of the Turkish labour market is also

taken into account, then the estimates of the migration flow reported in this study should be considered as a lower bound.

I have also computed the welfare gain when an optimal policy in the form of a uniform wage subsidy rate is introduced. Such policy might be taken into consideration if the urban wage rate remains sticky and if the pressure of migration on urban areas would not decline. The findings indicate that welfare would increase by 3%-4.5% of consumer income and unemployment would be minimised. However, despite the large welfare gains, this policy intervention is not advisable for two main reasons: firstly, it would require a large amount of financial resources, which are generally not available in a lump-sum manner; secondly, the assumption implicitly postulated by the dual economy literature that the high-wage union sector would not bargain for a new collective contract is not credible.

It should be stressed that, although the assumptions postulated for the labour market are not based upon an econometric testing procedure, the results of this study, especially those on welfare and migration, can be of some interest to policy-makers. Certainly, complementary econometric studies, which can characterise the features of the labour market in Turkey in more detail, are essential for the adoption of appropriate economic policy measures.

References

- Bhagwati, J. N. and Srinivasan, T. N. (1974), "On reanalysing the Harris-Todaro model: Policy rankings in the case of sector-specific sticky wages", *American Economic Review*, vol. 64, pp. 502-508.
- Blanchflower, D. G. and Oswald, A. J. (1994), *The Wage Curve*, Cambridge, The MIT Press.
- Beladi, H. and Marjit, S. (1996), "An analysis of rural-urban migration and protection", *Canadian Journal of Economics*, vol. 29, pp. 930-940.
- Bulutay, T. (1995), *Employment, unemployment and wages in Turkey*, Ankara, State Institute of Statistics.
- Celasun, M. (1994), "Trade and industrialization in Turkey: Initial conditions, policy and performance in the 1980s", in Helleiner, G. K. (ed.), *Trade Policy and Industrialization in Turbulent Times*, London, Routledge.
- Chen, J. and Choi, E. K. (1994), "Trade policies and welfare in a Harris-Todaro economy", *Southern Economic Journal*, vol. 61, pp. 426-434.
- Clarete, R. L. and Whalley, J. (1988) "Interactions between trade policies and domestic distortions in a small open developing country", *Journal of International Economics*, vol. 24, pp. 345-358.
- Commission of European Communities (1990), *TARIC Integrated Tariff of the European Communities*, Brussels, vol. I-III.
- Corden, W. M. and Findlay, R. (1975), "Urban unemployment, intersectoral capital mobility and development policy", *Economica*, vol. 42, pp. 59-78.
- De Santis, R. A. (1997), "The impact of a customs union with the EU on Turkey's welfare, employment and income distribution: An AGE analysis", Kiel Institute of World Economics, *Kiel Working Papers*, n. 843.

De Santis, R. A. and Ozhan, H. G. (1995), "A social accounting matrix for Turkey 1990", *INFORUM Working Papers*, Department of Economics of University of Maryland at College Park, n. 1.

De Santis, R. A. and Ozhan, H. G. (1997), "Social accounting matrix for Turkey 1990", *Economic System Research*, vol. 9, pp. 281-285.

EC (1996), *The Agricultural Situation in the European Union: 1995 Report*, Brussels.

Fields, G. S. (1975), "Rural-urban migration, urban unemployment and underemployment, and job-search activity in LDCs", *Journal of Development Economics*, vol. 2, pp. 165-187.

GATT (1994), *Trade Policy Review: The Republic of Turkey 1994*, Geneva.

Hazari, B. R. and Sgro, P. M. (1992), *Models of Unemployment in Trade and Economic Development*, Routledge, London.

Harris, J. R. and Todaro, M. P. (1970), "Migration, unemployment and development: A two-sector analysis", *American Economic Review*, vol. 60, pp. 126-142.

Harrison, G. W., Rutherford, T. F. and Tarr, D. G. (1992), "Piecemeal trade reform in partially liberalised economies: an evaluation for Turkey", *World Bank Working Papers*, Country Economics Department, n. 951.

