Patterns of Romanian Emigration, and their Link to Individual Education and Education in Place

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ABSTRACT

This paper examines individual, social and spatial determinants of international migration from Romania, with a specific focus on the role of education as a determinant of migration, both as an individual attribute and also as an aggregate level characteristic. Using two types of census data, (1) I present indirect support for the conclusion that the permanent migrants from Romania are highly educated, by showing that these migrants come from the most "developed" areas of the country with the largest concentration of highly educated people, (2) I show that temporary migrants are a much more diverse group of people with lower levels of education, and who come from places with the lowest level of income, (3) I present evidence for the phenomenon of ethnic migration, especially of Germans and Hungarians but also of Roma ethnics, and (4) I show that context matters as multilevel models indicate that county level variables have significant effects on the likelihood to migrate.

INTRODUCTION

The fall of the communist bloc, the recent expansion of the European Union (EU), as well as changes in immigration policies of many developed countries, have given rise to new types of migration, and have restricted the movement of some groups of people while facilitating the transnational circulation of others. While some migration systems have long been studied, others including the new international migration from Eastern Europe are still relatively under-explored and only partially understood. In this paper I explore the individual, social and spatial determinants of international migration (emigration) from Romania, as an example of Eastern European out-migration. 'What kind of places are sending out migrants from Romania' and 'what kinds of people leave Romania temporarily or permanently' are the main research questions to be answered in this paper. A specific focus is to explore the role of education as a determinant of migration, both as an individual attribute and also as an aggregate level characteristic.

The international migration literature has discussed several "ideal types" of migrants, the most important being (1) the labor migrants, (2) the professional immigrants, (3) the entrepreneurial immigrants and (4) the refugees and asylees (see Portes & Rumbaut, 1990). Most sending countries are associated with a certain type of migrants, although some countries may send migrants representing several types. For instance, the great majority of Mexican immigrants in the U.S. are labor migrants, working in low skilled and low paid occupations. In contrast, Filipinos and Indians are known to be highly skilled professional immigrants. Finally other countries send several types of migrants. A known such example in the U.S. literature is the case of China. Chinese students earn 7.5 percent of all science and engineering doctorates, 13 percent of the physical science and 15 percent of the mathematics doctorates in U.S. universities, and

over 85 percent of them intend to remain in the U.S. after graduation (Johnson 2001). At the same time, China also sends low skilled migrants to supply the labor needs of various Chinese ethnic enclaves (Zhou, 1992) in several major U.S. metropolitan areas, most notably New York, Los Angeles and San Francisco.

Romania is also a country that sends out several types of migrants, along with many of its neighbors. Documenting emigration patterns from Romania is important for several reasons. First, Romanian emigration is a relatively under-explored social phenomena, with possible important consequences. Many have argued that that the emigration of the highly skilled reduces economic growth through unrecompensed investments in education and the depletion of a source country's human capital assets. Conversely, alternative approaches to skilled migration have been advanced, which argue that despite the negative effect of skill losses, skilled migration has a beneficial effect in that it encourages "brain gain" or human capital formation (Commander et al.2004). Nevertheless, regardless of how positive or how negative the consequences are, most scholars agree that the migration of the highly skilled has economic and social consequences for both the country of origin and the destination. Low skilled migration is also likely to have consequences. A typical positive effect is an influx of money through remittances send by migrants, which may help boost the local economy. A negative consequence of low skilled migration is the absence of local labor for agricultural work in Romania within a context of population aging in Romanian villages.

Second, this study has the potential to inform much larger patterns of migration and to help build, together with other studies and theoretical models, a sophisticated theory needed to explain this complex and multifaceted phenomenon of international migration. The case of

Romania could speak for many other countries and especially for its neighbors in Eastern and central Europe who experience the migration of both the highly skilled and the low skilled.

TYPES OF MIGRANTS: The Professional Emigrants

Within the larger umbrella of international migration, the mobility of the highly skilled, which refers to the opportunities of qualified workers to capitalize on their skills by moving to other countries, represents an increasingly large and complex component of global migration streams. As Johnson (1998) shows, the number of earned doctorates by foreign-born students in science and engineering in the U.S. has been growing faster (11.6 percent annual growth) than the overall number of science and engineering degrees (3.4 percent annual growth). Paralleling this increase is an increase in those who plan to remain in the United States after receiving their degrees (Johnson, 1998). Globalization and the advent of a knowledge economy have created a new context for labor mobility, expressing a greater need for qualified professionals.

The phenomenon of highly skilled migration (or skill streams) can assume the features of brain drain—the massive flow of intellectual human capital directed to the most developed countries—facilitated by selective immigration polices (Lowell & Findlay, 2001, Khoshkish, 1966) and by knowledge-based metropolitan economies in search of qualified resources (Sassen, 1994). As Ferro (2004) explains in her review, brain drain has the following characteristics: (1) it refers to college educated migrants, (2) who emigrate for long stays or permanently, and (3) it is substantial. Many argue that the emigration of skilled professionals is harmful to the country of origin since valuable human capital is lost, and impedes economic development which might otherwise have occurred. Moreover, other claims argue that brain drain is not offset by the feedback effects of remittances, technology transfer, investments or trade, and that it reduces economic growth through unrecompensed investments in education and the depletion of a source

country's human capital assets. Compared to the labor migrants who are characterized by remittance behavior, evidence has found that the brain drain is associated with a smaller propensity to remit (Faini, 2007). Moreover, as argued by Todaro (1996), the highly educated and skilled people that migrate are the very ones that their origin countries can least afford to lose. Portes and Rumbaut (1990) explain that the highly skilled professional migrants are usually the best in their respective professions, as they need to pass difficult entry tests and to attract job offers from destination countries. Although alternative approaches argued that highly skilled migration might increase participation in tertiary education (as people see education as increasing their chance of migration), many authors dispute the potential size of this positive effect, claiming that it cannot counter the predominantly negative effects arising from skilled emigration (see Schiff, 2006).

Highly Skilled Romanian Migrants?

Quantifying the migration of skilled workers from Romania represents a very difficult task (Ferro 2004), as different sources of information offer partial prospects and because brain drain is a volatile phenomenon to be numerically determined. The International Organization for Migration (OIM) estimates (on the basis of the Romanian National Institute of Statistics and Economic Studies INSSE counts) that 413,993 Romanians of all educational levels emigrated permanently between 1990 and 2005. Some (e.g., Ferro 2004) argue that this seems to be an underestimated number, which could in fact be more than double, representing four percent of the Romanian population. Although reliable data on skilled migrations are lacking, several sources suggest that the emigration of the highly educated from Romania is substantial, especially from certain professional fields. As reported by Martin and Straubhaar (2002), about half of the 5000 graduates of Romanian universities in computer science emigrate each year.

Ferro (2004, 2006) has specifically surveyed Romanian IT workers and professional researchers in Italy, as well as potential IT emigrants from Romania, and she argues that brain drain from many Romanian cities is clearly happening. Other accounts also show massive migration of IT professionals, attracted by strong incentives and selective immigration policies of Western European countries and North America (Lazaroiu & Alexandru 2005). Moreover, the emigration of skilled physicians and health care workers from Romania is a well-documented phenomenon (www.romedic.ro). Over four percent of Romanian medical doctors and 25 percent of medical assistants have left Romania to practice abroad, despite the fact that Romania is in deficit of medical professionals, especially in rural areas. Almost all top universities in the world have Romanian graduate students, the great majority of whom are in the fields of engineering, computer science, mathematics, physics, and medicine. Many of these students are multiple times international Academic Olympic winners in their respective fields. Official figures evidence that the percentage of university graduates having left Romania permanently rose from six percent in 1990 to 23 percent in 2000 (National Institute for Statistics), which is as much as double the percentage of university graduates in total adult population (Lazaroiu & Alexandru, 2005). People like Miles Reed, an English mathematician and fellow of the Royal Society, wrote about the possible devastating effects of the Romanian brain drain on the continuation of the high-quality basic science teaching in the Romanian higher education system, and advocated the "Return to Romania" programs for Romanian scientists. Finally, Docquier, Lowell and Marfouk's (2008) database show that Romania is among top 30 countries in the world in terms of skilled emigration stocks (migrants with any post-secondary education).

Besides possibly reducing economic growth, the emigration of the highly skilled is problematic for Romania for two additional reasons. First, young educated people (students) in

Romania have an unusually high desire to migrate compared to other countries of similar level of development, and thus it is likely that the emigration of the highly skilled would be exacerbated instead of diminished in the future. For instance, a March 2001 poll found that "66 percent of the Romanian students would emigrate if they could" (Martin and Straubhaar, 2002, p.81). Also, comparative European data has found that 18.6 percent of the Romanian students had a general inclination to migrate, the highest rank among all the other countries included in the 2002 EUROBAROMETER survey (see table A).

Table A. Students in 2002 with a general inclination to migrate (Percent)

COUNTRY NAME	*Percent*
Poland	13.3
Romania, Bulgaria	**18.6**
Cyprus, Malta, Slovenia	7.6
Turkey	11.6
Hungary, Czech Republic, Slovakia	9.1
Estonia, Latvia, Lithuania	8.9

SOURCE: EUROBAROMETER data, 2002

Second, although evidence is scarce, it seems that the highly skilled migrants from Romania are by and large permanent migrants. The *Survey of Earned Doctorates* by the National Science Foundation has found that Eastern European graduate students in science and engineering in the U.S. have a higher desire to stay in the U.S. after finishing their degrees than the average foreign graduate student, with over 70 percent expressing the need to stay (Johnson 1998).

Reversely, evidence shows that most permanent migrants from Romania are highly skilled. For instance, analyses done by the Romanian National Institute of Statistics (2004) have found that about 72 percent of the permanent emigrants from Romania were highly qualified (either having university or highly specialized secondary and post-secondary education). Author's informal accounts show that most of the highly skilled migrants do not return to their home country. Most of them are able to find highly paid jobs in their destination country. Portes

and Rumbaut (1990) argue that this is not an exceptional phenomenon, as the majority of the professional immigrants come legally in their destination countries and earn good incomes in professional jobs. Nevertheless, others (e.g, Todisco, Brandi, and Tattolo 2003) have argued that highly skilled migration is temporary, but this seems to be an exception for the foreign researchers (including Romanians) going to Italy and other countries in Southern Europe.

