CONSIDERING THE INEFFICIENCIES IN LABOR MARKET FOR AN EXPLANATION OF MIGRATION FACT FROM RURAL TO URBAN AREAS IN TURKEY

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Abstract: In this study, it is intended to explain determinant points between market price of labor and shadow price of labor and explain migration from rural to urban according to this wage difference. Unemployment or rigidity in urban labor market causes different wage level from equilibrium wage level. This high level wage increases alternative cost of rural against urban and encourages migration from rural to urban. The state of instigating the migration from rural to urban that causing by the increase on wages levels which is in proportion to secession of competition level has been calculated by considering the Turkey example for different sectors. Consequently, it has been determined that the wage level modified according to the distortion in competition is one of the factors effecting the migration to rural to urban.

Keywords: Shadow Price; Migration from Rural to Urban; Labor Market

JEL classifications codes: R23, J21

1. Introduction

The migration from rural to urban areas which is a result of industrialization and modernization is an important social phenomenon and is based mainly on economic reasons. The expectations for a better life and income seem to be the most important triggering factors for the rural population. Therefore, there are a number of theoretical approaches which can be used to explain the reasons for migration from rural to urban areas. The aim of this paper is to present the determinants between the labor market prices and its shadow prices by defining the various features of the labor market in developing countries and also to explain the migration from rural areas to urban areas on this basis[‡‡‡].

In an economy in which there are market distortions, it is impossible to take the shadow prices (wages) of labor which is equal to marginal output of it as market prices (wage). Therefore differentiation of market prices from shadow prices enables us to

[‡‡‡] MAZUMDAR, Dipak, *Rural-urban migration in developing countries in handbook of urban*, Economics Volume II, edited by E.S Mills, Elseveir Science Publisher, 1987.

evaluate the shadow prices in respect of alternative costs[§§§]. In urban regions, in spite of unemployment, the prices being paid are lower than the equilibrium wage rate. For different reasons such as market distortions, incomplete information, minimum wages, and unions, the existence of unemployment in urban areas causes the wages of urban areas to be higher than the equilibrium wage rate in proportion to the unemployment rate[****]. As a result, these high wage levels cause an increase in the alternative cost in rural areas compared with urban areas and encourage migration from rural to urban areas.

The main reasons of migration from rural to urban areas, which started in the 1950s in Turkey, is the onset of mass production in agriculture sector and laborers beginning to have expectations of higher incomes and life standards associated with urban areas as a result of pressure mounted by population increase and the production of products with near zero marginal value in the agriculture sector[††††]. Despite the fact that industrialization has not been able to gain sufficient momentum in Turkey to absorb the labor migration, from rural areas to urban areas it has not stopped. On the contrary, the high economic income in urban areas encourages the migration of labor while ignoring the reality of unemployment. The migrated labor had been absorbed due to fact that industrialization in Turkey could not gain sufficient momentum. However even this fact could not stop the migration from rural to urban. Therefore, the highness of yield of urban areas even existence of unemployment caused continuance of migration.

In this study the basic assumption is that; the higher alternative cost of living in rural areas in Turkey under imperfect markets is related to the migration from rural to urban areas. If the labor market works in *Perfect Competition Market (PCM),* and the *Value of Marginal Product of Labor (VMP_L)*, that is equal to an employment of one extra unit of labor in rural areas, becomes equal to the labor wage in urban areas and the conditions are considered to be consistent with standard economic theory. For this to happen, the complete mobility of labor and capital in rural areas is required; however, various reasons such as market rigidity, land ownership and urban labor rigidity may prevent perfect elasticity of demand of labor in rural areas. Despite of these factors, high urban labor wages that are equal to the alternative rural cost lead to the continuation of migration from rural areas to urban areas. In this case study, the phenomenon is accepted to exist in Turkey and the alternative high cost of rural areas is considered as a basic assumption for the migration from rural to urban and was tested. The relationship between the three different return types, defining the rural returns and rural alternative cost, namely *ACRAMW* (alternative cost of rural areas in terms of minimum wage), *ACRAMI (alternative cost of rural areas in terms of manufacturing industry*) and lastly *ACRAPMI (alternative cost of rural areas in terms of public manufacturing industry),* and rural returns was tested for the period 1990-2006. The study is made of three sections; in the first section, how the rural alternative costs are affected by deterioration in the competition conditions of the labor market are shown by

[§§§] LE, Kien, T., *Shadow wage and labor supply in agriculture: new estimation method*, University of Virginia, working paper, 2007, p.2.

[****] KOSKELA, Errki, SCHOEB, Ronnie, *Tax progression and efficiency wages: partial equilibrium analysis*, Helsinki Center of Economic Research Discussion Papers, 2007, pp.1-3.

[††††] STIGLITZ, Joseph, E., *The structure of labor markets and shadow prices in LDCs*, ed.,Richard H. Sabot, Migration and the Labor Market in Developing Countries, Boulder, CO: Westview, 1982, pp. 13-63.

applying methods from the study of Stiglitz' (1982); in the second section, alternative costs of rural areas and their progress are studied, and in the last section, the relationships between rural returns and alternative costs of rural areas are econometrically evaluated.

