9. Why Do Not They Move from Rural to Urban Areas? Inter-Regional Migration in Romania[1]

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Abstract

This paper examines the role of wages and unemployment rates as major potential economic causes of internal migration between the separate regions of Romania in the period 1995-2005. The different inter-regional migration routes are treated as cross-section units in a panel data structure, with unobserved characteristics for each route modelled as fixed effects. The cross-section SUR (seemingly unrelated regressions) estimation indicates that wage in origin regions had a significant influence on internal migration flows, but unemployment rates in origin and destination regions have apparently played no part. When time is accounted for, results show that wages in destination regions become very significant and migration is explained by pull rather than push effects.

Keywords: regional migration, Harris-Todaro model, transition economies, Romania, SUR estimation

JEL Classification: J61, O15, R23

1. Introduction

The present EU enlargement has increased interest in the pattern of labour mobility within transition economies and the consequent potential for output and welfare gains. Little is yet known about the causes and consequences of such inter-regional migration in transition economies (for an exception, see, Andrienko and Guriev, 2004; Ghatak, S. *et al*., 2008).

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In their seminal contributions to the economic literature, Todaro (1969) and Harris and Todaro (H-T) (1970) identified real wage gaps and the probability of finding employment as the major factors behind immigration. In the light of such models, it is easy to understand why strong migration pressures exist from the East due to population growth and due to the growing economic gap (in terms of real wages and employment) between certain Central and Eastern European (CEE) countries on the one hand and the European Union on the other (Fassman and Munz, 1994; Ghatak *et al.*, 1996; Levine, 1999, Ghatak and Sassoon, 2001; Hatton and Williamson, 1998; Straubhaar and Zimmermann, 1992). Some recent migration studies have extended this theoretical framework to include other possibly relevant factors such as housing, health care and human capital (see Ghatak, Mulhern, Watson, 2008). Migration in general and rural-urban migration in particular have become one of the most important factors affecting economic development in the 21st century (Hatton, 2001; Wheatley Price, 2001).

This paper focuses on the major economic causes of internal migration within Romania during transition. Standard economic models have been applied for some CEE countries but to the best of our knowledge, for Romania, modelling of inter-regional migration flows using panel-data methods has not been attempted before. In section 2, we survey the relevant literature and describe the data and the regions of Romania. Section 3 describes the welfare implications of migration and the traditional theoretical basis for expecting real wages and unemployment to be significant causal factors. Section 4 presents the empirical methodology and results. Section 5 draws some policy implications.

2. Literature review and data sources

The patterns of internal migration have been studied in some details for the Czech Republic, Slovakia, Russia, Poland, Hungary, Slovenia, Romania, Estonia, Latvia and Lithuania (see Andrienko and Guriev, 2004; Fidrmuc, 2002; Fidrmuc and Huber, 2002; Huber, 2003; Kallai, 2003; Hazans, 2003). Fidrmuc (2002) investigates the patterns of interregional migration at country level within the Czech Republic and Slovak Republic. The findings that migration acts as a mechanism for achieving regional adjustment in the labour market are limited. Support for the basic theoretical framework is mixed: unemployment rates and average real wages appear to have significant effects on net migration in Slovakia but not in the Czech Republic. Hazans (2003) finds that regional wage and unemployment differentials are significant in explaining internal migration flows in Estonia, Latvia and Lithuania. However, these countries, despite their small size, continue to suffer from real and persistent regional disparities. As regards Romania, Constantin, Pârlog, and Goschin (2005) argue that between 1990 and 2000 the economic disparities increased also between the prosperous and poorer regions of Romania. Using gravitational models, this study finds out that long distance migration will decrease compared with short distance migration and that individual and family motivations were strong incentives for people who decided to migrate. The authors also provided an analysis of the territorial distribution of labour resources in the regions of Romania. Kallai and Trăistaru (1998) investigate internal migration flows within Romania for the period 1990–1995, using data for 41 counties. They also conclude that regional disparities have persisted in

Romania during this period and, further, that regional disparity of unemployment rates does not prompt corrective internal migration. One reason depicted by the authors for counter-intuitive migration flows from richer to poorer regions, in the Romanian case from (say) Bucharest to poorer cities, is the importance of family networks. People who are unemployed in Bucharest may move to a region with higher unemployment because that is where they can access family support. Sandu (1999, p. 178) also observed and analysed the tendency to return to initial residence (a so-called phenomenon of return migration) mostly around the pension age. The literature upon internal migration in Romania (urban-rural and more recently at regional level) offers insights about the patterns and causes of migration flows based on statistical data, analysis of economic indicators of counties or regions and records changes that occurred in the Romanian demography (see also Rotaru and Mezei 1999, Petre, 2005).

