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International Migration and Agglomeration Economies

Vicente Royuela

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International migrations and agglomeration economies

Vicente Royuela

AQR Research Group-IREA
Universitat de Barcelona
Avda Diagonal 690, 08034 Barcelona, Spain
Tel+34 934035732; FAX: +34 934021821
Email: vroyuela@ub.edu

Abstract

Migration to more developed regions in the world has significantly increased over the last decades. Internationally, regional migration is a big part of labour mobility. Migration among neighbours is considerable, and that has been the case for the European Neighbouring Countries as well. If 3% of the world's population live outside their region of birth, in ENC countries + Russia that figure is above 7%. It is generally agreed that countries do not prosper without mobile people. Indeed, the ability of people to move seems to be a good gauge of their economic potential, and the willingness to migrate appears to be a measure of their desire for advancement. According to World Bank's data, in 1960 almost one third of the World Population lived in cities. In 2010 this figure is above 50% and is steadily growing 1% every three years. At that speed, in 2050 around two thirds of the world population would be living in cities. In 2010 the ENC countries + Russia accounted for an urbanisation rate of 63%, although this figure has remained stable since the 1990's. The question posed in this paper is if migration and agglomeration are two connected variables and how are they correlated. In this work we embrace these two major trends and we inspect the relationship between international migration and urbanisation in panel data framework in which we consider a gravitational model for panel of 197 countries over the period 1960-2010. Particular attention is devoted to ENC countries + Russia.

Keywords

international migration; gravitational model; agglomeration economies; urbanisation; urban concentration

JEL Classification

R00, R23, F22

1. INTRODUCTION

Today, the number of persons who live outside their country of birth is around three percent of the world population, about 200 million people. Despite the largest flows of people are between places in the same country, international migration still captures the greatest attention in the media, even though most of the international migrations are regional, as people mostly moves within world regional neighbourhoods. Of course, the majority of migrants end up in developed countries: immigrants represent more than 12% of population in OECD countries (Gheasi et al 2012).

Nowadays large international flows of people are from low income countries to wealthy countries, while in the industrial period in the XIXth century, industrialised countries were the main senders. The World Development Report (World Bank, 2009) relates that in the industrial period between 10 and 20 per cent of the population left Europe, and consequently the movement of people was not driven by a lack of economic growth or development in the sending countries (Great Britain, the first country to industrialize, was by far the largest sender). Nevertheless, this is not contradictory with the neoclassical theory. On the contrary, it is in line with the findings of Milanovic (2011): in the early 19th century just 30% of the total global inequality was due to differences in mean country incomes, while in the early 21st century that figure is over 80%. It was in the post-industrial period that began in the 1960s, when people began to move from lower income countries to wealthy countries, while between country inequality exceeded 80% of the total global inequality in 1950s.

Consequently, migration is mainly explained by the personal opportunities that the worker may face wherever he/she goes. From a micro perspective (Borjas, 1987) migrants estimate the costs and benefits of moving to alternative international locations and migrate to where the expected discounted net returns are greatest over some time horizon. From a macro perspective, this is clearly related with the process of economic development, as assumed by a large literature (Lewis, 1954; Ranis and Fei, 1961; Harris and Todaro, 1976; Todaro, 1976). In some of these models migration occurs between lagged rural areas and developed urban areas, as the latter exhibit higher wages due to higher productivity, which comes from agglomeration economies. This is in line also with the model proposed by Simon Kuznets (1955) which, in turn, assumes that economic growth is likely to be associated with increasing urbanization. After all, labour mobility is the human side of the agglomeration story. As stressed in Castells and Royuela (2012), in 2010 above 50% of the World Population live in cities and this figure is steadily growing 1% every three years. At that speed, in 2050 around two thirds of the world population would be living in cities.

In this work I analyse together these two major trends: international migrations and the increase of cities all over the world. As the WDR (2009) stresses, “an important insights of the agglomeration literature – that human capital earns higher returns where it is plentiful – has been ignored by the literature of labour migration” (WDR, 2009, p. 158), and that novel understandings come from considering agglomeration economies and labour migration.

Next, section 2 describes the empirical background and the current trends in in international migrations and urbanisation. Section 3 presents the theoretical framework, section 4 presents the empirical model, and section 5 displays the estimation results. Finally, section 6 concludes with the main findings.