2. Alternative Cost of Rural Areas and Migration from Rural Areas to Urban Areas

The purpose of this article is to define various characteristics of the labor market in developing countries and to demonstrate the relationships between the market cost of labor and its shadow price. Therefore, this approach may be considered as the general equilibrium approach on a microeconomic basis. The results of a general equilibrium approach of 2x2x2 as the market of both rural and urban areas can be summarized with the five equations below:

$$MRTS_{x,y} = \frac{P_x}{P_y} \quad (1)$$

$$MPPL_{rural,L}.P_x = MPP_{urban,L}.P_y = w \quad (2)$$

$$MPP_{rural,C}.P_x = MPP_{urban,C}.P_y = r \quad (3)$$

$$MRTS^x_{L,C} = \frac{w}{r} = MRTS = r^y_{L,C} \quad (4)$$

$$\frac{w}{P_x} = MPP_{urban,L} = MPP_{rural,L} \quad (5)$$

These five equations are sufficient to define shadow prices in an atomistic market economy. By using equation (2), the level of shadow prices in conditions of competition is defined as an equalization level of rural and urban area labor to their marginal products. In other words, the level of shadow prices is defined as an amount that equalizes the marginal product of labor thereby maximizing the social welfare and prices in urban areas. An amount equalizing prices in urban areas, without having any market errors, namely under *PCM,* the marginal product of labor equals the shadow price of labor [‡‡‡‡].

Labor market prices are not suitable tools to measure shadow prices since under perfect competition market conditions because they are independent from real life. However, this assumption means that in the case of any deterioration in labor force market, shadow prices will become different from market prices and form a reference point in terms of alternative cost. Thus, when there are rigidities of price, market errors and deteriorations, shadow prices are not marginal products of labor. In other words, there is no longer a connection between labor prices and shadow prices as much as the labor market retreats from *PCM*. The marginal product of labor as a market price can not be taken as a reference point in real life. If *PCM* is valid, it can be said that employing one extra person, or the alternative cost of an employee (shadow price), in a rural area marginally equals to urban wage[§§§§]. When labor is distributed effectively

[‡‡‡‡] JACOBY, Hanan, *Shadow wages and peasant family labor supply: an econometric application to the Peruvia Sierra*, Review of Economic Studies 60, 1993, pp. 903-921.
[§§§§] STIGLITZ ,pp.13-15

between rural and urban areas, the supply price of labor in urban areas has to be equal to marginal product value of labor in rural sector. If all employees receive VMP_L as a wage, labor will be distributed more effectively between the two sectors and total manufacturing will be maximized.

When there is a deviation from *PCM*, since labor supply elasticity is not infinite, both rural and urban prices will be equal to average product rather than marginal product of labor[*****]. Therefore, employees in rural and urban areas receive wages in accordance with average product more than the marginal product. The supply price of labor determined in urban sector is the average product of urban areas. Unemployment resulting from wage rigidity due to incomplete information, minimum wage, sustenance costs of staying in urban areas, legal limitations, and labor unions makes shadow and market wages different from each other. Even if there is no decay in the rural sector, the basic determinant between market price and shadow price of labor in the urban sector is the elasticity of labor demand as an indicator of the decay in labor market in the urban sector. When elasticity of demand is not infinite in urban labor as in *PCM*, payments to labor will be larger than the alternative cost. For instance, when the entire workforce is registered in a union, elasticity of demand will decrease dramatically and a substantial part of payments to workers will either turn into income or wages that could be higher than the equilibrium wage rate in a rural area where an effective contract and legal minimum wage is implemented. Therefore, wages that are equal to marginal product cannot be used as the alternative cost of labor in rural areas.

According to the traditional approach, when there is a wage gap between rural and urban areas, the shadow price level should be lower than the real wage level in urban areas. In the Harris-Todaro static model, the shadow price is equal to the market wage. In this model, if migration from rural to urban areas does not increase wages in the urban sector, the shadow wage and market wage will equalize with each other. If there is a decreasing marginal product of labor in the rural sector and the labor price is determined according to the marginal product, then migration from rural areas to urban areas will always increase the level of wages in rural areas. This finding is valid for other statistical studies as well[†††††].

$$MPP_{L,rural} = \frac{\partial q}{\partial L} C_{rural} \qquad (6)$$

$$MPP_{L,Urban} = \frac{\partial q}{\partial L} C_{urban} \qquad (7)$$

It can be deduced from equation (6) and (7) that labor and capital efficiency in rural and urban areas is a function of capital volume in rural and urban areas. If C (urban)>C (rural), level of rural labor wage will be higher than that of urban labor wage marginally. As long as this difference exists, labor mobility will keep continuing. This labor movement is called immigration. Tadoro's suggestion is valid in this case.

Little and Mirless stated that wages paid to employees are different than the shadow price in the modern sector (in urban areas) for developing countries. As it is

[*****]KOUTSOYIANNIS, Anna, *Modern micro economics*, Palgrave Macmillan; 2nd Revised edition, 2003, p.500.