Romania is divided into 41counties and the Municipality of Bucharest is the capital of the country. A well known division of Romania is the one which relates to the historical and cultural provinces: Transylvania in the north-west and center, Moldova in the east, and Walachia (Oltenia and Muntenia) in the South. The two counties Tulcea and Constanța at the Black Sea belong to the Dobrudja.

Following the fall of the communism in 1989, Romania turned its special policy from a centrally-based to a regional-based policy conforming to the EU rules (Benedek 2006, p. 105). The criteria for classification are the number of inhabitants, area, cultural identity and functional space relations. Romania is divided into eight Development Regions. These regions are geographically defined: Centre (C), West (W), South-East (SE), North-West (NW), North-East (NE), South-West (SW), South (S) and Bucharest-Ilfov (B) - see the map of Romanian Regions in the Appendix). These regions became very important in regional development projects, although they do not actually have an administrative status or a legislative and executive councils. Their main function is to obtain funds from the European Union.

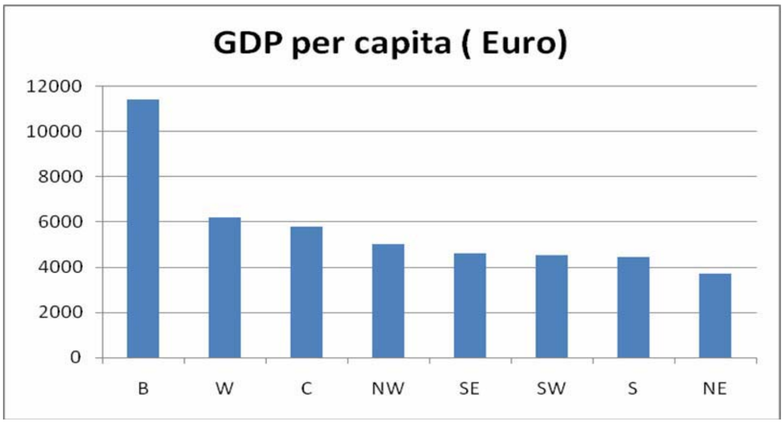
Critics argue that the composition of the regions in Romania lacks coherence. The South-East region is considered as very heterogeneous one, as it combines counties from three very different historical provinces: Moldova, Muntenia and Dobrudja. This means they are not very well connected and they face very different economic performance.

In Figure 1, we provide the ranking of the eight regions of Romania for the year 2008 in terms of the GDP per capita, this ranking being the one which characterized also the period under study.

One should note that in terms of GDP, Bucharest ranks first and North–East region is at the bottom. In terms of other indicators, such as migration rates, unemployment rates or industrial sectors, the hierarchy remains approximately the same during the period of our study. We also analyzed other social variables, such as infant mortality rates as an index of medical care, housing and number of students per 1000 of inhabitants. These data showed us that the ranking of the regions by GDP per capita relatively holds in terms of social conditions. In our paper, we employ panel estimation methods to analyse Romanian data on inter-regional migration between 1995 and 2005. Due to availability of the data and to the need of working with a homogenous panel data set we limit to this period when all the relevant data needed for estimation were available. This period reflects the changes in the Romanian internal migration as starting with the year 1997, for the first time, the outgoings from rural areas were lower than the incomings into these areas (see also Petre, 2005). In what follows, we present the theoretical hypotheses of the classical model of Harris-Todaro.

Figure 1

Regional disparities based on GDP per capita (year: 2008)



Source: National Commission for Prognosis, 2009.

3. A theoretical model of migration

In the Harris-Todaro (H-T) model of rural to urban migration, the future expected income after migration is given by

$$\int_0^{\infty}\left[PW_u+(1-P)W_b\right]e^{-rt}dt-C=\frac{1}{r}\left[PW_u+(1-P)W_b\right]-C \qquad (3.1)$$

where: C is the direct cost of migration, r is the migrants' discount rate, P is the probability of employment at the urban real wage, W_u, and W_b is the real value of the urban unemployment benefit. The would-be migrants compare (3.1) with the future income from remaining in the rural sector, which the basic H-T framework assumes to be

$$\int_0^{\infty}W_r e^{-rt}dt=\frac{1}{r}W_r \qquad (3.2)$$

where: W_r is real wage in the rural sector.