Harrison, G. W., Rutherford, T. F. and Tarr, D. G. (1997), "Economic implications for Turkey of a customs union with the European Union", *European Economic Review*, vol. 41, pp. 861-870.

Hoddinott, J. (1996), "Wages and unemployment in an urban African labour market", *Economic Journal*, vol. 106, pp. 1610-1626.

IMF (1995), *International Financial Statistics Yearbook*, Washington.

IMF (1997), "Turkey-Recent Economic Developments and Selected Issues", Washington, *IMF Staff Country Report*, n. 97/110.

Kose A. H. (1995), “*The macroeconomic effects of the customs union process on the economy of Turkey*” (in Turkish), Hacettepe University (Ankara), Ph.D. thesis, unpublished.

Lucas, R. E. B. (1997), “Internal migration in developing countries”, in Rosenzweig, M. R. and Stark, O. (eds.), *Handbook of Population and Family Economics*, Amsterdam, Elsevier, vol. 1B.

Mansur, A. H. and Whalley, J. (1984), “Numerical specification of applied general equilibrium models: estimation, calibration and data”, in Scarf, H. E. and Shoven, J. B. (eds.), *Applied General Equilibrium Analysis*, Cambridge, Cambridge University Press.

OECD (1996), *OECD Economic survey. Turkey 1995*, OECD, Paris.

Partridge, M. D. and Rickman, D. S. (1997), “Has the wage curve nullified the Harris-Todaro model? Further US evidence”, *Economic Letters*, vol. 54, pp. 277-282.

State Institute of Statistics of the Republic of Turkey (SIS) (1994a), *Annual Manufacturing Industry Statistics 1990*, Ankara.

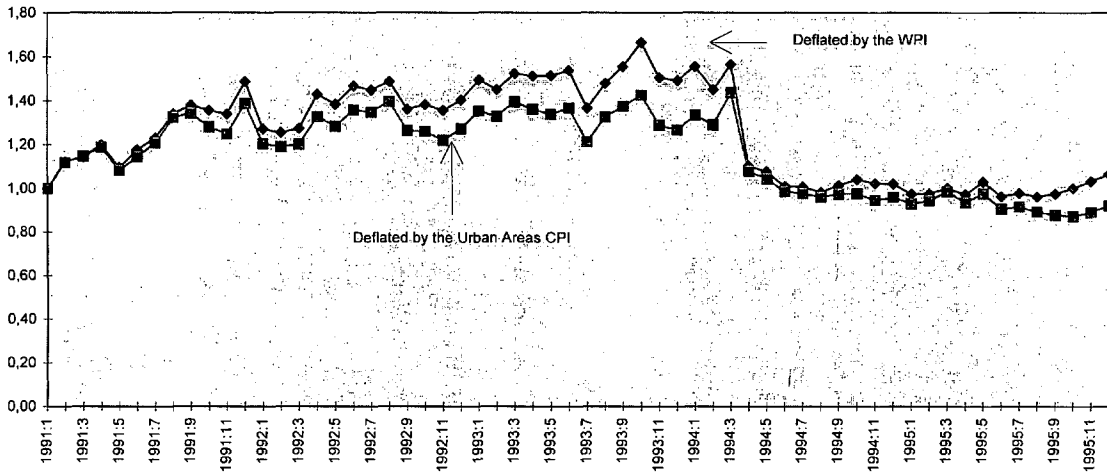
SIS (1994b), *The Input-Output Structure of the Turkish Economy 1990*, Ankara.

SIS (1997), *Household Labour Force Survey October Results 1995*, Ankara.

State Planning Organisation of Turkey (SPO) (1996), *Main Economic Indicators*, Ankara, June.

Tunali, I. (1996), “Migration and remigration of male household heads in Turkey, 1963-1973”, *Economic Development and Cultural Change*, vol. 45, pp. 31-67.

Fig 1 Real wages in Turkish manufacturing, Jan 1991 - Dec 1995
(Jan 1991 = 1)



Source: Author's calculations from SPO (1996)