[†††††] HARRIS, John,R., TODARO, Micheal, P., *Migration, unemployment and developmen,* American Economic Review, 60, 1970, pp.126-144.

indicated in the literature, migration affects the shadow price of labor[‡‡‡‡‡] and labor migration between the two areas has free circulation. In the first region living is dependent on agriculture and the other is a modern sector and wages received in this sector '*wm'* are higher than market clearing wages 'w_a'. Wages can not balance the market due to market defects and other factors. A wage in '*wm'i* level leads to an unemployment level such as '*u*'. On the contrary, employment in the agricultural region is complete but marginal product of labor is either low or constant.

An assumption can be made at this point; as a function of withdrawing from competition, the difference between the two wage levels, namely, the wage that equilibrates the market and the level of prevailing wage can be described depending on the level of distortions or unemployment. If there was no unemployment, the prevailing market wage and equilibrium wage could be equal. By using this logic, the following equation can be written[§§§§§]:

$$wa = (1-u)wm \qquad (8)$$

Unemployment rate in equilibrium would be;

$$u = 1 - \frac{wa}{wm} \qquad (9)$$

The alternative cost of extra labor to convince the migrants can be considered as output losses for those in rural areas. However, this approach is faulty. The real alternative cost is the urban wage itself and the probable gain in the urban areas[******]. As market clearing wages are determined due to marginal products, these wages will have to be discounted if they are accepted as wages of urban areas due to the existent conditions, structural imbalances and distortions. '*1/1-u'* in the following equation is the discount ratio relative to unemployment and according to this, discounted income received by a marginal worker in an urban area defines the alternative cost of migration from rural areas to urban areas. In this study, the alternative cost of rural areas is taken as the discounted wage of urban areas. The alternative cost of rural areas v;

$$v = \frac{wa}{1-u} = w_m \qquad (10)$$

Despite unemployment in urban areas, the price paid is not below the equilibrium wage. Since there is generally unemployment in urban areas for different reasons wages in urban areas will be higher than the equilibrium wage directly related to unemployment. This high wage level will increase the alternative cost in rural areas and will encourage migration from rural areas to urban areas.

Theoretical literature describing the effect of migration on shadow prices indicates that even in involuntary unemployment cases, migration is not able to eliminate the inequality between shadow prices and market wages. The underlying

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‡‡‡‡‡ LITTLE, Ian, Malcom, D., MIRLESS, James, A., *Project appraisal and planning for developing countries*, Nueva York: Basic Books, 1974.

§§§§§ GUPTA, M.R., Shadow *wage rate in dynamic Harris-Todaro model*. Oxford Economic Papers, New Series, Vol. 38, No. 1, 1992, pp.131-140.

****** HEADY, Cristopher J., *Shadow wages and induced migration*, Oxford Economic Papers, New Series, Vol. 33, No. 1., 1981.

reason is that even if migration increases in the elasticity of demand, and labor markets in urban areas vary from the *PCM*[††††††].

Migration from rural to urban areas can change alternative costs by increasing urban unemployment. In addition, other rural area factors should be taken into account which could change alternative costs in urban areas. There are four factors which detract from or differentiate the labor wage in rural areas from the marginal product and are characterized as the alternative cost of urban areas in terms of urban alternative cost and are called as rural yield. Factors that affect rural yield are;

a) Advantages and disadvantages of being a family member

b) Land ownership by those who work in rural areas

c) Wide use of traditional subsistence wages in rural areas

d) The reasons for migration from rural to urban areas are: problems concerning basic needs and disputes and or disagreement over property rights after returning from urban to rural areas.

All of these factors affect *'v'* which determines the alternative cost of migration between rural and urban areas. In other words, since (dv/dOwnership) <0, land ownership will decrease the alternative cost of migration in terms of rural areas. Elasticity of labor demand depends on the distribution and size of manufacturing factors. If there is a substantial volume of land, capital, and rural manufacturing industry, elasticity of labor demand will not be infinite. In this case (dv/d rural industry) will be <0 and urban attraction will decrease. Business skills of labor will change and migration will have more possession of unskilled and homogenous labor. Structure of labor and capital in rural areas will differentiate the shadow price of labor first and as a result of this, migration and elasticity of labor demand. The reasons for high wages in urban areas are;

a) Political pressure and regulations by government,

b) Unions,

c) Wage rigidities in urban areas.

When these three factors come together as a whole, it can be said that an extra unit in urban areas may lead to the cost of hiring labor greater than VMP_L which consequently lowers the alternative cost of migration from rural to urban areas.

Other factors explaining higher wages are as follows:

Unregistered employment and public sector.

It means the inequality between the labor price and shadow prices. Unregistered employment can be compared to monopolist competition. Even if someone who migrates from rural to urban areas works in the informal sector, he receives higher wage than VMP_L if the agricultural sector is not developed. In terms of migration, the affect of working in the informal sector could be insignificant on shadow prices. If the wage paid in the informal sector is high, the effect will be significant or the opposite.

Qualified and unqualified labor work .