It is impressive how little highly skilled migration is mentioned in major books on international migration (e.g., Massey at al, 1998, Hirschman, Kasinitz and DeWind , 1999), considering that it is a substantial phenomenon of the contemporary world. For instance, many developed countries, and especially Australia, Canada and New Zealand, see these immigrants as a source of economic growth and implement policies in favor of immigration of highly skilled workers through a point-based system, while trying to stop low skilled migration (Hart, 2007). While the immigrants comprise 11 percent of the U.S. population, they make up 18 percent of the seven million scientists and engineers in the U.S., and this latter percent continues to increase every year (Weber-Morales, 2005). The combination of being Romanian, young, healthy, highly educated (at least college education), and married is a guaranteed entrance to Canada, Australia and New Zeeland. Many of those migrating to U.S. after 1989 also have these traits, although there is a higher tendency for those migrating to the U.S. to come as graduate students and as never-married.

Although the neoclassical economics and the push-pull approaches have been criticized for their inability to fully explain international migration, they remain among the main explanatory frameworks of international migration today. The neoclassical economics is the oldest theory of international migration and states that migration occurs because of geographic differences in the supply and demand of labor. A country with a large endowment of labor

relative to capital will have a low equilibrium market wage, while a nation with a limited endowment of labor relative to capital will have a high market wage (Massey at al. 1998). As Massey at al (1998) explain, the resulting differential in wage causes workers from low-wage or labor surplus country to move to labor-scarce country. This theory has been criticized because of its universal statements that do not account for many situations today. For instance, the migration from southern Europe to Northern and Western Europe has virtually stopped despite large wage differentials that still exist between these countries. Nevertheless, most scholars agree that while wage differentials are not a *sufficient* condition for international migration, they are in most cases a *necessary* condition for international migration, as most migrants move to places where they can earn more than in their origin country. Also, because of today's segmented and highly differentiated labor markets, it is difficult to make statements about the labor surplus and labor deficit at the country level. Most developed countries today have labor surplus in some areas/fields coexisting with labor deficits in other areas. For instance while U.S. may have a surplus in fields such as law, social sciences and business, it has a relative deficit in IT and some hard-science fields, fact reflected in high concentration of foreign born professionals and graduate students in these later fields (Weber-Morales, 2005). In contrast, while the communist education system in Romania was characterized by fostering lack of individualism and creativity and poor preparation of students in arts, history, and social sciences in general, it provided traditionally strong training in mathematics and hard sciences, and vocational technical training resulting in a well prepared work force for the IT industry, physics and other sciences (Bachman, 1989). Consequently, several accounts show that the IT professionals, physicists and chemists were the majority of highly skilled immigrants from Romania after the 1989 revolution when a transition period did not offer much opportunity for many of these professionals.

With the advent of outsourcing, professional technical jobs opportunities have increased exponentially in Romania, but the flow of highly skilled emigrants continues, suggesting that emigration should be explained by more than simply wage differentials. A complement to the macro-economic model of neoclassic economics is a microeconomic model of individual choice, which could add in explaining international migration. Simply stated, this latter model posits that individual rational actors decide to migrate because a cost-benefit calculation leads them to expect a positive net return, usually monetary from movement (Massey at al, 1998). People thus choose to move where they think they can be most productive, given their skills. Potential migrants estimate the costs and benefits of moving to alternative locations and migrate where the expected discounted net returns are greatest over some time horizon (Massey at al, 1998). From this perspective, the individual human capital characteristics that *increase the likely rate of remuneration* in the destination countries (e.g., education, experience, training, language skills), as well as the characteristics that *lower migration costs* (e.g., language skills, wealthy parents) raise the probability of international migration.

The social sciences have broadly investigated the push-pull factors determining migration, considering how local conditions of deprivation and frustration can enforce the willingness to move away and how the appealing perspectives of a better life abroad can attract people to leave. Nevertheless, there are distinctions to be made when considering the traits of migration and the level of skills involved. Todisco, Brandi and Tattolo (2003) argue that migrants' plans differ substantially for the two types of migration. Mass migration involves people with low-level of education and without specific qualifications, who move under the influence of push factors (escape from their present difficult situation). In contrast, skilled migration is conditioned by more attractive factors (the pull factors) and is more likely to be

temporary. It involves people with high professional qualifications and working experience, and the decision to migrate has been carefully calculated and thought out. Several studies have found partial support for Todisco, Brandi and Tattolo's (2003) assertion regarding highly skilled migrants. For instance, Ferro's (2004) study of 128 highly-skilled Romanian emigrants has found evidence that highly skilled Romanian migrants' plans to migrate are driven primarily by "pull-factors" rather than "push-factors," although these pull-factors extended well beyond the typical economic factors, to include pursuing international careers, study abroad, cultural and travel experiences, etc. However, she did not find support for the "temporality" of highly skilled migration. In contrast she found that, although highly skilled migrants started with the idea that their migration was temporary, later they transformed it into a long-term, if not permanent, life choice.

Ferro (2004) has found that it is not the "push –factors" that drive international highly-skilled Romanian migration. This means that these migrants tended to be generally well-off in their country of origin. They were also young with at least college education, in the growing phase of their careers, with good average incomes and high standards of education.

Based on previous available evidence on highly skilled migration, I expect that permanent migrants from Romania are likely to be college educated and to come from areas that are the most developed in Romania, with the largest emigration coming from Bucharest, the capital of the country and by far the most developed area. Moreover, I expect permanent migration to be associated with "highly educated places"(places with a high proportion of highly educated individuals), places with high average income, and places with a high proportion of young individuals.

Although highly skilled migration from Romania is an empirical reality, several researchers have argued that the bulk of Romanian migration is not skilled migration or permanent migration but rather unskilled/low-skilled temporary, incomplete and circular migration, mainly within the EU countries. For instance, OECD SOPEMI (2002) estimates that only about 20 percent of the total Romanian migrants have college degrees, although the proportion of college educated Romanian emigrants has been and continues to increase today. Moreover, even if 20 percent college educated is far from majority among international Romanian migrants, this is a rather large percent if compared to the percent college educated among the Romanian population as a whole. Bachman (1989) has shown that only about eight percent of the eligible population in Romania was allowed to enroll in college throughout the whole period of communist dictatorship.

Historically, several trends have been documented (see Baldwin-Edwards, 2005) in regard to the Romanian emigration after the 1989 Revolution and the fall of the communist dictatorship, as follows: (1) between 1990 and 1993, mass permanent migration of Romanian minorities (especially German) and of Romanians fleeing political turmoil, (2) between 1994 and 1996, low levels of Romanian economic migration and very low levels of ethnic migration, (3) between 1996 and 2001, (a) growing permanent migration to the U.S. and Canada, rather than legal migration to western EU countries, along with increases in the educational levels of migrants, (b) the emergence of illegal incomplete or circular migration to European countries for illegal work, (c) some short term legal migration to EU countries through various labor recruitment agreements with various EU countries (Germany, Spain, Portugal, Italy), and (d) some return migration of Romanians, as well as the developing of circular migration between Germany and Romania, and (4) after 2002, (a) the rapid growth of circular migration between

EU countries and Romania promoted by the elimination of the Schengen visa requirement, and (b) the continued growth of permanent emigration of the Romanian skilled migrants to Canada, U.S. and some EU countries with policies attracting the highly skilled.

TYPES OF MIGRANTS: The Labor Migrants

The most typical migrants of today's world are not professional migrants, but rather low paid labor migrants (Portes and Rumbaut, 1990), and there is evidence to suggest that the latter type is the dominant type of international migrants from Romania today. Reliable data on low skilled emigration from Romania and especially on temporary illegal and/or circular migration is not available (Baldwin-Edwards, 2005). Most of what we currently know about this type of migration is inferred from (1) the receiving countries' estimates, and some qualitative studies on Romanian immigrants in various countries (2) the level of declared remittances sent by migrants, (3) a few surveys conducted in Romania by private companies and research institutes unaffiliated with the Romanian government (Simina, 2005), and (4) the Romanian census, which seems to under-count illegal migration.

As mentioned in the previous subsection, the years between 1994 and 1996 marked the emergence of short-term and circular migration, legal and illegal, from Romania to European countries. These types of migration took off after 1996/1997 and especially after 2002, with elimination of the Schengen visa requirement which meant free circulation of Romanians within Europe (for up to three months). It is now estimated that 23 percent of all Romanian households reported at least one member having worked abroad after 1990, which means about 1.6 million households. The percentage is fluctuating according to seasons but overall estimates show that about 10 percent of the households have at least one member working abroad during a calendar year (Lazaroiu & Alexandru 2005). These estimates mean that the number of temporary labor

migrants is three times as high as that of the permanent migrants (e.g., 1.6 million compared to almost half a million respectively between 1990 and 2005).

In the early 1990s, the main destinations for labor migration from Romania were Germany, Israel, and France, facilitated by the ethnic migration (see next section). However, at present these countries were replaced by Italy and Spain, which became the new destination countries for the Romanian labor migration, followed by Germany (Lazaroiu & Alexandru 2005). As Lazaroiu and Alexandru (2005) show, in 2005 there are tendencies indicating that the flow of Romanian labor migrants has slightly increased in Great Britain and France, but these destinations still receive only a very low number of Romanian migrants, and the increase is insignificant if compared to the total number of migrants heading to these destinations.

Evidence shows that many labor migrants from Romania come from villages, and even if they come from urban areas they were originally villagers (Sandu et al 2004). A strong connection exists in Romania between the internal migration system and the labor migration abroad. Before 1989 many people lived as temporary in- migrants in the cities, coming from villages and not having the possibility of getting a permanent residence especially into the large cities. The new context after the 1989 revolution allowed them to get official residence into the city. Thus, immediately after 1989 the rural-urban migration increased, and it was a kind of compensation migration, a compensation for the frozen political-administrative context that dominated before that revolutionary change (Sandu et al 2004). However, with the high increase in urban unemployment and poverty during the post-communist transition, the rural-urban migration trend was replaced by the urban to rural migration trend. The new city residents moved back to the villages they came from as a strategy for survival: the cost of living in rural areas was smaller, the taxes were low and a part of the survival needs was covered by the small plots of

land restituted after 1989. This survival strategy (return migration from cities to villages) affected large segments of the population, and it is these people who started to migrate abroad to aid their survival. The beginning of circular migration abroad from Romania coincided to the return from cities to villages. It also coincided to the sharp increase in poverty. The more the poverty increased, the higher the temporary international migration (Sandu et al 2004) throughout the second half of the 1990s. Despite the fact that poverty started to decrease after 2000, temporary and circular migration continued to increase, most likely influenced by the elimination of the Schengen visa requirement. Those who were previously afraid to travel illegally, now were able to leave Romania for up to three months. The circular and short term migration abroad became the dominant type of migration in Romania. During this time period, several Governmental agencies were formed to deal with various migration problems and among other actions they facilitated short-term legal migration of Romanians abroad. For instance, 60 000 Romanians worked in Spain, Germany, Switzerland, Italy and Qatar during 2004 with contracts intermediated by the Office for Labor Abroad (Lazaroiu & Alexandru 2005). However, the labor contracts intermediated by the Office for Labor migration account for only a small part of the labor migration flows. According to a recent IOM report about 50 percent of the labor migrants are working on the black market.