If urban employment is a certain prospect (i.e. P=1) then migration takes place only if there are gains from moving, i.e., only if

$$\frac{1}{r}W_u-C>\frac{1}{r}W_r \quad or \quad W_u-W_r>rC \qquad (3.3)$$

Under conditions of uncertainty, the probability of obtaining employment is given by

$$P = \frac{\bar{L}_u}{N_u} = \frac{\bar{L}_u}{\bar{L}_u + M\,\bar{N}_r} \tag{3.4}$$

where: $\bar{L}, \bar{N}, M$ are defined as labour, population and migration, respectively. The basic H-T framework thus assumes that migrants compete on equal terms with the incumbent urban employed population. When M rises in this model, P falls – reducing expected post-migration income, and migration continues only until the returns from (3.1) and (3.2) are equal. Hence, the equilibrium migration rate M is given by

$$PW_u + (1-P)W_b - W_r = rC \tag{3.5}$$

with P given by (3.4). Substituting (3.4) into (3.5) and solving for M gives the equilibrium level of migration:

$$M = \left[\frac{(W_u - rC) - W_r}{W_r - (W_b - rC)}\right]\frac{\bar{L}_u}{N_r} \tag{3.6}$$

If $W_r > (W_b - rC)$, i.e. there is no incentive to leave rural areas for urban unemployment, then we get the familiar results:

$$\partial M/\partial W_u > 0, \quad \partial M/\partial W_r < 0, \quad \partial M\Big/\partial \bar{L}_U > 0, \quad \partial M/\partial C < 0 \tag{3.7}$$

Equation (3.7) states that any marginal increase in urban wage, W_u, or decrease in the rural wage, W_r, will increase migration. Paradoxically, any policy to increase employment in the advanced urban sector will raise the migration rate and may increase urban unemployment. Hence, in H-T models, a policy of creating more employment opportunities in the advanced regions may only enlarge the migration from the backward regions. Also, any decrease in the cost of migration will increase M.

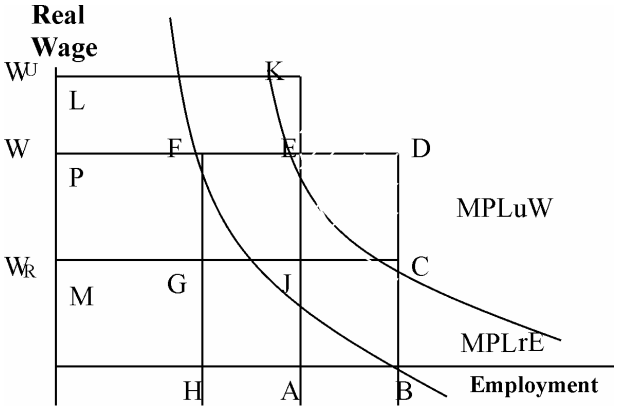
Figure 2 explains the gains and losses from migration, showing the pre- and post-migration labour market in host and donor regions.

Due to the access to superior technology, better organisation and higher quality human capital, the marginal productivity of labour in the advanced ("Urban") region is higher than in the backward ("Rural") region, as shown by the relative positions of the MPLU and MPLR curves. With employment initially at A, real wages are higher in the advanced region (W_U) in comparison with backward region (W_R).

Figure 2 illustrates the case where migration is at AB (HA) level, which leads to an equality of wage rates across the two regions ($W_U = W_R = W$). The value of the additional output in the advanced region is KDBA, whilst the output loss in the backward region is valued at FJAH, which is replicated as ECBA. Thus, the net overall gain equals *KDCE*. Hamilton and Whalley (1984) estimate this area for the case of global perfect labour mobility.

Figure 2

Employment and real wage before and after migration



Source: Ghatak.S. (2003), An Introduction to Development Economics*, 4th ed., Routledge, London/NewYork.*

Clearly, the size of the gain will depend on the degree of labour mobility, nature and quality of labour, substitutability or complementarities between different types of labour and the degree of labour absorption in the labour market given by the real wage flexibility. *Inter alia,* the greater the wage flexibility in the host region is, the greater would be the welfare gain (for formal proofs, see Ghatak *et al*., 1996; Levine, 1999).