2. EMPIRICAL BACKGROUND

In this section I describe the main trends in migration and in urban agglomeration all over the world. Regarding migration, our data sources are the World Bank Bilateral Migration Database 1960-2000 and the World Bank Bilateral Migration Matrix 2010.[1] It includes 197 countries for the years 1960, 1970, 1980, 1990, 2000 and 2010, what accounts for

[1] These databases can be respectively accessed at http://data.worldbank.org/data-catalog/global-bilateral-migration-database and http://go.worldbank.org/JITC7NYTT0

231,672 potential observations.[2,3] The variables on population and urbanisation belong to the World Bank World Development Indicators.[4]

Table 1 shows the main demographics trends in the world regions. Population growth has slowed down over the last 40 years, although several World regions still have in 2010 annual growth rates over 2%, mainly in Africa and Western Asia and Melanesia. Interestingly these areas do not show particularly high rates of emigration. Finally immigration is particularly important in more developed areas, such as Europe, North America, and Oceania.

Table 1b focuses on the ENC countries. The more striking fact is that ENC-East countries and Russia display a demographic decline in the last two decades. In fact, Eastern Europe is the only subregion in the World with negative rates of population growth. On the contrary, ENC countries show high population growth rates, that caused that the population in these countries has tripled from 1960 (65 million) to 2010 (203 million). The emigration rates are particularly large in ENC-East countries (15% all over the years), while the immigration rate, being large as well, is much below and is decreasing over the years. In ENC-South we see as well higher emigration than immigration rates. Finally, Russia has reversed the sign of these rates, as since 2000 the immigration rate is larger than the emigration rate.

Tables 2 and 3 presents the destination of the migrants. Table 2 presents where do emigrants go, while table 3 shows where do immigrants come from. African people migrate more and more over the years outside of their continent, particularly to Europe, although also to Asia. By far the larger sender in relative terms is Northern Africa, as only 9% of emigrants stay in the African continent. By contrast, in 2010, 97% of immigrants at the African continent were Africans. There is a huge decline in the proportion of Europeans since 1960, what can be associated to the decolonization process.

Americans mostly stay in their continent, although that figure has strongly declined for southern Americans (in 2010 35% of emigrants were in Europe). Regarding the

[2] The list of countries displayed by continents and world subregions is displayed in annex 1.
[3] Özden et al. (2011) describes the 1960-2000 database and highlights the main migration trends in the world. Here I briefly expand that analysis to 2010 and enrich it with urbanisation figures.
[4] http://data.worldbank.org/data-catalog/world-development-indicators

immigrants, we see that the proportion of Americans among immigrants has doubled since 1960 (24%) until 2010 (54%). Asiatics have followed a similar pattern. Inversely, the weight of Europeans has strongly declined since 70% in 1960 to 16% in 2010.

Nowadays Asiatics emigrate to America and Europe (particularly the ones coming from Central Asia) much more than 50 years ago, as in 2010 just 51% of them stay in Asia, compared to the 86% in 1960. On the contrary, most immigrants in Asia are Asiatics, although Africans represent a higher community over time, particularly the Northern Africans.

Europeans prefer to stay in their continent, and that trend is increasing all over the years, while they emigrate less to America and more to Oceania. As a destination continent, Europeans represent just a half of total immigrants in Europe, particularly because the increase of the weights of the rest of continents, and particularly from South America and Western Asia.

Finally, emigrants from Oceania mostly prefer their continent, but large proportions go to America and, at a declining rate, to Europe. Immigrants at Oceania still come mostly from Europe, but the rest of the continents are largely increasing their weight.

Tables 2b and 3b display the dame figures for the ENC countries plus Russia. The ENC-East countries mainly stay in Europe, being the subregions of destination with more, and higher, importance the Eastern European countries that belong to the European Union in 2010. Interestingly, Southern European countries have vastly increase their importance as destination countries. The ENC-East countries mostly receive immigrants from other ENC-East countries and in the last years more and more from Central Asia, and less and less from Eastern European countries belonging to the European Union.

The ENC-South countries also emigrate mostly to Europe, although since 2000 the preferred subregion in the world in Western Asia. The immigrants come primarily from other ENC countries and related neighbours (Northern Africa, Western Asia and Eastern Europe-ENC).