Regardless of its legal or illegal status, temporary migration affects large segments of the population. In several villages more than 30 percent of the population is working in a foreign country (IOM Bucharest 2001 cited by Lazaroiu & Alexandru 2005), and these percentages do not include the migration from villages of ethnic minorities where the percent migrating temporarily abroad is much higher, in some cases the whole adult population (Sandu et al 2004).

Several case studies suggested that the level of illegal migration depends on the destination. For instance, excluding the mostly illegal migration of the Roma population everywhere, it seems that most of the temporary migration to Germany is contract-based, and thus legal. Many of those migrating to Germany come from areas that used to have large German minority population (most of whom permanently migrated to Germany). They use intermediate companies that facilitate 2-3 months contracts in Germany for work. Absence of social networks among Romanian migrants to Germany was also an interesting finding in a case study of Jebel, a village sending out short term migrants to Germany (Sandu et al 2004). In this latter case study, contract migrants were surprised to arrive at the destination in Germany and to find their neighbors there. The main reason people used intermediate companies for migration to Germany was "the absence of money," as under the new policies adopted by the Romanian government, Romanians have to show a substantial amount of money to travel abroad. The "proof" money should be able to cover daily living expenses, a round trip ticket, proof of accommodation at the destination, as well as proof of health insurance. However, if they have a labor contract, migrants do not need to show proof of living expenses for travel. Finally, Germany's zero immigration policy coupled with its need for labor migrants, has encouraged the proliferation of intermediate companies, which now Romanian migrants use for short-term migration to Germany.

In contrast to migration to Germany, migration to Spain and Italy, the largest receivers of Romanian short-term migrants seems to be network based, and circular migration is the norm. Some even argued that the term "migration" is inadequate to describe the movement of Romanians to countries like Italy and Spain. Rather, the term "long-term commuting" is a much more appropriate description of this phenomenon. For instance, Constantin (2004) argues that

simply classifying labor commuting as "short-term migration" would be incorrect, as it does not adequately reflect, in many instances, the longer-term nature of the phenomenon of international "commuting" and also overlooks crucial aspects of the activity and life of persons involved in transnational labor. She further explains that Romanian migrants (in Italy), even when they stay for long periods (years) do not become integrated in destination society. This is not necessarily because of the host societies, but rather they do not see themselves as part of the countries where they "commute" to work. They do not intend to build a life in the host societies, but rather they see the work abroad as a way to make money to bring back home where their lives and families are. Just like many of them used to commute to Romanian cities during the communism, now they commute to work to Spanish and Italian cities and villages. The most typical jobs for male migrants are in construction sector or agriculture. Most of the female migrants are working as nurses, baby-sitters, or housekeepers. Males are found to be much more likely to migrate than females. Some polls suggest that Romanian citizens are more welcome than Serbs, Chinese, Black Africans, or Arabs. They are accepted as co-workers, neighbors, fellow citizens, family or friends (Juhasz 1995).

Spain seems to have been a good host for Romanian labor migrants, and Spanish people generally welcome Romanian workers regardless of the official laws. Some qualitative studies have found that Romanian citizens who arrived in Spain as "tourists" and who wanted to work but had no contacts at the destination have gone directly to the Spanish police to ask for work. When asked if they were not afraid of being arrested, they replied that the only way to get arrested in Spain is to steal or do something morally wrong, but hard work is always appreciated. Nevertheless, studies have shown that migration to Spain has developed on the basis of network

mechanisms, with kinship and friendship relations acting as the main channels to transmit information and support from migrant to non-migrant (Sandu et al 1994).

Migration or "commuting" to Italy has many similarities with the migration to Spain, although some Italians seem to hold much more xenophobic views toward migrants. Many have argued that this is due to the fact that Italy has been a main destination for Romanians of Roma ethnicity (Lazaroiu & Alexandru 2005), who created multiple problems in this country. However, not including the Roma, at present, the region of Moldavia (one of the poorest and most rural region in Romania) provides the biggest flow of international migration from Romania to Italy (Constantin 2004). As Constantin (2004) shows, several advantages favor a massive movement of Romanians to Italy, as opposed to other European Union countries. First, an overwhelming advantage of Romanian workers is the lack of a language barrier. The similarity between the Italian and Romanian languages makes it possible for even someone with a low education level to assimilate basic knowledge of the language within a matter of weeks. Second, although salaries in Italy are lower than in Germany, workers perceive that this lower level of income is generally compensated by more relaxed regulations in terms of stay and work (hence, higher rates of illegal migration to Italy than Germany). The price of permits to stay is comparatively low at around €10 (in Poland, by contrast, the price of the stay permit is €75). The application procedures are lengthy and bureaucratic (sometimes it takes almost a year to obtain a permit to stay), but a significant advantage comes from the fact that the workers' legal status in Italy is not affected by the length of the procedure. Constantin's (2004) study in Veneto area, where large numbers of Romanians work, has found that the typical jobs Romanians hold are care for the elderly (done by women), construction (done by men), and performing as public artists.

Overall, the available studies on international Romanian temporary migration suggest that many temporary migrants are yesterday's commuters from villages to nearby cities. The same theories mentioned in the previous section to explain highly skilled migration, seem to also explain the temporary migration. The neoclassical economics states that people migrate to higher wages and where they perceived their skills fare best on the labor market. The great majority of the labor migrants seem to migrate for higher wages. They also migrate where the costs of migration are lower (i.e, Italy in terms of language and inexpensive stay permits). They usually work hard in low status jobs and have very little rights. Exceptions are the newest legislation in Germany, which will provide pensions to Romanians who have worked there for more than a year and have contributed to the social security system. Possible similar legislation will be signed with Spain, and eventually other countries. These migrants also seem to come from relatively poor and rural counties. Another aspect differentiating this type of migrants from permanent migrants is that, as the new economics of migration predicts (Massey et al, 1998) "working abroad" is a family/household strategy for temporary migrants. Romanian families minimize their risk and increase their survival by sending their members to temporarily work abroad. Romanian long-term commuters see their work abroad as a way to make money to support their lives and families at home. Most do not intend to stay in their destination countries for life, and not even for long periods. Few migrate as whole families at once. Research on voluntary return of Romanian migrants showed that missing family was the most important reason of people working abroad to return. In contrast, the long term and permanent migrants migrate as single individuals or with their families. Their main reason for migrating is not necessarily "minimizing risk for their families left behind" or to escape poverty (as generally they are well off in their countries). Rather, they migrate for fulfilling international careers and

where their professional skills are fully appreciated. As Portes and Rumbaut (1990) explain, highly skilled migrants seldom accept menial jobs. From this perspective, we expect that the temporary Romanian migrants are not highly educated, as they accept low status and low paid jobs in the country of destination. Nevertheless, some highly educated may accept low status jobs abroad, when they lack job opportunities in Romania.

TYPES OF MIGRANTS: The Ethnic Migrants

A third category of migrants from Romania are ethnic migrants. Although ethnic migrants may be permanent or temporary migrants, they have some special characteristics that make them distinct from other migrants. The main groups of ethnic migrants in Romania after 1990 were Germans, Hungarians, Jews and Roma. Roma is the poorest, most uneducated and most discriminated group in Romania. Most Romanian ethnics attribute the negative views of some western Europeans about Romanians to the migration of Roma population (Lazaroiu & Alexandru 2005). Even before 1989, the Roma ethnics had a culture of their own, distinct from that of Romanian ethnics, and they resisted integration. The great majority of them did not finish mandatory schooling and many of them, especially those living in urban areas lived off small illegal commerce (selling sunflower seeds and chewing gum smuggled in Romania from Turkey) or stealing. While there is also a rural Roma population who works (e.g., doing pottery and other handmade objects), the most visible Roma abroad are those coming from the cities. As the Roma migrated abroad with the opening of borders after 1989, many engaged in stealing and other crimes. When they were not stealing, they "worked" as beggars. Italy and Germany were main destinations for the Roma, who were by and large illegal migrants. Nevertheless, the travel of Roma became increasingly restrictive, as new immigration policies and cross-country treatments were signed. If Roma return to Romania today, it is almost impossible for them to leave the

country again because of increasingly restrictive border control (e.g, those found as criminal offenders abroad, are suspended the right to bear a passport, and are not allowed to leave Romania).

Most of the Jews migrated to Israel immediately after 1989. Many of them migrated even before 1989, as the international Jewish community paid Ceausescu about $2000 per Jew allowed to migrate. Thus, the Jewish Romanians were the most likely group to have migrated during the communism. The main advantage of Jewish Romanians compared to other Romanian migrants was that they received citizenship, once they reached Israel, at the airport. Thus, they acquired instant full rights, including work rights. Moreover, they had help with integrating in the destination society. Jewish migration is not part of the migration system today, as most Jews have already left Romania.

Like Jews, German Romanians migrated permanently in the early 1990s. They also received citizenship once they reached German airports/ borders. However, in contrast to the more gradual migration of Jews, the German migration in the early 1990s was sudden and massive. Entire villages were left empty. The great majority of the Germans migrated out of Romania. However, some of them established double residency. They opened small business in Romania, and are travelling back and forth between Germany and Romania. Some of them are probably involved in the intermediate companies who arrange short-term contracts for other Romanians who want to work in Germany. I thus expect that German ethnicity significantly increases the likelihood to migrate.