4. Methodology and results

We test the extent to which inter-regional migration flows are correlated with *relative economic opportunities,* measured by differences in wages and unemployment rates. Our data is a panel of pooled cross-section/time-series with the units of the cross-section being the (8 x 7 = 56) different inter-regional migration routes between the 8 geographic regions of Romania. The data we use are annual gross migration flows data for the eight geographic development regions in Romania described previously. We have 616 observations points provided from the 11 years of annual records for 56 intra-regional migration regions.

As models applied to time series data are likely to have auto-correlated errors and those applied to cross section data are likely to encounter heteroskedasticity, we expect that both problems are present in our pooled data. Generalised Least Squares (GLS) is then theoretically superior to OLS, though infeasible without knowledge of the autocorrelation and heteroskedasticity parameters. Feasible GLS is a practical alternative, utilising consistent estimators of disturbance variances and covariances, and is asymptotically superior to OLS.

If $[y_i \quad X_i], u_i$ are vectors of data and disturbances for the i^{th} migration route then, with common parameters, the entire data generating process can be modelled by stacking these vectors as:

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_M \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_M \end{bmatrix} \beta + \begin{bmatrix} u_1 \\ u_2 \\ \vdots \\ u_M \end{bmatrix}, \qquad (4.1)$$

Permitting contemporaneous cross-equation correlation of disturbances, but no heteroskedasticity within equations and no serial correlation, the stacked disturbances will have a covariance matrix of the form:

$$\Omega = \begin{bmatrix} \sigma_{11} I_T & \sigma_{12} I_T & \cdots & \sigma_{1M} I_T \\ \sigma_{21} I_T & \sigma_{22} I_T & \cdots & \sigma_{2M} I_T \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{M1} I_T & \sigma_{M1} I_T & \cdots & \sigma_{MM} I_T \end{bmatrix} = \Sigma \otimes I_T \qquad (4.2)$$

The σ_{ij} may be consistently estimated on the basis of residuals obtained by applying OLS to 4.1, viz:

$$\hat{\sigma}_{ij} = T^{-1} \sum_{t=1}^{T} e_{it} e_{jt} \quad , \begin{bmatrix} e_1 \\ e_2 \\ \vdots \\ e_M \end{bmatrix} = y - X\hat{\beta}$$

If some σ_{ij} are large, we expect, following Zellner (1962), to gain efficiency by applying GLS to equation (4.1) rather than OLS, i.e.

$$\begin{aligned} &\tilde{\tilde{\beta}} = (X'\hat{\Omega}^{-1}X)^{-1}(X'\hat{\Omega}^{-1}y) \\ &Asymptot.Var - Cov(\tilde{\tilde{\beta}}) = (X'\hat{\Omega}^{-1}X)^{-1} \\ &\hat{\Omega}^{-1} = \hat{\Sigma}^{-1} \otimes I_T \end{aligned} \qquad (4.3)$$

The coefficient covariance estimator is given by:

$$\left(\frac{N^*}{N^* - K^*}\right)\left(\sum_t X_t' X_t\right)^{-1}\left(\sum_t X_t' \hat{\varepsilon}_t \hat{\varepsilon}_t' X_i\right)\left(\sum_t X_t X_t\right)^{-1} \qquad (4.4)$$

where: the first term is the degree of freedom adjustment depending on the total number of observations, N^* is the total number of stacked observations and K^* is the total number of the estimated parameters.

The cross-section SUR (Panel Corrected Standard Error PCSE) methodology (Beck and Katz, 1995) that we apply replaces the outer product of the cross-section residuals in equation (4.4) with an estimate of the cross section residual (contemporaneous) covariance matrix Ω_m :

$$\left(\frac{N^*}{N^*-K^*}\right)\left(\sum_t X_t^{'}X_t\right)^{-1}\left(\sum_t X_t^{'}\hat{\Omega}_M X_i\right)\left(\sum_t X_t X_t\right)^{-1} \tag{4.5}$$

This estimator is robust to unrestricted unconditional variance Ω_m, but places additional restrictions on the conditional variance matrix. However, conditional and unconditional matrices remain the same. This ensures that the variance of u_i remains constant with t and there is no serial correlation in the errors.