By definition wage differences can arise when labor is heterogeneous. It is hard to calculate the relation between the alternative cost of qualified labor and wage. All

[††††††] HECKMAN, J.ames, J., *Shadow prices, market wages, and labor supply*, Econometrica, 42(4), 1974, pp. 679-94.

these factors will affect the alternative cost of migration. Thus alternative cost of migration '*v'* will either decrease or increase depending on the factors listed above. In this aspect, while the factors such as high wages in urban areas, unemployment, employment in public sector, social security, and education, etc. increase alternative costs of living in rural areas, and land ownership, economical policies improving rural income and industrialization, family and living in urban areas decrease alternative cost of rural areas.

3. Estimation of Alternative Cost of Turkish Rural Areas and Empirical Case

Basic economic activities of the Turkish rural sector are agriculture based. Capital stock and investments in this area are insufficient. Depending on the type of agricultural activity in rural areas, and the number of small producers, a substantial amount of economic instability may be present. In addition, the large number of small producers working small lands in the Turkish agricultural sector contributes to lower production levels and efficiencies. According to the General Agricultural Census in Turkey in 2001, areas smaller than 50 thousand square meters constitute 64.81% of the total agriculture areas[‡‡‡‡‡‡]. Dependency of economic activities to agriculture in rural areas and widespread presence of small production facilities may lead to substantial effect of economic instability on this area[§§§§§§]. In addition, dominancy of small producers in Turkish agricultural production and activity of these producers in small agricultural lands leads to low production levels and low efficiency. According to General Agricultural Census in Turkey in 2001, establishments with an area smaller than 50 thousand square meters make up 64.81% of the total of establishments In the European Union on the other hand, ratio of small establishments smaller than with an area of 50 thousand square meters is 21.34%[*******]. Such small lands can not significantly benefit from economies of scale in agricultural production.

Due to the rigidity of supply and demand in global agricultural production, the sector needs to be supported by the state. Turkish agriculture was heavily subsidized through market price supports until the year 200l. Market price supports are regarded as one of the factors responsible for the continuation of low productivity and the lack of capitalization in the Turkish agriculture sector. Price supports have been replaced by the political tools that intervene in prices and volume less extensively compared to the past. These policies were developed in cooperation with international organizations and in are also in part the result of disinflationary politics of the early 2000's. The attempt to apply disinflation politics and market mechanism to each sector of the Turkish economy accelerated the migration of small agriculture producers to urban areas. From this perspective the alternative cost of living in rural areas rapidly increased. The agricultural sector accounted for approximately 48% of employment between 1980 and 1999 it dropped down to 26.4% in 2007. This drop led to an increase in labor force

‡‡‡‡‡‡ State Institute of Statistics, *General Agricultural Census*, Ankara, 2001.

§§§§§§ SAHIN, Afsin, SARACOGLU, Metin, *The Function of Rural Development Politics on Migration from Rural to Urban Fact in Turkey,* EKEV Academic Journal, Year:10, Number:28, 2006, p.209.

******* BOR, Ozgur, *A look to the aftermath of direct income payments system*, Mediterranean Journal of Economics, (9), 2005, pp.33-51.

demand and accelerated the migration of those near zero marginal product producers to urban areas[†††††††].

During the 1950s, modernization in agriculture which started with the implementation of the Marshall Plan sped up migration from rural areas to urban areas[‡‡‡‡‡‡‡]. The people who constituted the hidden unemployed in the agricultural sector became openly unemployed in the mid 1980s when the industrialization decelerated in cities. On the other hand, demand for work in Turkey probably increased every year due to the population growth and the failure of industrial development to keep pace with this growth for almost 20 years. These changed the conditions for the migrants contributed to the transition from hidden unemployment into open unemployment. Nevertheless, increasing unemployment and labor demand could not prevent real wages of those who worked in manufacturing industry in urban areas from rising above market clearing wages. Real wages were higher than the equilibrium value due to rigidity in the labor market. In this sense, the alternative cost of urban areas in relation to rural areas increased between 1990 and 2001 and in the crisis year of 2001 the narrowing of real wages in the manufacturing industry in urban areas decreased the alternative cost in the rural areas. Despite all these factors, the alternative cost in rural areas exhibited an inconsistent progression after the crisis, and the alternative cost in rural areas increased relatively while the real income of these areas decreased.

This study proves that the reasons for urban attraction to a great extent depend on the alternative cost of rural areas and industrialization in urban areas. In a study concerning the geographical dimensions of migration from rural areas to urban areas, it was demonstrated that there is a close relation between internal migration to urban areas and industrial plants on the map of Turkey[§§§§§§§]. For this reason, in the estimation of alternative costs in rural areas, manufacturing industry wages and minimum wage were taken as the explanatory variances in the model. Data placed in columns 10, 11 and 12 in Table 1 measure alternative cost in rural areas in terms of production industry, public manufacturing industry and minimum wage. According to column 10 in Table 2 which show alternative cost in rural areas in relation to the manufacturing industry, it can be said that real wages in the manufacturing industry between 1990 and 2000 in Turkey displayed a wavy progress. Alternative cost in rural areas in terms of the manufacturing industry which showed a 35% increase in 1991 in comparison to that in 1990 and drop in real wages in 1997 began to increase again and regained value in a 15% ratio. This increase in value which followed a wavy progress until the year 2000 lost value again in a ratio of 73% and this variation in real wages continued to drop in 2003 and 2005.