Hungarians are the largest minority group in Romania with over 1.6 million inhabitants, and they are highly concentrated geographically. The great majority of them live in two counties located in the center of Romania called Covasna and Harghita. Some sources estimated that

virtually every single adult living in these two districts have worked in Hungary at some point during the last 15 years (Sandu et al 1994). The labor migration of Hungarians living in Romania to Hungary has a long history. During the 1980s Hungary changed its constitution to stipulate that "the Republic of Hungary shall sense its responsibility for the fate of Hungarians living outside its borders and shall promote its fostering of their links with Hungary." As Radu (1998 in Sandu et al, 1998) explains, Hungary receives a great number of Romanian migrants for at least two reasons. Firstly, the Hungarians form the largest minority group in Romania. Thus, migration to Hungary is partly explained by the transnational linkages between the Hungarians of Romania and their 'mother nation'. Given the dynamic policies initiated by the Hungarian state especially after the breakdown of the communist regime, the Hungarians living in Romania have been entitled to various opportunities related to economic cross-border mobility or local political participation. They were permitted to receive work permits for three months each year (including access to national insurance, pension contributions etc.) in Hungary. In order to prove the eligibility to these advantages, Hungarian certificates have been required, along with recommendations from the part of an institution such as local church or the party (Romanian Magyar Democratic Union). 450,000 Hungarian certificates have been issued until now. However, by January 2002, when Romania has become a member of the Schengen agreements, the various benefits of the Status Law became fuzzy and less visible. More recently, after May 2004, the Hungarian certificates lost their relevance entirely, as long as Hungary became part of the European Union. Nevertheless, strong relationships exist between the Hungarian ethnics in Romania and the Hungarian state. The Hungarian ethnics were able to have an easier pass through the transition period of the 1990s because they worked in Hungary. Romanian citizens, including ethnic Hungarians, represent the largest migrant group in Hungary (Sandu et al 1994).

One point of attractiveness in Hungary is the existence in this country of open-air free markets in several cities: Budapest, Pecs, Szeged etc. Access in these places is very easy and the activity is highly valued by a great number of people from Eastern European countries who try their luck in retailing cheap or second - hand consumer goods (e.g., cars, bicycles). Romanian citizens were successful in their attempts of working or trading in Hungary because of proximity, language proficiency, and a great level of acceptance/tolerance from the Hungarian side (Sandu et al 2004). The main distinction between German ethnics and Hungarians is that most Hungarians are temporary labor migrants in Hungary, rather than permanent emigrants. Although some Hungarians established permanent residence in Hungary (68,017 according to the Romanian census), most of them still have their main home in Romania. Like German ethnicity, I expect that Hungarian ethnicity significantly increases the likelihood of (temporary) migration.

Since in this paper I use Romanian census data, the current study is necessarily limited to exploring country of origin only determinants of international migration. Also this study is cross-sectional and consequently is unable to assess the "step-migration" process, or the tendency of migrants to move in steps, first from villages to cities for the purposes of furthering their education (best and largest universities are found in the largest cities and the capital), and finding better work prospects, and then internationally. Nevertheless, it is likely that many international permanent emigrants from Bucharest and other large cities previously migrated from smaller towns. Also, despite evidence of the links between temporary migration and the internal migration discussed above, the cross-sectional nature of this study prevents the further exploration of these links.

DATA AND METHODS

This paper employs two sets of Romanian census data: (1) an aggregate level dataset of the total count of international emigrants from Romania that the author obtained as an Excel file from the Romanian census Bureau (not public), and (2) individual level data publicly available from IPUMS representing 10 percent of the 2002 Romanian census. A major distinction exists between the two sets of data used in this analysis, in that they capture mainly two different types of migration. While the aggregate level data captures long-term and permanent migration (it is a specific database for permanent Romanian emigrants), the IPUMS individual level data captures mainly short-term and temporary migration, as those who have left the country for more than one year are no longer considered residents of Romania. The aggregate level data (the permanent migration database) is probably the most reliable source of permanent Romanian migration and includes ethnic migration (e.g., the return of the German ethnics to Germany after 1989), highly skilled migration, as well as some other types of migration (e.g., asylees, family reunification, marriages with foreign citizens). For simplification purposes I will refer to the aggregate level data as Permanent database.

The IPUMS data is likely to capture most legal short term migration as well as some illegal short term and /or circular migration (with stays shorter than three months). Moreover, it could also include some permanent migration for those who have migrated for less than a year.

The methodological strategy adopted in this paper includes several steps. First, the IPUMS data will be aggregated to allow a comparison with the Permanent database. Based on previous findings, permanent migrants are likely to be highly educated. Since I expect college graduates to be concentrated in cities with a large percent of college graduates, I hypothesize that emigration rate in the Permanent database is positively correlated to the percent college graduates at the county level. In contrast, I do not expect "percent college graduates" to be

positively correlated to the IPUMS emigration rate. Previous findings suggest that temporary migrants tend to come from rural areas, and are not highly educated, and we might expect a negative correlation between the IPUMS emigration rate and education at the county level. If these ecological correlations are true, they will constitute *indirect* evidence of the polarized migration from Romania: highly skilled permanent migration simultaneous or parallel with low skilled temporary and circular migration.

Our next step, Exploratory Spatial Data Analysis (ESDA) will allow us to locate Romanian counties with the highest permanent and temporary emigration rates, to assess the degree of spatial autocorrelation in the permanent and temporary emigration rate variables, and to compare the degree of correlation between the emigration rate in the permanent database and that in the IPUMS database. Our third step is running aggregate level regressions and /or spatial autoregressive models predicting the emigration rate at county level for the two sets of data, and compare their results. This comparison will allow the test of our polarized migration hypothesis, while controlling for other aggregate level factors that might impact emigration rate.

The next step in our analysis is using individual level IPUMS data to predict the likelihood to migrate based on a number of individual level characteristics (education completed, urban/rural residence, sex, marital status, being a parent, ethnicity, being unemployed, and age), as well as regional and county level variables (percent unemployed, percent ethnic minorities, percent young population and percent college educated). The latter step will allow a direct test of the assumption that temporary and circular migration is low skilled, or that those who temporarily migrate are rural people and with low levels of education. It will also allow the test of the relative impact of individual versus county level characteristics in impacting the temporary migration. Finally, our fifth step is running a household-fixed effects logit regression model

predicting the likelihood to migrate to better estimate the effect of education on migration and refute the possibility that family background factors might jointly determine both education and migration.

EDA

Romania is administratively and politically divided into 42 districts or counties (*judete*), and these *judete* represent the unit of analysis for the aggregate level analyses. Counties' population varies between a minimum of 224,397 to a maximum of 830,442 with the exception of the capital of the country, Bucharest, which has a population of about two million declared residents. The mean districts' population is 516,500 and the median is 462,583.5 residents.

The dependent variable in the aggregate level analyses is the 2005 international emigration rate in the Permanent database and the 2002 international emigration rate in the aggregated IPUMS data. The original census variables measured raw numbers of emigrants by district. I have calculated an "emigration rate" by dividing the number of out-migrants in each *judet* by its population, and multiplied this ratio by 100,000. As seen in table 1, the emigration rate in the Permanent database varies between a minimum of 5.9 to a maximum of 118.93 per 100,000, with an average of 44.9 emigrants per 100,000, and a standard deviation of 32.82. The emigration rate in the aggregated IPUMS data varies between a minimum of 61 to a maximum of 1,561 per 100,000, with an average of 474 emigrants per 100,000, and a standard deviation of 383, indicating much larger numbers of migrants in the IPUMS database compared to permanent and long term migrants. Although IPUMS data most likely include some permanent migrants (who migrated for less than a year), because of much larger number of migrants in the IPUMS database compared to Permanent database, we have indication to believe that the majority of IPUMS migrants are temporary migrants. Nevertheless, this does not mean that IPUMS data

captures all temporary migrants, as both those who overstayed their three-month "travel" allowance (and thus became illegal), and also those who migrated as entire families are unlikely part of this dataset.

The first independent variable used in the aggregate level analysis is *percent young population*, measured as the population 15 to 44 years of age as percent of the total population. This variable has been used because in the majority of studies, migration has been associated with young people. Thus, the larger the percent of young population in a district, the greater the likelihood of emigration. The second independent variable is a measure of income/wealth (the average family income per district- logged in multivariate analyses). Average family income per district is used because a higher wage is seen as the main motivation of emigration. The third independent variable, percent college graduates, is a measure of education or skill. As expected the average percent college graduates per county is a low 9.29 although large discrepancies exist between counties with large concentrations and counties with very low concentrations of college educated people.

Table 1. Summary Statistics for Aggregate Level Datasets

VARIABLES	N	Mean	Std.	Min	Max
Migration Rate (Permanent Database)	42	44.91	32.83	5.91	118.93
Migration Rate (IPUMS Aggregated Data)	42	988.49	842.33	166.46	4025.79
Percent Young Population (15 to 44 years)	42	45.21	2.21	38.23	49.68
Average Family Income (in RON)	42	688.64	84.61	577.00	988.00
Percent College Graduates	42	9.29	4.53	4.60	30.97
Percent Germans 1992	42	0.54	1.09	0.00	3.80
Percent Hungarians 1992	42	8.99	18.95	0.00	84.70
Percent Roma 1992	42	1.92	1.19	0.40	5.70
Percent Unemployed	42	8.60	2.55	4.01	14.06

Next, I included measures of percent ethnic minorities for the three most salient groups in Romania (Germans, Hungarians and Roma). As most Germans left between 1990 and 1992, I

have used the percent Germans in the previous Romanian census (1992 value). Even if most Germans are gone, the most typical temporary migrants to Germany are those Romanian ethnics living in counties that used to have large percentages of German ethnics and some Germans who established double residency. Even with the 1992 value, as most Germans left prior to this year, the highest value registered in a county is 3.8 percent Germans. However, this is the best proxy I have to capture places that used to have a large German minority. I have also used the 1992 values for percent Hungarians and percent Roma, although 2002 values are almost identical. As expected, while some counties have no Hungarian ethnics, others (specifically Covasna and Harghita) have over 80 percent Hungarians. Roma are more evenly distributed as there are no counties with zero percent Roma or counties with a majority of this ethnic group. Finally, I included percent unemployed as lack of work opportunities could be a motivation for migration.

All the aggregate level independent variables tend to be quite stable from year to year, and because of this reason and for simplification purposes I will use their 2002 values for all independent variables except those measuring ethnicity to predict both permanent emigration (from Permanent database) and also short term and temporary migration (from aggregated IPUMS data).

ESDA.