Finally, Russians emigrate to the EU countries of Eastern Europe and to Central Asia. Besides, in 2010 there is a large proportion of Russian emigrants in Northern America. Regarding the immigrants in Russia are mostly from neighbouring countries: they come from Eastern European countries (ENC, not EU) and from Western and Central Asia (more and more in fact).

Regarding urbanisation, table 4 presents the picture of continents and world subregions. As was stressed above, urban world population has increased from 33% in 1960 to 51% in 2010 (16 percentage points). All regions in the world have increased their urbanisation rate by 20 points (but Oceania, that started already had a large rate in 1960). In 2010 in 15 world regions more than half of people live in cities, while in 8 regions the figure is below 50%.

Urban concentration has also risen in the last 50 years (6 percentage points), being more important in America, Oceania, and in several other subregions, such as Southern Africa and Western Asia. But the global urbanisation trend has a deeper source in small and median cities (below one million inhabitants), that has risen from 20% of total world population in 1960 to 32% in 2010. It means 12 percentage points, double of the increase in larger cities. In two regions, Central Asia and Northern Europe, large cities lost weight, while small and median cities were responsible for the entire increase in urbanisation rates. In fact, in Europe we can see that more than 80% of the increase in urbanisation rates was due to the enlargement of small and median cities.

Table 4b presents the urbanisation rates of ENC countries and Russia. As in other world regions, there is an increase in urbanisation rates in all countries, but the distribution between large and small and median cities is heterogeneous. In Armenia, Israel, Lebanon and Syria more than one third of total population live in large cities, while in Azerbaijan, Algeria and Jordan large cities have lost weight since 1960. As in other parts of the world, the increase in urban rates was mainly driven by small and median cities (curiously in Egypt, where Cairo has a huge importance, 90% of the increase in the urbanisation rate was due to smaller cities).