The progress, shown on the monthly average real wages per person in urban manufacturing industry (*UMIMARWPP)* in column 11 in Table 2, follows a fluctuating course once again. The monthly average real wages per person in public manufacturing (*MARWPPPMI)* followed a course parallel to the results in column 10. In terms of minimum wage, the alternative cost in rural areas followed a fluctuating course between 1990 and 2007 and in the following years, except for 1997 and 1999, the alternative

[†††††††] Independent Social Scientists, *2008 intersection in Turkey, politics, economics and society*, İstanbul: Yordam Press, 2008, pp.169-172.

[‡‡‡‡‡‡‡] KOYMEN, Oya, *Capitalism and peasantry, landholders, bosses*, Istanbul: Yordam Press, 2008, pp.135-142.

[§§§§§§§]TUMERTEKIN, Erol, *Internal migration in Turkey*, Istanbul: Geographical Institute of the University of Istanbul, 1968, pp.57-58.

cost in rural areas fell to lower levels every year. On the other hand, the decline in income levels in rural areas and the increase in the alternative cost of living in rural areas due to changes in agricultural politics were not able to prevent migration to urban areas although the wages in the manufacturing industry were decreasing.

Considering the annual return rates between 1990 and 2006 in agriculture which was regarded as the most important economic activity of rural areas in Turkey, *UMIMARWPP* was at much lower levels than the rural alternative cost. It can be stated that the main reason for this was common family labor without payments. When annual return rates in agriculture are evaluated between 1990 and 2006, it can easily be seen that these rates are considerably lower than *UMIMARWPP, MARWPPPMI* and the *minimum wage*. The main reason behind this are the large number of small family owned lands and the reduction in prices and returns in agriculture sector brought about by of the implementation of agricultural liberalization policies in the context of international agreements. When the alternative cost of urban areas relative to rural areas is examined in Table 2 and evaluated as an agricultural return, it can be stated that the agricultural return between 1990 and 2006 decreases and therefore alternative cost of urban areas gradually decreases.

4. Making a Model for Alternative Cost of Rural Areas

Average rural return =C1+C2* Alternative Costs of Rural Areas (Alternative Cost of Rural Areas in terms of Minimum Wage, Alternative Cost of Rural Areas in terms of Production Industry and Public Manufacturing Industry)+C3*Rural Social Security+C4*Growth Rate of Rural Areas +U

The model estimates the relationship between rural return and different alternative cost of urban return. The unemployment rate of people with higher education in rural areas or the macro economic growth rate is used as a control variable. Considering the model mentioned above, the relationship between alternative cost of rural areas and alternative cost of urban areas is limited by defining different alternative costs. The estimated test results are given in Table 3.

The relationship between the rural return and three different return types defining alternative cost of rural areas, namely *ACRAMW*, *ACRAMI* lastly *ACRAPMI* will be tested for the period 1990-2006. In the first, second, third and fourth models, the number of Insured Actively Working People in agriculture sector and in the fifth model, the macro growth rate were used as a control variables in the respective tests.

Model 1: RR= C (1) + C(2)*ACRAMW + C(3)* NIAWPA +C(4)*RR(-1)

RR=Rural return, ACRAMW =Alternative Cost of Rural Areas in terms of Minimum Wage, NIAWPA = Number of Insured Actively Working People in Agriculture

C (1) =Constant Variable

C (2) =Alternative Cost Coefficient in terms of Minimum Wage in Rural Area

C (3) = Coefficient of Number of Insured People Actively Working in Agriculture

C (4) =Alternative Return Coefficient of Rural Areas in the Previous Year

Since all variables in Model 1 are second order stationary, these time series can be put into a direct regression analysis. All time series are co-integrated with each other. In other words, the series have similar reactions on the same frequency and they move together. Our model is logarithmic. Consequently, the coefficients are also

elasticity coefficients. An autocorrelation problem occurred during the first test. In order to remove the autocorrelation problem, the lagged values of agricultural returns were taken as independent variables and put into a regression analysis once more. The Durbin Watson value in Model 1 (as shown in Table 3) was found to be 2.14 and no autocorrelation was found according to this value. The selected regression equation is statistically significant. The *F value* is considerably higher than the *table value*. The improbability of such an equation is very close to zero. A White test was conducted in order to determine if there was any heteroscedasticity and the test results concluded that there was not (any heteroscedasticity) at all. This means that there is an inverse relationship between agricultural return and minimum wage in urban areas at a rate of 2.8 % and when minimum wages and unemployment in urban areas are considered together, any increase in minimum wage decreases rural return, thus decreases its attraction

Model 2: RR=C (1) + C (2)*ACRAMI+ C (3)* NIAWPA +C (4)*RR (-1)

RR= Rural return, ACRAMI= Alternative cost of rural areas in terms of manufacturing industry,

NIAWPA =Number of Insured Actively Working People in Agriculture; RR(-1)= Rural Return in the Previous Year