For empirical modelling, we use the following specification:

$$Y_{ijt} = \sum_k \beta_k X_{k,ijt} + \varepsilon_{ijt} \ \ with\ i, j = 1.....8,\ i \neq j \tag{5.1}$$

where: Y_{ij} is the natural logarithm of migration from region *i* to region *j* and $X_{k,ij}$ are explanatory variables as follows:

$X_{1,ij}$ is the natural logarithm of wages in the ith origin region

$X_{2,ij}$ is the natural logarithm of wages in the jth destination region

$X_{3,ij}$ is the natural logarithm of unemployment in the ith origin region

$X_{4,ij}$ is the natural logarithm of unemployment in the jth destination region

Some migration studies use symmetrical models, in which explanatory variables such as unemployment and wages enter as ratios or differences between origin and destination provinces. Since migrants may react differently to changes in labour markets in far provinces, compared to those in their home region, for which more information is available (Taylor and Martin 2001), our modelling uses the less restrictive asymmetrical specification.

Since the diagonality of Σ is at the heart of using the SUR estimation method (Baltagi, 1999) we use the residual tests LM for testing if Σ is diagonal. The LM statistics for the null hypothesis of no serial correlation is 385.55, which has an effectively zero probability, which means that the null hypothesis of no serial correlation in the errors cannot be accepted. White’s heteroskedasticity test indicates that the hypothesis of homoskedastic errors cannot be accepted (a value of 161.62 with a zero probability). With such error behaviour, the OLS estimators are unbiased but inefficient.

We apply the standard methodology to control for the autocorrelated and heteroskedastic errors and allow route-specific intercepts (“fixed effects”) to capture other unobserved characteristics. The values of fixed effects are given in Table 1, for each route and they indicate that each route has unique features.

Table 1a

Estimated model, Cross section SUR (PCSE) with fixed effects

Dependent Variable: LOGMIGRATION
Method: Panel Least Squares
Sample (adjusted): 1995 2005

Cross-sections included: 56				
Total panel (balanced) observations: 616				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.35	0.336	24.84	0.00
UNEMPLOYMENTDESTINATION	0.016	0.011	1.44	0.14
UNEMPLOYMENTORIGIN	-0.011	0.011	-0.95	0.33
LOGWAGEORIGIN	-0.615	0.318	-1.93	0.05
LOGWAGEDEST	0.504	0.325	1.55	0.12
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.958	Mean dependent var		6.80
Adjusted R-squared	0.953	S.D. dependent var		0.86

Table 1b

Fixed effects for migration routes

Bucharest – Centre	-0.309611	South-Bucharest	1.890298
Bucharest – North East	0.615237	South-Centre	-0.278091
Bucharest – North West	-0.748257	South-North East	-0.106460
Bucharest – South	1.801774	South- North West	-1.342855
Bucharest – South East	0.595396	South- South East	0.733632
Bucharest – South West	0.140613	South-South West	0.178584
Bucharest – West	-0.852703	South-West	-0.866516
Centre – Bucharest	-0.641081	South East- Bucharest	0.994293
Centre – North East	0.708784	South East-Centre	0.113079
Centre – North West	0.490342	South East-North East	1.147288
Centre – South	-0.507965	South East-North West	-1.136271
Centre – South East	0.017372	South East-South	0.831072
Centre-South West	-0.444767	South East-South West	-0.573201
Centre- West	0.443882	South East-West	-0.470520
North East-Bucharest	0.874704	South West-Bucharest	0.491410
North East- Centre	0.850462	South West- Centre	-0.147202
North East – North West	-0.393856	South West- North East	-0.717760
North East-South	0.381828	South West-North West	-1.302986
North East – South East	1.315635	South West- South	0.287609
North East-South West	-0.446018	South West-South East	-0.532927
North East-West	1.049281	South West-West	0.653190
North West- Bucharest	-1.029549	West-Bucharest	-1.032937
North West- Centre	0.431711	West-Centre	0.115545
North West- North East	-0.747933	West-North East	0.746726
North West-South	-1.359686	West-North West	0.510561
North West-South East	-1.380194	West-South	-0.877210
North West- South West	-1.408078	West-South East	-0.517127
North West-West	1.172607	West- South West	0.588843

From Table 1a, we notice that only real wages in origin regions have statistical significance at 5% level. One simple conclusion can be drawn from these results: during the transition years, Romania faced a pattern of migration determined more by *push* than *pull* effects, as people were strongly motivated to escape from lowest-wage in origin regions. The economic variables which might be theoretically anticipated to be the prime drivers, i.e. wages and unemployment levels, do not perform well according to our results of inter-regional migration within Romania. The estimated fixed effects further highlight the contrast between theoretical expectations and empirical results. When North-East (the poorest region of the country) is the destination region, fixed effects are in many cases positive and high (see Table 1b), indicating that migration flows towards this region were significant despite its apparent lack of economic opportunity. In fact, when we included socioeconomic variables such as schooling, housing or infant mortality rates, results turned out to be insignificant for the migration decisions[4].