Table 1. World Demographic trends

	Population Growth - annual rates					Emigrants as % of local population						Immigrants as % of local population					
	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010	1960	1970	1980	1990	2000	2010	1960	1970	1980	1990	2000	2010
Africa	**2.5%**	**2.7%**	**2.8%**	**2.5%**	**2.3%**	**2.9%**	**2.9%**	**2.9%**	**2.6%**	**2.5%**	**2.9%**	**2.9%**	**2.2%**	**2.0%**	**1.5%**	**1.5%**	**1.5%**
Central Africa	2.1%	2.6%	2.9%	2.8%	2.7%	2.0%	1.8%	2.2%	1.9%	1.8%	2.4%	2.6%	2.0%	1.5%	1.5%	1.1%	1.5%
Eastern Africa	2.8%	2.9%	3.0%	2.7%	2.6%	3.5%	2.8%	2.1%	1.8%	1.7%	2.2%	3.5%	2.7%	1.8%	1.3%	1.2%	1.2%
Northern Africa	2.6%	2.7%	2.6%	1.9%	1.7%	3.1%	3.9%	4.1%	4.1%	3.6%	4.5%	2.1%	1.0%	0.8%	0.7%	0.7%	0.7%
Southern Africa	2.4%	2.3%	2.5%	2.3%	1.3%	2.6%	2.2%	2.1%	2.4%	2.0%	2.5%	4.9%	4.2%	3.4%	3.5%	2.3%	3.5%
Western Africa	2.3%	2.7%	2.7%	2.6%	2.6%	2.4%	2.5%	2.9%	2.4%	2.6%	2.8%	2.3%	2.4%	2.8%	2.1%	2.2%	2.0%
America	**2.0%**	**1.8%**	**1.6%**	**1.5%**	**1.1%**	**1.3%**	**1.5%**	**2.0%**	**2.5%**	**3.4%**	**3.8%**	**4.7%**	**4.0%**	**4.2%**	**4.6%**	**5.5%**	**5.8%**
Caribbean	2.0%	1.6%	1.4%	1.2%	0.9%	7.0%	9.4%	11.2%	13.4%	15.4%	16.3%	2.5%	2.8%	2.6%	2.5%	2.6%	2.1%
Central America	3.0%	2.8%	2.1%	1.8%	1.4%	1.7%	2.0%	3.5%	5.6%	9.0%	10.0%	0.9%	0.6%	0.5%	0.6%	0.8%	0.9%
Northern America	1.3%	1.1%	1.0%	1.2%	0.9%	1.0%	1.1%	1.1%	1.0%	1.1%	1.0%	6.8%	6.6%	7.9%	9.8%	12.7%	13.7%
South America	2.6%	2.3%	2.1%	1.6%	1.2%	0.9%	0.9%	1.2%	1.5%	1.9%	2.5%	3.4%	2.4%	1.9%	1.4%	1.2%	1.1%
Asia	**2.3%**	**2.1%**	**1.9%**	**1.5%**	**1.1%**	**1.8%**	**1.5%**	**1.5%**	**1.5%**	**1.6%**	**1.7%**	**1.9%**	**1.6%**	**1.3%**	**1.3%**	**1.2%**	**1.2%**
Central Asia	3.1%	2.2%	2.0%	0.9%	1.1%	7.3%	8.3%	7.9%	10.2%	12.0%	10.7%	14.9%	16.3%	14.5%	13.3%	9.4%	7.4%
East Asia	2.0%	1.8%	1.4%	1.0%	0.5%	0.8%	0.6%	0.6%	0.6%	0.7%	0.8%	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%
South Asia	2.4%	2.4%	2.4%	1.9%	1.5%	3.2%	2.4%	2.0%	1.7%	1.5%	1.6%	3.1%	2.2%	1.6%	1.1%	0.8%	0.6%
Southeast Asia	2.6%	2.4%	2.2%	1.6%	1.3%	0.6%	0.6%	0.9%	1.4%	1.8%	2.1%	1.8%	1.3%	0.7%	0.6%	0.9%	1.0%
Western Asia	2.7%	2.8%	2.7%	2.2%	2.3%	3.0%	4.2%	5.9%	6.0%	6.2%	5.5%	5.3%	5.7%	6.6%	8.7%	8.4%	9.4%
Europe	**0.8%**	**0.5%**	**0.4%**	**0.1%**	**0.2%**	**7.8%**	**8.0%**	**7.6%**	**7.7%**	**7.2%**	**7.4%**	**4.9%**	**5.8%**	**6.3%**	**7.2%**	**7.7%**	**9.2%**
Eastern Europe	0.9%	0.7%	0.5%	-0.2%	-0.3%	10.3%	10.2%	9.6%	10.2%	9.1%	9.1%	5.9%	6.2%	6.2%	7.0%	6.8%	6.8%
Northern Europe	0.7%	0.3%	0.2%	0.2%	0.5%	7.4%	8.3%	7.8%	7.8%	7.8%	7.3%	4.0%	5.9%	6.7%	7.6%	8.3%	10.7%
Southern Europe	0.8%	0.8%	0.3%	0.1%	0.8%	7.9%	9.3%	8.3%	7.6%	7.5%	8.5%	0.8%	1.3%	1.9%	2.9%	4.5%	9.9%
Western Europe	0.9%	0.3%	0.3%	0.4%	0.3%	3.7%	3.4%	3.5%	3.5%	3.7%	3.9%	6.7%	8.4%	9.7%	10.4%	11.2%	11.5%
Oceania	**2.0%**	**1.7%**	**1.6%**	**1.4%**	**1.7%**	**1.8%**	**2.0%**	**2.7%**	**3.3%**	**4.3%**	**4.1%**	**13.3%**	**15.3%**	**15.0%**	**15.5%**	**15.5%**	**17.9%**
Australia and New Zealand	1.9%	1.5%	1.4%	1.2%	1.5%	2.0%	2.1%	2.6%	3.2%	4.1%	3.9%	15.9%	18.4%	18.5%	19.6%	20.0%	23.8%
Melanesia	2.4%	2.7%	2.4%	2.4%	2.3%	0.6%	0.8%	1.4%	2.0%	2.7%	2.9%	2.2%	2.7%	1.9%	1.4%	1.2%	0.9%
Micronesia	2.7%	2.1%	3.7%	1.9%	0.4%	6.9%	4.8%	10.8%	8.5%	14.7%	12.5%	8.0%	6.5%	6.2%	12.8%	16.8%	16.5%
Polynesia	3.0%	1.7%	1.2%	1.2%	0.9%	4.1%	5.2%	17.5%	20.0%	26.7%	25.9%	2.1%	3.2%	5.5%	6.5%	6.7%	5.5%
World	**2.0%**	**1.9%**	**1.7%**	**1.4%**	**1.2%**	**3.0%**	**2.8%**	**2.7%**	**2.6%**	**2.7%**	**2.8%**	**3.0%**	**2.8%**	**2.7%**	**2.6%**	**2.7%**	**2.8%**