When the two choropleth maps representing the permanent and short-term migration rates by county in figure 1 and 2 are compared we observe some similarities but also noticeable differences. The most important similarity between the two maps is that we see higher migration rates on average in the upper half of Romania than in the lower half. Those southern counties with low permanent emigration rates, also have the lowest temporary migration rates. The only exception to this rule that also differentiate the two maps is the southern city Bucharest, the most

developed city in Romania which sends out at a high rate permanent migrants, but has a very low temporary migration rate.

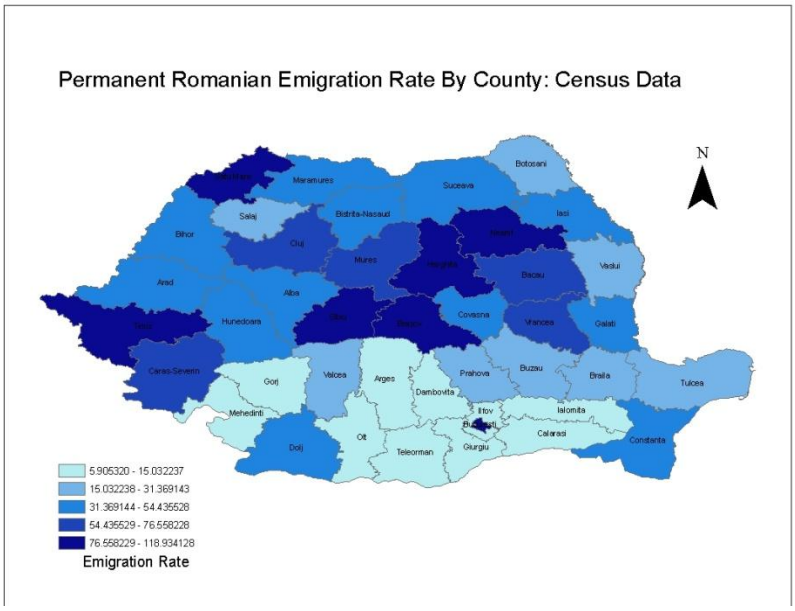

Figure 1. Permanent Romanian emigration rate by county (Romanian census data)

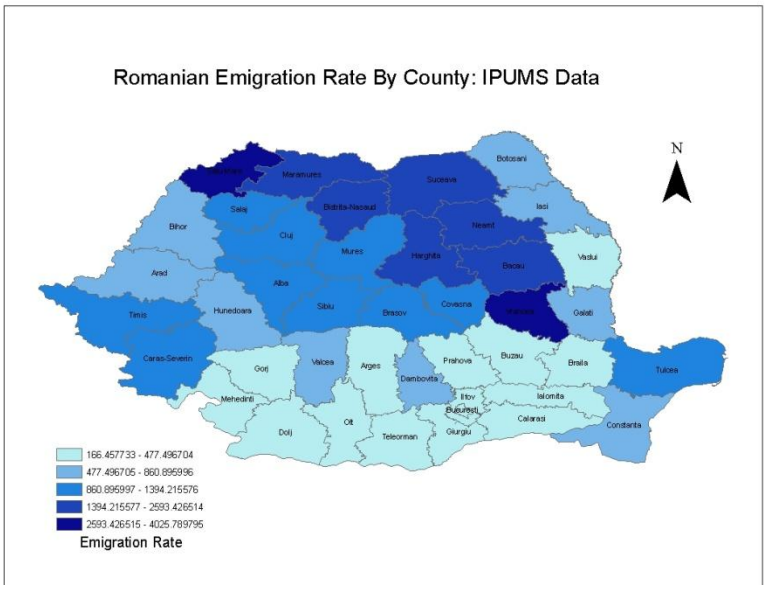

Figure 2. Short-term Romanian emigration rate by county (Romanian IPUMS census data)

Bucharest sends by far the highest numbers of permanent migrants, but when adjusted for its density (also the densest city), its permanent migration rate becomes similar with three other top counties in terms of permanent migration rate. The counties with the highest permanent emigration rate, except Bucharest, are Timis (the most western district), two districts in the middle of Romania (Sibiu and Brasov), and two districts in the center-north of Romania (Harghita and Neamt). Timis, Sibiu and Brasov are quite developed in Romania but they also have high numbers of ethnic minorities. Sibiu was traditionally considered a German city, because it was founded/built by Germans but also because it used to have the highest percent of Germans of all places in Romania. Harghita is a Hungarian district with over 80 percent of its residents being Hungarians. Timis has much lower percent minorities (with over 80 percent of its residents being Romanian) but it is one of the most developed and "western" city in Romania. In figure 2 we see that the places with the highest short-term migration are Vrancea and Satu-Mare, as well as series of counties in the north-east part of Romania. All these districts are relatively poor counties, although not the poorest in Romania. As expected, Harghita, the Hungarian district is high in both temporary and permanent migration.

Figure 3 shows the percent college educated by county. Bucharest, Sibiu, Brasov and Timis, the districts with the highest permanent emigration rate are also top counties in terms of percent college graduates. In addition, Constanta (the most south-eastern county), Iasi (in north east), Dolj (south-west) and Cluj (in north-west) are also among the most "college educated counties." All districts with a high percent of college educated residents have large cities with the largest (and best) universities in Romania.

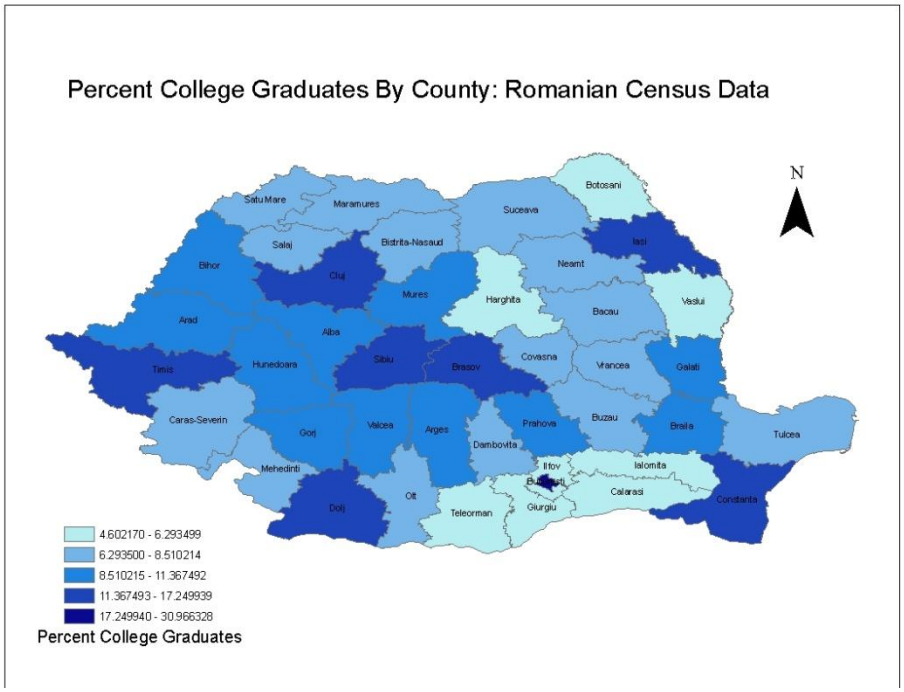

Figure 3. Percent College Graduates by County (Romanian census)

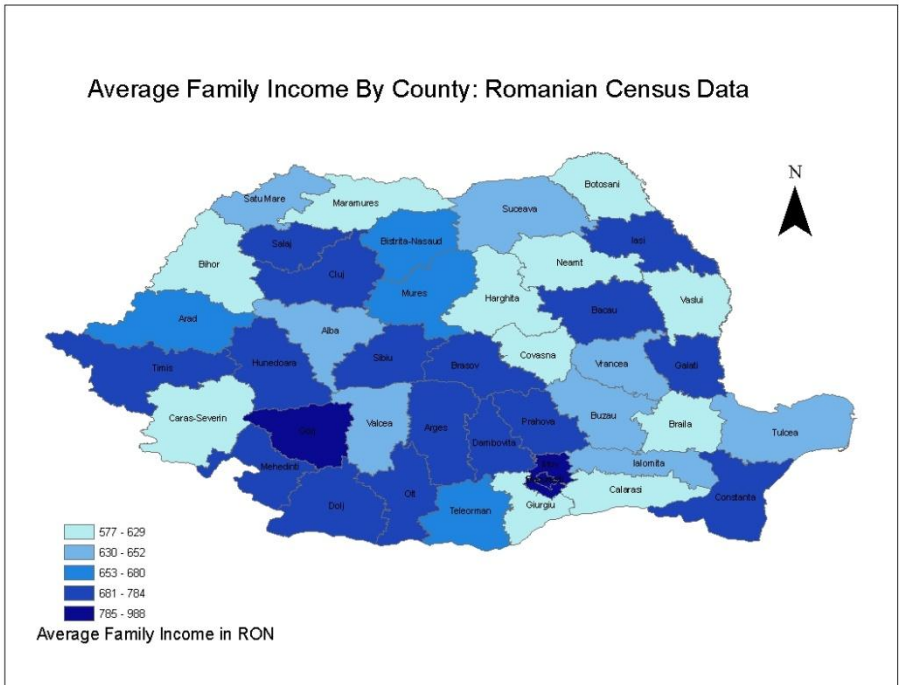

Figure 4. Average Family Income by County (Romanian census)

Figure 4 shows the average family income by county. All the counties with a high percent college graduates also have high average family income as expected. Also, Bucharest, Timis,

Brasov and Sibiu, the districts with the highest permanent migration rates are among the counties with the highest average family income. Nevertheless, except these four districts, there is not much overlap between the permanent migration map and the "average family income" map, probably explaining why the correlation between these two variables was not significant (results not shown).

If we compare figure 4 ("average family income" map) with the map showing the temporary migration rate, we notice a negative relationship between the two. Most notably, the south-west counties with very low temporary emigration rates have high average family income. Reversely, some of the north-eastern counties with high temporary migration rates have very low average family incomes. Also, Cluj, Iasi , Constanta and Dolj, counties with high levels of education and relatively high incomes have some of the lowest temporary migration rates.