Among the Eastern European countries Romania, under the rule of Ceauşescu, mirrored many features of the Stalinist regime (see Dăianu, 2001; Stan, 1995). The strict autarky, the isolationism, the central planning system and the failure to exploit the comparative advantage of the country made the reform a very stressful process (Calgano *et al*., 2006). Following the spirit of liberalization since 1989, the Romanian government started the restructuring of the state owned enterprises that resulted in a severe decline of output and employment - especially in the urban areas. This phenomenon forced many people to move towards poor, rural regions. When people moved in Romania during the period under study, risk-aversion, family reunion and staking the claim on land after de-collectivisation were the primary drivers of internal migration.

In explaining our results, we wish to stress that the internal migration rate reached its highest level in 1990 in Romania (see for details, Constantin, Pârlog and Goschin, 2005). This was the result of the cancellation of some restrictive legislation on residence in towns having more than 100 thousands inhabitants. First, the rural-urban flow reached 70% of all migration, which later declined; e.g., in 1994, it stood at 30.4%. A new pattern of migration developed. A relatively high level of urban unemployment till the year 2005 (see Table 2) has induced the return of a large number of persons back to their rural origins. After 2005, we can notice that the urban unemployment decrease and starting with the year 2009 it can be observed an increase due to the economic crisis and its impact on the Romanian economy.

Table 2

Unemployment rate in urban and rural Romania (gender and area)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Gender												
M	6.5	7.4	7.7	7.1	8.9	7.5	7.7	7.7	8.2	7.2	6.7	7.7
F	6.1	6.2	6.4	5.9	7.7	6.4	6.9	6.4	6.1	5.4	4.7	5.8
Area												
Urban	9.2	10.3	11.2	10.4	11.2	9.5	9.5	8.8	8.6	7.7	6.8	8.1
Rural	3.5	3.5	3.1	2.8	5.4	4.3	6.2	5.2	5.6	4.9	4.6	5.4

Source: Bulletins of the National Institute of Statistics, various issues, period 1998-2009.

[4] *Tables with results when factors like infant mortality, housing, number of students per 1000 of inhabitants are included in the regression can be provided upon request*

Further, we proceed by assuming different characteristics each year, i.e. using time dummy variables, we found that each year could have exerted different impact on migration, as the reconstruction process of the industry meant different employment opportunities for different sectors each year. Table 3 contains the results of cross section SUR methodology when intercept varies across section and overtime.

Table 3a

Fixed effects model: intercept varies across section and over time

Cross section SUR (PCSE)

Dependent Variable: LOGMIGRATION				
Method: Panel Least Squares				
Date: 12/14/06 Time: 14:23				
Sample (adjusted): 1995 2005				
Cross-sections included: 56				
Total panel (balanced) observations: 616				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.99	12.21	-1.39	0.16
UNEMPLOYMENTDESTINATION	0.037	0.019	1.90	0.05
UNEMPLOYMENTORIGIN	0.009	0.010	0.92	0.35
LOGWAGEDEST	1.376	0.712	1.93	0.05
LOGWAGEORIGIN	0.256	0.250	1.02	0.30
	Effects Specification			
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.96	Mean dependent var		6.80
Adjusted R-squared	0.96	S.D. dependent var		0.86

Table 3b

Cross section fixed effects (each route)

Bucharest – Centre	-0.367274	North East-South West	-0.471456	South East-North West	-1.075477
Buch.. – North East	0.546671	North East-West	1.100118	South East-South	0.802911
Buch.. – North West	-0.756398	North West-Bucharest	-1.037689	South East-South West	-0.667240
Bucharest – South	1.704678	North West-Centre	0.572009	South East-West	-0.488284
Buch. – South East	0.458229	North West- North East	-0.618538	South West-Bucharest	0.328436
Buch.. – South West	-0.022360	North West-South	-1.258820	South West-Centre	-0.161737
Bucharest – West	-0.939401	North West-South East	-1.319400	South West-North East	-0.743199
Centre – Bucharest	-0.698744	North West- South West	-1.373091	South West-North West	-1.267999
Centre – North East	0.788656	North West-West	1.283869	South West-South	0.233642