C (1) = Constant Variable

C (2) = Alternative Cost Coefficient in terms of Manufacturing Industry in Rural Areas

C (3) = Coefficient of Number of Insured Actively Working People in Agriculture

C (4) = Coefficient of Rural Return in the Previous Year

The equation estimated for Model 2 as shown in Table 3 is statistically significant. The *F value* 36 is higher than the *table value*. The probability of lack of a relationship between rural return and *UMIMARWPP* and alternative cost in rural areas is 3 in one million. This is a very low probability. An autocorrelation problem was also encountered in Model 2, similar to Model 1 and the autocorrelation was removed by taking the lagged values of agricultural returns. A White test was conducted in order to determine if there were any heteroscedasticity and the constant variance hypothesis was accepted. Statistically, the alternative cost coefficient of manufacturing industry is meaningful for a significance level of 5% and it has a inverse relationship with rural return. Each 1% increase in alternative cost in the manufacturing industry decreases the rural return by 3%.

Model 3: RR=C(1) +C(2)*ACRAPMI+C(3)* NIAWPA +C(4)*RR(-1)

ACRAPMI= Alternative Cost of Rural Areas in terms of Public Manufacturing Industry

C(1)= Constant Variable

C(2)= Alternative Cost Coefficient of Rural Areas in terms of Public Manufacturing Industry

C(3)= Coefficient of Number of Insured Actively Working People in Agriculture

C(4)= Coefficient of Rural Areas in the Previous Year

When Model 3 as shown in Table 3 is examined, it can be concluded that the estimated equation is statistically significant and the *F value* 39 is higher than the *table value*. The probability of lack of a relationship between rural return and monthly average real wages per person in public manufacturing industry and alternative cost of

rural areas is 2 in a million. This is also a very low probability. An autocorrelation problem was encountered similar to those in Model 1 and Model 2 and the autocorrelation was removed by taking the lagged values of agricultural returns. A White test was conducted in order to determine if there was any heteroscedasticity; none were detected and the constant variance hypothesis was accepted. Statistically, the alternative cost coefficient of manufacturing industry is meaningful for a significant level of 5% and it has an inverse relationship with rural return. Each 1% increase in alternative cost of manufacturing industry decreases the rural return by 3.1%.

Model 4: SA=C(1)+C(2)* ACRAMW +C(3)* NIAWPA +C(4)*SA(-1)

SA= Share of agriculture in GNP (Gross National Product)

C(1)= Constant variable

C(2)= Alternative Cost Coefficient of Rural Areas in terms of Minimum Wage

C(3)= Coefficient of Number of Insured Actively Working People in Agriculture

C(4)= Share Coefficient of Agriculture in GNP

C(5)= Share Coefficient of Agriculture in GNP in the Previous Term

Model 5: SA=C(1)+C(2)* ACRAMW +C(3)*MEG+C(4)*SA(-1)

SA= Share of Agriculture in GNP

MEG=Macro Economic Growth

C(1)= Constant Variable

C(2)= Alternative Cost Coefficient of Rural Areas in terms of Minimum Wage

C(3)= Coefficient of Macro Economic Growth Variance

C(4)= Share Coefficient of Agriculture in GNP in the Previous Term

The results of models do not change when the number of Insured Actively Working People in agriculture sector is included as well. The Growing Performance of Turkey should be evaluated in order to determine the significance level of Models 4 and 5 as given in Table 3. When the growth variable is included in the model, the tests described above were repeated by including an unemployment variable to exploratory power of the model.

In this context, the share of agriculture in national income was taken as the dependent variable, instead of per capita income in agriculture. The minimum wage, which is the alternative cost of rural areas, was put in a regression by using *UMIMARWPP* and *MARWPPPMI* as the base. A significant relationship was found between the share of rural areas and minimum wage and the estimates regarding this relationship are presented in the Table 3. The model formed is statistically significant according to the Table 3 and the *F value* 36 is higher than the *table value*. The probability of lack of accuracy of this equation is 3 in a million. An autocorrelation problem was solved as described previously and a heteroscedasticity problem does not exist according to the results of the White Test. The alternative cost variable of rural areas is statistically significant in terms of minimum wages. Since the equation is logarithmic, the coefficient also gives elasticity values. In this regard, a 1 % change in the minimum wages decreases the share of rural areas (agriculture) in *GNP* by 44%.

In accordance with the explanations above, they were put into a regression analysis again by considering the real exchange rate of *GNP*. Since the exploratory power of this model was higher than the other models, it was taken as the basic equation. This equation is able to explain 92% of the return relation of rural and urban

areas. The equation is statistically meaningful. The *F value* 50 is higher than the *table value*. The probability of lack of accuracy of this equation is very close to zero. The existence of autocorrelation and heteroscedasticity were tested and no variances were detected. In the light of these test result, when the alternative cost of rural areas in terms of minimum wage was examined, an inverse relationship was found between alternative cost of rural minimum wage and the share of agriculture in *GNP* for a significance level of 5%. The result of these models is that the changes in alternative rural returns affect rural returns considerably and ***accelerate*** the migration to urban areas. In terms of wages, since it is not possible to balance the investment, infrastructure and economic policy returns of urban areas with rural areas, migration will be continuing in the following years.