To explore the possible autocorrelation in the migration rates, I constructed a first order queen contiguity weights matrix. The queen matrix makes the most sense in this case because it does not exclude any contiguous districts from the category of "neighbors" (as a rook matrix would), in a context in which there is no theoretical reason for such exclusion. Moreover, since most districts have irregular shapes, a rook matrix would be a poorer choice than a queen matrix since some degree of arbitrariness would be involved in choosing neighbors, depending on the relative size of the districts involved and the size of their border line; in contrast, a queen weight matrix would just "consider" all first order contiguous districts as neighbors

Table 2. Table showing the Moran's *I* values and Moran's *I* significance levels for permanent and temporary Romanian migration based on a first order queen contiguity weights matrix, before and after introducing covariates. (Romanian census data)

	Moran's I Value	**Significance Level**
Permanent Emigration Rate: No COVARIATES	0.2108	0.011
Permanent Emigration Rate: With COVARIATES	0.0677	0.178
Temporary Emigration Rate: No COVARIATES	0.3013	0.011
Temporary Emigration Rate: With COVARIATES	-0.0081	0.611

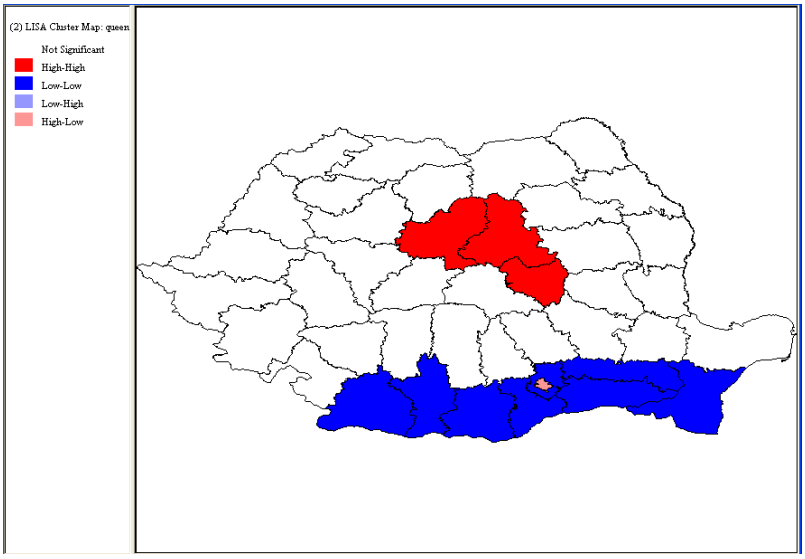

Figure 5. Permanent migration rate LISA map based on queen contiguity weight matrix (Moran's I= 0.2108)

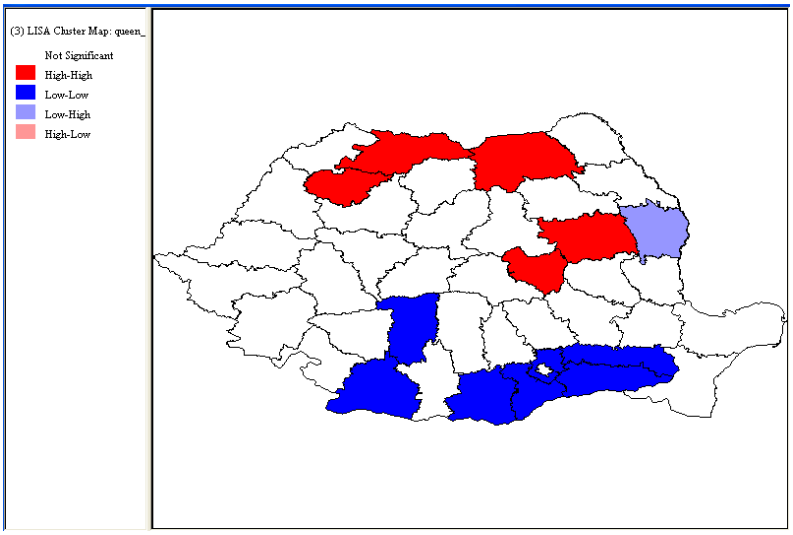

Figure 6. Temporary migration rate based on queen contiguity matrix (Moran's I = 0.3013)

As first and third rows in table 2 show the Moran's *I* values are positive and significant for both permanent and temporary migration rate, indicating that there is autocorrelation in the migration variables. However, the Moran's I values are relatively small (around 0.2/ 0.3), suggesting that there is either a low level of autocorrelation overall, or that the Moran's I values

are driven by only a few small areas on the map that exhibit spatial autocorrelation. When the univariate LISA cluster maps in figures 5 and 6 are examined, the latter point is confirmed. In both LISA maps we observe some few red (high-high) clusters in the north and blue (low-low) clusters in the south, which drive the positive Moran's I values. Interestingly, none of the high migration counties (permanent or temporary) in figure 1 and 2 appear significant in the univariate LISA maps.

MULTIVARIATE ANALYSES

Geographically Weighted Regression.

OLS in GeoDa.

Table 3 shows the results of two OLS regression models performed in GeoDa in which the permanent emigration rate and the temporary migration rate were regressed on the same seven predictors as follows: the percent college educated, the percent young population, the percent German ethnics, the percent Hungarian ethnics, the percent Roma, the percent unemployed and average family income (logged). The model fit statistics indicate the both of the models in table 3 have a very good fit. R-square indicates that almost 70 percent of the variation in the permanent emigration rate is explained by the model. Although these independent variables do not explain as much variation in the temporary emigration rates, they still explain almost 40 percent of it. Additional model fit tests (log likelihood, AK, SC) also indicate good fit models, which explain well the two types of emigration rates (see table 3).

Based on the standardized regression coefficient (Beta's), table 3 shows that the strongest predictor of the permanent international migration rate is percent college graduates, after controlling for all the other variables in the model.

Table 3. OLS Regression Models Predicting Permanent and Temporary Romanian International Migration Rates

	Permament Database		IPUMS Data	
Covariates	**Coefficient**	**Beta**	**Coefficient**	**Beta**
Percent College Graduates	**3.45**	**0.47**	-33.87	-0.18
Percent Young	3.27	0.22	**155.12**	**0.41**
Percent German	**13.6**	**0.45**	59.86	0.07
Percent Hungarian	**0.37**	**0.21**	4.68	0.11
Percent Roma	-1.21	-0.04	-128.76	-0.18
Percent Unemployed	-1.49	-0.11	**-146.61**	**-0.44**
Average Income (Log)	**-97.71**	**-0.34**	**-3779.35**	**-0.51**
Adj. R-Square	0.66		0.37	
Log Likelihood	-178.606		-328.217	
AIC	373.213		672.433	
SC	387.114		686.335	
N	42		42	

Significant coefficients (at min 0.05 level) shown in red bold

Predicted permanent emigration rate increases by 0.47 standard deviation with each 1-standard deviation increase in the percent of college graduates, if all the other variables remain the same. This finding is consistent with previous evidence that permanent migrants from Romania are highly educated. Nevertheless this strong finding provides only indirect evidence of "brain drain," as the aggregate nature of this data does not allow the distinction between college educated and non-college educated permanent migrants. In contrast with the above finding, the "percent college educated" does not significantly predict temporary migration. Based on this models, temporary migrants do not seem to be highly educated nor low educated, but rather of all educational levels (as 'college educated' coefficient is not significant).

As hypothesized, the second largest predictor of permanent migration is "percent German." However, "percent German" does not significantly predict temporary migration. These findings may indicate the departure of the last Germans from Romania. Alternatively they may indicate other types of migration, such as the migration through marriage with foreign citizens.

Overall, these findings are consistent with the idea that Germans tend to migrate permanently rather than temporarily.

"Percent Hungarian" is significantly related to the permanent migration rate, but it is not significantly related to the temporary migration. This variable was significant in the models (predicting temporary migration) that do not include "percent unemployed," which reduces this variable to insignificance. This finding suggests a higher propensity of Hungarian minority people to migrate when they experience unemployment. When unemployment is absent, the ethnic status per se does not increase the likelihood to migrate at the aggregate level. Interestingly, like in the bivariate results (not shown), unemployment is significantly and negatively related to the temporary emigration rate. Thus top migration districts in Romania are those with the lowest unemployment rates, indicating the selectivity of migration. Finally, after controlling for *percent college educated,* for *percent young population,* for *percent ethnic minorities* and for *percent unemployed,* the districts with low levels of average family income are more likely to send out emigrants, compared to wealthier district. The effect of income is negative and significant in both models. In the model predicting permanent migration, I interpret this finding as the "intuitive effect" of income after controlling for "brain drain" or the migration of the highly skilled. The relationship between income and emigration was not significant in bivariate analysis, most likely because of the heterogeneous effect of income. Also, it has been found that the "highly educated districts" which on average are known to have higher incomes are more likely to send out migrants (interpreted as the emigration of the highly skilled). Therefore, when the highly skilled emigration is controlled for, what remains is other types of emigration (ethnic, marriage with foreign citizens etc.), which most likely come from poorer districts, as these findings indicate. In the models predicting temporary migration, the effect of

income may show the very reason for migration itself: searching for higher wages and better opportunities, the classic economics prediction. Also of notice is that the effect of income is much stronger in the model predicting temporary migration than in the models predicting permanent migration. In fact, as the neoclassic economics predicts, income is the best predictor of temporary migration: predicted temporary migration rate decreases by 0.51 standard deviation with each 1-standard deviation increase in average family income.

The regression diagnostic tests based on the models showed in table 3 indicate that the Moran's I for the residuals is very small (0.067 and -0.0081 respectively) and not significant, indicating that OLS predictors fully explain the spatial autocorrelation in the dependent variable. Thus both Lagrange Multiplier tests and spatial autoregressive models are futile. The reader may recall table 2 which shows in rows 1 and 3 the degree of spatial autocorrelation (as measured by Moran's I) in the permanent and temporary migration rate respectively, when no other covariates are used. The same table shows in rows 2 and 4 respectively that Moran's I (spatial autocorrelation) values became very small and are reduced to insignificance when we introduce the covariates in the models (Moran's I in rows 2 and 4 is obtained from the regression models in table 3).

Multilevel analyses

The aggregate level analyses provided indirect evidence that permanent migrants tend to be highly educated (e.g., brain drain), while temporary migrants seem to have a diversity of educational levels. Nevertheless, we cannot tell from the aggregate level analyses who the actual migrants are. Unfortunately, the permanent migration database does not contain individual level characteristics, so we can only conduct an individual level analysis with the IPUMS data. As explained before the IPUMS data capture mostly temporary migration, and some permanent

migration only if the permanent migrants emigrated for less than a year from the time of the census.