Table 1b. ENC countries demographic trends

		Population Growth - annual rates					Emigrants as % of local population						Inmigrants as % of local population					
		1960-1970	**1970-1980**	**1980-1990**	**1990-2000**	**2000-2010**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**
AM	Armenia	3.0%	2.1%	1.4%	-1.4%	0.1%	20.9%	16.9%	13.8%	13.2%	27.7%	25.7%	12.0%	14.8%	12.8%	7.5%	9.5%	10.3%
AZ	Azerbaijan	2.9%	1.8%	1.5%	1.2%	1.2%	10.3%	10.9%	12.0%	14.2%	18.7%	14.2%	9.7%	8.1%	6.3%	5.6%	3.2%	1.2%
BY	Belarus	1.0%	0.6%	0.6%	-0.2%	-0.5%	23.8%	25.3%	24.1%	24.8%	17.5%	16.9%	13.0%	12.5%	13.4%	16.0%	11.4%	11.4%
GE	Georgia	0.9%	1.2%	0.7%	-0.8%	0.1%	1.9%	10.8%	12.7%	17.9%	25.8%	21.6%	9.4%	8.7%	7.3%	7.3%	5.0%	3.7%
MD	Moldova	1.8%	1.1%	0.8%	-0.2%	-0.2%	16.2%	14.9%	13.0%	16.1%	17.7%	19.9%	12.8%	13.8%	14.4%	15.8%	13.1%	10.8%
UA	Ukraine	1.0%	0.6%	0.4%	-0.5%	-0.7%	14.6%	13.4%	12.7%	13.8%	12.0%	13.1%	9.4%	11.5%	12.2%	13.3%	10.6%	10.8%
Total ENC- East		**1.2%**	**0.8%**	**0.6%**	**-0.4%**	**-0.4%**	**15.1%**	**14.8%**	**14.1%**	**15.6%**	**15.1%**	**15.0%**	**10.1%**	**11.4%**	**11.7%**	**12.5%**	**9.7%**	**9.3%**
DZ	Algeria	2.4%	3.2%	3.0%	1.9%	1.5%	7.9%	12.3%	8.5%	6.2%	4.4%	3.4%	4.0%	1.2%	0.7%	0.4%	0.3%	
EG	Egypt	2.6%	2.3%	2.4%	1.8%	1.8%	0.5%	1.0%	2.2%	3.3%	3.2%	4.2%	0.7%	0.5%	0.3%	0.2%	0.2%	0.2%
IL	Israel	3.5%	2.7%	1.9%	3.0%	1.9%	2.3%	2.8%	3.7%	4.4%	3.7%	3.6%	56.0%	47.3%	36.8%	34.8%	35.5%	35.7%
JO	Jordan	6.0%	3.8%	3.8%	4.2%	2.3%	6.2%	15.7%	22.7%	25.4%	17.3%		0.8%	1.2%	3.0%	4.8%	5.2%	
LB	Lebanon	2.6%	1.3%	0.5%	2.4%	1.2%	7.1%	7.6%	15.5%	20.0%	17.7%	15.1%	0.6%	0.5%	0.3%	6.8%	8.1%	
LY	Libya	4.0%	4.4%	3.5%	1.9%	2.0%	3.9%	3.6%	2.2%	1.5%	2.1%	1.7%	3.5%	5.6%	9.3%	9.7%	9.6%	8.1%
MA	Morocco	2.8%	2.5%	2.4%	1.5%	1.0%	5.7%	5.3%	6.2%	6.5%	5.5%	9.4%	3.4%	0.8%	0.4%	0.2%	0.2%	
SY	Syria	3.4%	3.4%	3.3%	2.6%	2.5%	2.7%	2.6%	3.3%	3.7%	3.5%	4.2%	1.1%	3.2%	0.5%	0.5%	0.5%	
TN	Tunisia	2.0%	2.2%	2.5%	1.6%	1.0%	5.5%	6.8%	8.0%	6.9%	5.9%	6.0%	3.9%	1.0%	0.6%	0.5%	0.4%	0.2%
Total ENC-South		**2.7%**	**2.6%**	**2.6%**	**1.9%**	**1.7%**	**3.5%**	**4.6%**	**5.2%**	**5.4%**	**4.7%**	**5.2%**	**3.8%**	**2.7%**	**2.0%**	**1.9%**	**2.1%**	**2.7%**
Total ENC		**2.0%**	**1.8%**	**1.8%**	**1.2%**	**1.1%**	**9.2%**	**9.3%**	**8.9%**	**9.1%**	**7.9%**	**7.8%**	**6.9%**	**6.6%**	**6.0%**	**5.8%**	**4.5%**	**4.5%**
RU	Russia	0.8%	0.6%	0.6%	-0.1%	-0.3%	7.0%	8.1%	8.4%	8.9%	7.1%	7.1%	5.1%	5.6%	5.9%	7.1%	8.2%	8.3%
Total ENC + Russia		**1.5%**	**1.3%**	**1.3%**	**0.7%**	**0.6%**	**8.1%**	**8.7%**	**8.7%**	**9.0%**	**7.6%**	**7.6%**	**6.0%**	**6.2%**	**6.0%**	**6.3%**	**5.9%**	**5.8%**