5. Conclusion

In this study, the basic assumption that the higher alternative cost of living in rural area under imperfect markets is considered to be the reason for migration from rural areas to urban areas. When there is no *Perfect Competition Market*, there will not be a ***market-clearing wage and*** the market price will be different from the shadow price of labor. For reasons such as market rigidity, land ownership and urban labor rigidity, unions, and legislations infinite elasticity of labor supply in rural areas may be prevented. All these reasons increase the alternative cost of rural areas and may lead to the continuation of migration from rural to urban areas. By taking this theoretical framework as a basis, the motive for migrating from rural to urban areas in Turkey is a gradual increase in alternative cost of living in rural areas. This situation was tested by considering different alternative costs of rural areas.

The relationship between rural return and the three different return types defining alternative cost of rural areas, namely *ACRAMW*, *ACRAMI* and lastly *ACRAPMI* was tested for period 1990-2006 and it was observed that any increase in alternative costs of rural areas causes a decrease in rural return by 3% for a significance level of 5%. Since calculation errors and unforeseen mistakes can be made in rural return estimations, the share of agriculture in national income was taken as a dependent variable and it was put into a regression analysis in terms of three alternative costs. Even though the result did not change, the model which was considered from the macro economic growth in terms of the agricultural shares in national income and alternative cost in terms of minimum wage in rural areas had the highest explanatory power. When coefficients of these variables were statistically taken into account, a 1% increase in alternative costs in terms of minimum wage in rural areas causes a decrease of more than 0.5% in share of rural return in national revenue. An inverse relationship is valid even though it is limited in terms of macro growth. Therefore, in terms of models that were developed, wages in urban areas inversely affect rural return.

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The reasons for migration from rural areas can be the attraction of urban wages, the divergence of urban labor markets from the competition, and the decrease in agricultural incomes due to the liberalization of agricultural politics. Therefore, factors such as rigidity in labor market, minimum wage, incomplete information that diverting the labor market from equilibrium can encourage migration. Furthermore, when wages are considered, the factors such as constant investments in urban areas, infrastructure investments, education, and population reduce the alternative cost of living in rural areas. Therefore, the solutions that increase wage discrepancies between rural and urban areas, policies that increase these differences and advice encouraging people to stay in rural areas are not rational.

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Table 1. Different Alternative Cost of Rural Areas

Years	Monthly average wage per person in manufacturing industry	Monthly average wage per person in public manufacturing industry	Minimum wage	1+ inflation	Monthly average real wage per person in manufacturing industry	Monthly average real wage per person in public manufacturing industry	Minimum real wage	1-unemployment rate	Alternative cost of Rural Areas in terms of Manufacturing Industry	Alternative Cost of Rural Areas in terms of Public Manufacturing Industry	Alternative Cost of Rural Areas in terms of Minimum Wage
1990	1362836	1752367	304000	1,647	827465,6952	1063975,106	184578,0206	0,92	1904746,739	1156494,681	200628,2833
1991	2939080	4112001	575000	1,6989	1729989,994	2420390,253	338454,294	0,918	4479303,922	2636590,689	368686,5947
1992	4744469	7224802	1071000	1,7417	2724044,899	4148132,285	614916,4609	0,915	7895958,47	4533477,907	672039,848
1993	8013748	12251366	1886000	1,696	4725087,264	7223682,783	1112028,302	0,911	13448261,25	7929399,323	1220667,73
1994	13262291	22623565	3056000	2,064	6425528,585	10961029,55	1480620,155	0,914	24752259,3	11992373,69	1619934,524
1995	23047714	34942564	5603000	1,9573	11775258,77	17852431,41	2862616,87	0,924	37816627,71	19320813,21	3098070,206
1996	40163963	57587093	12023000	1,9496	20601129,98	29537901,62	6166906,032	0,934	61656416,49	31625162,33	6602683,118
1997	77359730	123402839	24688000	1,9137	40424167,84	64483899,78	12900663,64	0,932	132406479,6	69188733,66	13841913,77
1998	141027253	223185184	40605000	1,84	76645246,2	121296295,7	22067934,78	0,931	239726298,6	130286031,8	23703474,52
1999	252009038	429276711	85838000	1,5911	158386674,6	269798699,6	53948840,42	0,923	465088527,6	292306283,5	58449447,91
2000	402974000	615522500	114300000	1,5225	264679146,1	404284072,2	75073891,63	0,935	658312834,2	432389382,1	80292932,22
2001	879375020	161621240	152196000	1,515	580445557,8	106680686,5	100459405,9	0,916	176442401,7	116463631,5	109671840,5
2002	715387000	237802500	128875500	1,4397	496900048,6	165175036,5	89515524,07	0,897	265108695,7	184141623,7	99794341,21
2003	923250000	139650000	200955370	1,2544	736009247,4	111328125	160200390,6	0,895	156033519,6	124388966,5	178994849,9
2004	1030250000	237150000	433575000	1,105	932352941,2	214615384,6	392375565,6	0,897	264381270,9	239259068,7	437430953,9
2005	1162000000	189225000	488700000	1,0774	1078522369	175631149,1	453591980,7	0,897	210953177,3	195798382,5	505676678,6
2006	1103000000	215175000	531000000	1,1001	1002636124	195595854,9	482683392,4	0,901	238817980	217087519,3	535719636,4
2007	1512000000	259000000	562500000	1,1221	1347473487	230817217,7	501292219,9	0,882	293650793,7	261697525,8	568358526