Table 4. Descriptive Statistics – 10 Percent Romanian Census Micro-Data (Percent of Adults)

Less than High School	46.11
Special Education	0.22
Academic High School	7.36
Vocational High School	16.99
Technical High School	17.67
Technical Community College	3.43
Associate degrees	0.47
University Degree and Above	7.75
Urban	53.1
Male	47.83
Single	21.64
Married	62.46
Divorced	4.82
Widowed	11.31
Parent	39.99
Romanian + Other Ethnicity	90.66
Hungarian	6.63
Roma	2.46
German	0.26
Unemployed	6.09
Age 18-24	10.33
age_25_29	7.75
age_30_34	8.97
age_35_39	5.45
age_40_44	6.7
age_45_49	7.44
age_50_60	12.48
age_61up	18.54

Table 4 shows percentages for all the dummy variables included in the individual level analyses. Based on these data, the educational level of Romanians is low with 46 percent having less than high school education as of 2002, probably reflecting the fact that during the communist period the mandatory education was 10 classes only, hence the large number of people with less than high school education. Nevertheless, 98 percent of the population is

literate, and most of those with less than high school education have more than primary school completed.

The education in Romania is not evenly distributed by ethnicity, as 23 percent of the Roma have never attended school, despite the mandatory schooling. Almost 8 percent of Romanians in this sample have a college degree, which seems a lower estimate compared to other statistics. For instance, Tascu, Noftsinger and Bowers (2002) as well as other statistics compiled by the National Institute of Statistics show that around 9-10 percent of Romanians had a college degree as of 2002. Relatively large numbers of people have technical (17.67 percent) and vocational high schools (16.99 percent). Also a lot more Romanians hold a technical community college degree (3.43 percent) than an associate degree (0.47 degree).

Slightly more than half (53.1 percent) of Romanians live in urban areas, and slightly less than half are males (48 percent). Sixty three percent of adults (over 18 years of age) in Romania are married, 21.64 percent are never married, 11 percent are widowed and 4.82 are divorced. Forty percent of adults have children, although 76 percent of those married are parents (percent not shown). Almost seven percent of Romanians are of Hungarian ethnicity, 2.46 percent are Roma, and less than 1 percent is German in the 2002 census. These three ethnic groups are the largest ethnic groups in Romania. There are over 35 other ethnic groups in Romania, but they together make up about 1 percent of the population, and over 89 percent of Romanians are of declared Romanian ethnicity.

Table 5. Household Level Random Intercept Logit Regression Models Predicting the Likelihood to Migrate

	Model 1		Model 2		Model 3	
COVARIATES	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
Less than High School	**-0.130**	0.000	**-0.135**	0.000	**-0.240**	0.006
Special education	**-1.022**	0.000	**-1.019**	0.000	0.121	0.900
Vocational High School	0.003	0.922	0.055	0.100	0.143	0.095
Technical High School	**0.118**	0.000	**0.153**	0.000	**0.260**	0.003
Technical Community College	**-0.171**	0.001	**-0.144**	0.008	**-0.406**	0.007
Associate degrees	-0.216	0.056	**-0.224**	0.049	**-0.976**	0.001
University Degree and Above	**-0.187**	0.000	0.057	0.152	**-0.700**	0.000
Urban	**-0.049**	0.010	**0.068**	0.001	**0.188**	0.000
Male	**0.204**	0.000	**0.196**	0.000	**0.383**	0.000
Married	-0.005	0.824	**-0.053**	0.019	**-0.106**	0.001
Divorced	**0.306**	0.000	**0.288**	0.000	**0.425**	0.000
Widowed	**0.215**	0.000	**0.172**	0.002	**0.343**	0.000
Parent	**-0.655**	0.000	**-0.657**	0.000	**-0.828**	0.000
Hungarian	**0.565**	0.000	**0.098**	0.007	**0.226**	0.000
Roma	**0.161**	0.019	**0.214**	0.002	**0.213**	0.017
German	**1.151**	0.000	**0.802**	0.000	**1.124**	0.000
Unemployed	**-0.727**	0.000	**-0.697**	0.000	**-0.965**	0.000
age_25_29	**0.192**	0.000	**0.209**	0.000	**0.317**	0.000
age_30_34	**-0.105**	0.000	**-0.064**	0.022	-0.036	0.353
age_35_39	**-0.200**	0.000	**-0.188**	0.000	**-0.207**	0.000
age_40_44	**-0.536**	0.000	**-0.513**	0.000	**-0.620**	0.000
age_45_49	**-0.935**	0.000	**-0.895**	0.000	**-1.168**	0.000
age_50_60	**-1.585**	0.000	**-1.527**	0.000	**-2.104**	0.000
age_61up	**-2.601**	0.000	**-2.491**	0.000	**-3.303**	0.000
Percent College Graduates (PCG)			**-0.034**	0.000	**-0.045**	0.000
Percent Young			**0.136**	0.000	**0.218**	0.000
Percent German			**0.055**	0.000	**0.077**	0.000
Percent Hungarian			0.000	0.882	0.000	0.900
Percent Roma			**-0.144**	0.000	**-0.189**	0.000
Percent Unemployed			**-0.112**	0.000	**-0.155**	0.000
Average Income (Log)			**-3.951**	0.000	**-5.780**	0.000

TABLE CONTINUES ON THE FOLLOWING PAGE

Table 5. Household Level Random Intercept Logit Regression Models Predicting the Likelihood to Migrate: CONTINUED FROM PREVIOUS PAGE

	Model 1		Model 2		Model 3	
COVARIATES	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
Less than High School*PCG					-0.013	0.059
Special education*PCG					-0.160	0.137
Vocational High School*PCG					**-0.017**	0.012
Technical High School*PCG					0.013	0.307
Technical Community College*PCG					**0.059**	0.008
Associate degrees*PCG					**-0.017**	0.019
University Degree*PCG					**0.041**	0.000
/lnsig2u	2.204		2.220		2.227	
sigma_u	3.010		3.034		3.045	
rho	**0.742**	0.000	**0.736**	0.000	**0.738**	0.000
Number of observations	1,660,215		1,660,215		1,660,215	
Number of groups	731,390		731,390		731,390	
Log Likelihood	-92877.211		-89329.491		-85576.6	

Significant coefficients (at min 0.05 level) shown in red bold

Table 5 shows the results of three household level random intercept logit regression models predicting the likelihood to migrate. These models correct for the non-independence of observations within households, occurring in these data due to the household level sampling strategy used for the 10 percent IPUMS sample. The first model in table 5 only includes individual level characteristics as predictors. This model shows that the most likely group to (temporarily) migrate abroad is people with a technical high school (e.g., electricians, mechanics, computer operators). Those with such education have 28 percent higher odds of migrating compared to those with a college degree (not shown) and 13 percent higher odds of migrating compared to those with an academic high school education (the reference educational category used in table 5 models). The next most likely groups to migrate are those with vocational high school education (e.g., nurses, elementary school teachers) and those with an academic high school (no significant difference between these two groups). Those with a college degree, those

with other post-high school education and those with less than high school education have significantly lower odds of migrating compared to those with a high school degree (academic, technical or vocational).

As predicted, the temporary migrants are more likely to come from rural areas. The urban respondents have five percent lower odds of migrating compared to those in rural regions, all else equal. Males have 23 percent higher odds of migrating compared to females. Married people are as likely as singles to migrate, but those divorced and widowed have significantly higher odds of migrating compared to those never married. Divorced people have 36 percent higher odds of migrating compared to those never married. Those who have children have almost 50 percent lower odds of migrating compared to those without children, all else being equal. Being of an ethnic minority (German, Hungarian or Roma) significantly increases the odds of migrating. People between the ages of 25 and 29 are the most likely group to migrate, followed by those who are between 18 and 24 years of age. Older people are significantly less likely to migrate compared to those between 18 and 24 years of age. Finally, being unemployed decreases the odds of migration by 52 percent. The individual level model shows results quite consistent to the aggregate level results for temporary migration, and it is interesting to see that migration is a lot less likely for those who are unemployed. Thus, those who are employed in Romania are also more likely to migrate for work abroad.

The second model in table 5 adds to the individual characteristics the county level variables that were used in the aggregate level analyses. Interestingly in this model those with a college degree have significantly higher odds (13 percent higher) of migrating compared to those with less than high school education. However, just like in previous model, the most likely group to migrate is constituted by those with a technical high school. This latter group has 17 percent

higher odds of migrating compared to those with a college degree. Those with a vocational or academic high school are not significantly different from those with a college degree in their likelihood to migrate. All the other remaining educational groups are significantly less likely to migrate compared to those with a college degree. The changed propensity of migrating of those with a college degree relative to other groups in this model compared to the first model in table 5 suggests that significant interactions between individual level education and county level characteristics are likely (to be explored in the last model in table 5).

The effects of all the other individual level characteristics are similar with the effects in the first model in table 5 with few exceptions. In this second model, married people have significantly lower odds of migrating compared to those never married. Also, the effect of being of a Roma minority is much larger, with Roma ethnics having 24 percent higher odds of migrating compared to Romanian ethnics. Lastly, being from an urban environment has an opposite effect than in the first model, increasing the odds of migrating by six percent. All the county level variables have significant effects with the exception of "percent Hungarian" which is reduced to insignificance by all the other covariates. Since being of Hungarian ethnicity significantly increases the odds of migrating, and we control for this individual level effect, we can interpret the non-significant effect of "percent Hungarian" as the likelihood of migrating for the few Romanians living in the counties with a Hungarian majority. Thus, the Romanians living in Hungarian districts are not significantly more likely to migrate than Romanians living elsewhere.

Those living in counties that used to have a large German population have higher odds of migrating compared to those living elsewhere. In contrast, those living in counties with large Roma ethnics have lower odds of migrating compared to others. Like in previous models,

unemployment is negatively related to the likelihood of migrating. It is interesting that both being unemployed, and living in a county with high unemployment decrease the chances of migration. Migrants are also less likely to come from counties with a high percent of college educated people, and more likely to come from counties with low average family income.

Finally, the third model in table 7 adds the interaction between the dummy variables measuring individual level education and the county level education. In this model, all variables have similar effects with previous models effects, and several interaction terms are significant. Compared to those having an academic high school living in a county with high percentage of college educated people (the excluded category for the interaction term), (1) those having a vocational or technical high school education, who live in "highly-educated counties" have significantly lower odds of migrating, while (2) those with a college degree as well as those with an associate degree, who live in counties with high percent of college educated people have significantly higher odds of migrating. Thus, although college educated people are less likely to migrate compared to other groups and especially to those with a technical high school, if they live in counties with high percent of college educated (with many people like themselves), they are more likely to migrate.