Centre – North west	0.630639	South-Bucharest	1.793203	South West-South East	-0.626966
Centre - South	-0.456622	South-Centre	-0.226748	South West-West	0.609619
Centre- South East	0.028643	South-North East	-0.066020	West-Bucharest	-1.119635
Centre-South West	-0.459302	South- North West	-1.241990	West-Centre	0.177285
Centre- West	0.505622	South- South East	0.705471	West-North East	0.797563
North East-Bucharest	0.806138	South-South West	0.124616	West-North West	0.621823
North East- Centre	0.930334	South-West	-0.844208	West-South	-0.854902
North East – North West	-0.264461	South East-Bucharest	0.857126	West-South East	-0.534891
North East-South	0.422268	South East-Centre	0.124351	West- South West	0.545272
North East – South East	1.316003	South East-North East	1.147656		

Table3c

Period Effects

1/1/1995	3.543503
1/1/1996	2.978415
1/1/1997	1.797200
1/1/1998	0.818725
1/1/1999	0.104054
1/1/2000	-0.560898
1/1/2001	-1.092392
1/1/2002	-1.354440
1/1/2003	-1.723513
1/1/2004	-1.985556
1/1/2005	-2.525099

Table 3 shows some changes in our results. Wages in destination regions become significant at 10% level. Some unexpected signs are obtained for unemployment in destination regions and wage in origin regions. When each year is allowed to have a different intercept to account for the reconstruction process, migration pattern is influenced mainly by wages in destination regions and by unemployment in destination regions, but the coefficient is small (0.037). When different intercepts are allowed for each year, the pattern of migration could involve the mobility of only skilled people. Interestingly, the elasticity coefficient for wage in destination regions has a high value (1.37). Wages in origin regions are not significant. Thus, the pull factor becomes significant when we control the model by considering different intercepts for both cross sections and time.

5. Conclusions

Inter-regional factor mobility is acknowledged to be an important route to promote economic growth and efficiency gains. EU enlargement with Romania and Bulgaria forces both countries to improve their regional policies and to stimulate their economic development. One of the central issues of economic development is an efficient inter-regional migration that contributes to the reduction of regional income disparities by reallocation of labor from low productivity to high productivity regions. It can be achieved by improving the employment opportunities, real wages and economic and social conditions of different regions. At the moment, it seems that the efficiency and welfare (as measured by output) gains from inter-regional labor mobility in Romania have been rather limited.

In this paper, we examined the causes of Romanian inter-regional migration. Using the cross-section SUR estimation for analyzing panel data with cross-sectional fixed effects, we tested the role of real wages and unemployment as the major explanatory variables of migration. We found that unemployment effects are absent and that wage effects are primarily the influence of low wages in donor regions. To rationalize these counter-intuitive results, we suggest that the inter-regional migration decisions are partly the results of the de-collectivization of Romanian agriculture. It has provided rural economic opportunities, whereas high rates of urban unemployment have reduced urban economic opportunities. In consequence, it was some significant return migration from urban to rural areas, which may have incidentally involved inter-regional relocation. When considering time effects, which allowed us to take into account the fact that restructuring process was different each year, our results proved that wages in destination regions became very significant. This means that, while controlling for differences in each route of migration and each year, the depicted pattern of migration becomes characterized by pull effect rather than push effect, based on rational income decisions. This implication is very relevant, as it stresses the fact that as the massive restructuring of the Romanian economy gets under way, the effects of many other socio-economic factors such as housing, health amenities and human capital become important areas of future inter-regional migration research. More recent and relevant data of internal migration in Romania would be a good way forward to model an extension of the standard economic models that include important socio-economic conditions which could influence migration decisions.

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Appendix

Regions of Romania

Source: *The eight development regions of Romania (http://www.romania-central.com/country-profile-romania/romania-maps/)*

Legend:
1. North-East
2. South-East
3. South
4. South-West
5. West
6. North-West
7. Centre
8. Bucharest-Ilfov