Source: Calculated by the author using Turkish Statistical Institute (TSI) and Central Bank of the Republic of Turkey

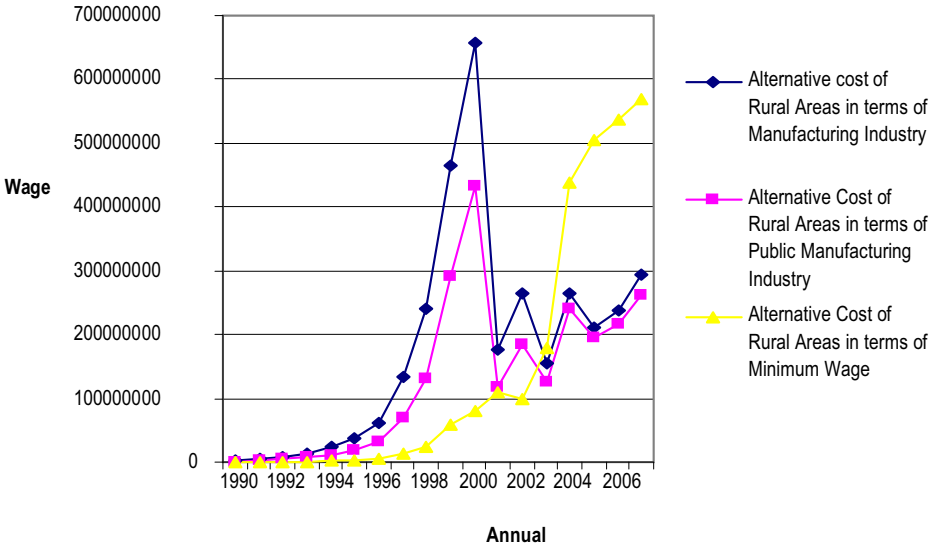

Figure 1: Alternative Costs

Table 2. Alternative Costs of Urban Areas

Years	Agricultural Production Values	Agricultural Growth Rate (%)	Share of Agriculture in GNP (%)	Employment in Agriculture	Agricultural Returns
1990	6672 078,5	7,0	16,4	8691000000	137250
1991	91913101,0	-0,6	16,2	9211500000	141575
1992	156051192,7	4,3	15,9	8718000000	145141,6667
1993	293733744,1	-0,8	14,6	7861500000	141333,3333
1994	57267 842,0	-0,6	15,4	8812500000	172000
1995	1163076 914,0	1,3	14,5	9080000000	163108,3333
1996	2350374597,0	4,6	14,2	9259000000	162466,6667
1997	3925650028,0	-2,2	12,9	8837000000	159475
1998	8809970804,0	9,6	13,7	9039000000	153333,3333
1999	11300776507,0	-5,6	13,6	8855500000	132591,6667
2000	17002973501,0	3,8	13,2	7769000000	126875
2001	20389344763,0	-6,0	13,4	8089000000	126250
2002	31537336905,0	7,5	13,3	7458000000	119975
2003	41562744271,0	-2,4	12,3	7165000000	104533,3333
2004	47630198 241,5	2,0	11,5	7400000000	92083,33333
2005	49069171028,0	5,7	11,3	6493000000	89783,33333
2006	52050392706,1	2,9	11,0	6088000000	91675

Source: Calculated by the authors using Turkish Statistical Institute (TSI) and Central Bank of the Republic of Turkey (CBR)

Table 3. Estimated Different Alternative Costs of Rural Areas

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	3.023848 (1.816359)*	1.056400 (1.693699)*	1.478642 (1.697808)	16.60145 (7.696275)*	21.39240 (6.152749)*
C(2)	0.028245 (0.010044)*	-0.030037 (0.0133856)*	-0.0031264 (0.013031)*	-0.444811 (0.182969)*	-0.531994 (0.158573)*
C(3)	-0.000505 (0.010095)*	0.001305 (0.096339)*	0.001340 (0.093428)*	0.286330 (0.664406)*	-0.070400 (0.033180)*
C(4)	-0.782461 (0.141609)*	0.954773 (0.126371)*	0.919714 (0.126391)*	0.278671 (0.302475)*	0.106303 (0.252565)*
R^2	0.917749	.0901841	0.907683	0900255	0.926344
Adjusted R-Squared	0.897187	0.877301	0.884603	0.875319	0.907931
F statistics	44.63184	36.75021	39.32887	36.10230	50.30686
Autocorrelation	2.142733	2.241416	2.230714	1.032848	2.285398
Log-likehood	22.21643	20.80189	21.29276	-10.83279	-8.407061

*Note:*Statistically significant at the 5% level*