CONCLUSION

In this paper I started with the comparison of two datasets, one capturing the permanent emigration from Romania, and the other capturing mostly temporary migration. As expected, the aggregate level analyses provided indirect evidence that permanent migrants are highly educated, as the variable measuring the percent of college educated people in each county explained the largest variation in the permanent emigration rate. This variable however, had no significant effect on the temporary migration rate, suggesting indirectly that temporary migrants are a much

more diverse group of people. Individual level analyses on the datasets capturing temporary migration have been consistent with aggregate level analyses, showing that the most likely educational group to migrate is constituted by those with a technical high school. Those with a college degree as well as those with less than high school education have significantly lower odds of migrating compared to those with a high school education. Thus it seems that college educated people are indeed less likely to accept menial jobs abroad compared to those without a college. Those with a technical high school seem to be best prepared to migrate abroad (most of them are skilled in at least one profession), while not having very high expectations in terms of wages. At the same time, those with less than high school education migrate much less compared to those with technical high school. Migrating abroad is not easy, it requires foreign language skills, dealing with foreign employers, as well as the ability to travel a relatively long distance, and those with less than high school education might not be yet up to the challenge. These findings are consistent with theories of selective migration, which state that migrants are not the poorest and least skilled and they do not come from the least developed and isolated places. Massey et all (1998) argues that "international migrants do not come from poor, isolated places that are disconnected from world markets, but from regions and nations that are undergoing rapid change and development as a result of their incorporation into the global trade, and the information, and production networks. "In the short run, international migration does not stem from a lack of economic development, but from development itself" (p. 277). Thus, temporary migrants from Romania are skilled but not highly educated, having rather average levels of technical education, with one major exception. The Roma ethnics, generally with very low educational levels, have a much higher propensity to migrate compared to other groups.

Moreover, our models have shown that migrants are not only less likely to come from places with low levels of unemployment, but they are less likely to be unemployed themselves. Unemployment shows the most consistent effects throughout this analysis, and it unites temporary and permanent migrants showing similar effects regardless of the type of migration. Both at the aggregate level and at the individual level it has a consistent negative relationship with migration. This is not surprising in light of previous evidence about network migration and in light of theories of selective migration.

Like previous research, migrants in this study are more likely to be young and males. However, an interesting finding was that divorced and/or widowed people have much higher likelihood to migrate compared to never married people. Informal accounts show that many Romanian women who care for the elderly in Italy are in fact divorced or widowed. After 1989 many factories closed, and most of the women who formerly worked in them had to find alternative ways to support themselves. If their husbands died or they divorced, they had no other income to support themselves, and thus they became more willing to migrate abroad if they can earn better incomes. Qualitative interviews show that they liked the advantages that come with "caring for the elderly." Since they "live-in," they do not have to pay for housing and they eat the same food they cook for the Italian elderly. Thus all the money they make, even if modest compared to other types of jobs stay in their pockets.

Ethnic migration was quite evident in our analyses, as Germans, Hungarians and Roma have had increased odds of migrating. Interestingly, the Romanians living in Hungarian districts are not significantly more likely to migrate than Romanians living elsewhere, and those living in counties with high percent of Roma are actually less likely to migrate. The Germans who left and

the few who are still in Romania seemed to have facilitated the migration of Romanians living in counties with (formerly) large numbers of Germans.

Finally, one of our most interesting findings is that although college educated people are less likely to migrate compared to those with less education, if they live among others like them (counties with high percentages of college educated residents) they have increased odds of migrating. The remaining question to be answered in future studies is whether the college educated migrants leaving from places with high levels of education are temporary labor migrants who accept low status jobs abroad or they represent the few migrants captured in the IPUMS data who migrate to highly skilled professional jobs, permanently or temporarily, and who just happened to have migrated for less than a year from the time of census.

REFERENCES

Arango J, Jachimowicz M. 2005. Regularizing Immigrants in Spain: A New Approach. *Migration Information Source.*

Bachman, Ronald D.1989. *Romania: A Country Study*. Washington: GPO for the Library of Congress. Retrieved on May 22, 2008 from: http://countrystudies.us/romania/.

Baldwin-Edwards M. 2005. Migration Policies for a Romania within European Union: Navigating between Scylla and Charybdis. University Research Institute of Urban Environment and Human Resources, Panteion University, Athens, Greece.

Baldwin-Edwards M. 2006. Patterns of Immigration in the Balkans. University Research Institute of Urban Environment and Human Resources, Panteion University, Athens, Greece

Commander S, et al. 2004. The Brain Drain: A Review of Theory and Facts. *Brussels Economic Review.* 47: 29-44.

Constantin, Florentina. 2004. Migrating or commuting? The Case of Romanian Workers in Italy: Niches for Labor Commuting to the EU. Retrieved on June 3rd, 2008 from eumap.org (Online Journal).

Docquier, F., B.L. Lowell & A. Marfouk's. 2008. "A Gendered Assessment of the Brain Drain." The World Bank Development Research Group. *Policy Research Working Paper.*

Faini, Riccardo. 2007. "Remittances and the Brain Drain: Do More Skilled Migrants Remit More?" The World Bank Economic Review 2007 21(2):177-191; doi:10.1093/wber/lhm006.

Ferro A. 2004. Romanians Abroad: A Snapshot of Highly Skilled Migration. *Higher Education in Europe* XXIX: 381-91.

Ferro A. 2006. Desired Mobility or Satisfied Immobility? Migratory Aspirations Among Knowledge Workers. *Journal of Education and Work.* 19: 171-200.

Hart, David. 2007. "Global Flows of Talent: Benchmarking the United States." Policy brief.

Hirschman, Kasinitz & DeWind. 1999. The Handbook of International Migration. New York, New York: Russell Sage Foundation.

Johnson, Jean M. 2001. "Human Resource Contributions to U.S. Science and Engineering From China." *National Science Foundation,* Division of Science Resources Studies, Directorate for Social, Behavioral, and Economic Sciences NSF 01-311 January 12, 2001: Issue Brief.

Johnson, Jean M. 1998. "Statistical Profiles of Foreign Doctoral Recipients in Science and Engineering: Plans to Stay in the United States." *National Science Foundation,* Division of Science Resources Studies, Directorate for Social, Behavioral, and Economic Sciences: An SRS Special Report, November 1998.

Khoshkish, A. 1966. "Intellectual migration: a sociological approach to brain drain", Journal of World History, 10, 178-197.

Lazaroiu, Sebastian & Alexandru, Monica. 2005. Controlling Exits to Gain Accession: Romanian Migration Policy in the Making. Centro Studi di Politica Internazionale. Retrieved on June 3rd, 2008 from: http://www.cespi.it/migraction2/PAPERS/mig-romania-2.pdf

Lowell BL, Findlay A. 2001. *Migration of Highly Skilled Persons from Developing Countries: Impact and Policy Responses*, International Labor Office, International Migration Branch., Geneva

Martin P, Straubhaar T. 2002. Best Practice Options: Romania. *International Migration* 40: 3-43

Massey DS, Arango J, Hugo G, Kouaouci A, Pellegrino A, Taylor EJ. 1998. *Worlds in Motion: Understanding International Migration at the End of the Millennium*. Oxford: Clarendon Press

OECD. 2001. *SOPEMI: Trends in International Migration.*, OECD, Paris.

OECD. 2002. *Student Mobility Between and Towards OECD Countries: A Comparative Analysis*, OECD, Paris.

OECD. 2002b. *International Mobility of the Highly Skilled*. Presented at OECD Seminar on 'International Mobility of the Highly Skilled Workers: From Statistical Analysis to Policy Formulation', Paris

Portes, Alejandro & Rumbaut, Ruben G.1990. Immigrant America: A Portrait. Berkeley, Los Angeles, Oxford: University of California Press.

Romanian National Institute of Statistics. 2004. *Situația Demografică a României în 2003*, National Institute of Statistics, Bucharest

Sandu, Dumitru, Radu, Cosmin, Constantinescu, Monica, & Ciobanu, Oana. 1989. A Country Report on Romanian Migration Abroad: Stocks and Flows after 1989. Study for www.migrationonline.cz. Multicultural Center Prague, November 2004.

Sassen S. 1991. *The Global City: New York, London, Tokyo.* Princeton, NJ: Princeton University Press.

Sassen S. 1994. *Cities in a World Economy.* London: Pine Forge Press.

Schiff M. 2006. *International Migration, Remittances and the Brain Drain*. Basingstoke: Palgrave Macmillian and World Bank

Simina OL. 2005. *Next in Line: Romanians at the Gates of the EU*. Presented at 4th International Immigration Conference "Contemporary Migration Issues: Migration and Society. Legal Framework of Migration in the Age of Human Rights Law", *First Independent University of Business and Government,* Warsaw, Poland. URL: http://aei.pitt.edu/4465/01/SDP_II-1-2005_Ovidiu_SIMINA.pdf.

Tascu, Miroslav-Valeriu, Noftsinger, John & Bowers, Stephen. 2002. The Problem of Post-Communist Education: The Romanian Example. *The Journal of Social, Political and Economic Studies, 27*(2): 203- 226.

Todaro MP. 1996. *Economic Development*. London: Addison-Wesley

Todisco, Enrico, Brandi, Maria C., & Tattolo, Giovanna. 2003. Skilled migration: a theoretical framework and the case of foreign researchers in Italy. FULGOR 1(3): 115-130. Retrieved on June 3rd, 2008 from: http://ehlt.flinders.edu.au/deptlang/fulgor/volume1i3/papers/fulgor_v1i3_todisco.pdf

Unesco-CEPES. 2004. *Brain Drain in the Context of the Intellectual Labor Market and Human Capital.* Presented at International Roundtable on Brain Drain and the Academic and Intellectual Labor Market in the South-East Europe., Bucharest.

Weber-Morales, Alexandra. 2005. "Salary Survey 2005: Holding Pattern." *Dr.Dobb's Portal: The World of Software Development (Architecture and Design Section)*. November 2005. Retrieved on May 22, 2008 from: http://www.ddj.com/architect/184415424

Zhou, Min. 1992. *Chinatown: The Socioeconomic Potential of an Urban Enclave (Conflicts in Urban and Regional Development) (Hardcover*). Temple University Press.