Note: Palestinian territory is not considered due to the lack of data

Table 2. Migrants as a proportion of total migrants from origin (sum of rows = 100%)

Origin \ Destination	Africa			America			Asia			Europe			Oceania		
	1960	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**
Africa	**77%**	**58%**	**50%**	**1%**	**3%**	**6%**	**5%**	**9%**	**14%**	**17%**	**30%**	**29%**	**0.4%**	**0.8%**	**1.4%**
Central Africa	89%	66%	54%	1%	3%	4%	0.4%	1.0%	1.1%	9%	30%	41%	0.0%	0.0%	0.1%
Eastern Africa	97%	81%	70%	0%	3%	8%	0.7%	2.2%	3.9%	2%	14%	17%	0.2%	1.0%	1.6%
Northern Africa	27%	12%	9%	1%	3%	5%	17%	22%	37%	54%	62%	48%	0.8%	0.8%	0.8%
Southern Africa	82%	78%	56%	2%	6%	9%	2.1%	1.3%	0.4%	12%	11%	21%	2.0%	4.7%	12.5%
Western Africa	97%	89%	76%	0%	2%	6%	0.4%	1.1%	0.3%	3%	7%	17%	0.0%	0.0%	0.2%
America	**0.7%**	**1.0%**	**0.0%**	**83%**	**86%**	**82%**	**1.6%**	**1.0%**	**2.1%**	**14%**	**11%**	**15%**	**0.5%**	**0.9%**	**0.8%**
Caribbean	0.1%	0.1%	0.0%	84%	91%	90%	0%	0%	0%	15%	9%	10%	0.0%	0.0%	0.1%
Central America	0.2%	0.1%	0.0%	98%	99%	99%	0%	0%	0%	1%	1%	1%	0.0%	0.0%	0.1%
Northern America	1.6%	3.5%	0.4%	74%	67%	62%	4%	4%	8%	19%	23%	25%	1.2%	2.6%	4.7%
South America	0.3%	0.7%	0.0%	86%	85%	59%	0%	1%	5%	13%	13%	35%	0.1%	1.2%	1.0%
Asia	**0.8%**	**0.9%**	**0.3%**	**4%**	**10%**	**20%**	**86%**	**69%**	**51%**	**9%**	**19%**	**26%**	**0.4%**	**1.1%**	**3.1%**
Central Asia	0.1%	0.1%	0.0%	2%	1%	1%	23%	27%	17%	74%	72%	82%	0.1%	0.0%	0.0%
East Asia	0.3%	0.3%	0.2%	9%	22%	39%	89%	73%	45%	1%	3%	10%	0.4%	1.0%	5.5%
South Asia	0.7%	0.6%	0.3%	0%	3%	13%	97%	91%	73%	2%	5%	11%	0.2%	0.4%	1.7%
Southeast Asia	0.3%	0.3%	0.1%	12%	38%	35%	61%	42%	47%	25%	16%	12%	1.8%	4.8%	6.2%
Western Asia	3.9%	3.0%	0.8%	21%	9%	10%	49%	37%	30%	25%	49%	58%	1.1%	1.7%	2.0%
Europe	**3.1%**	**1.9%**	**0.5%**	**29%**	**21%**	**16%**	**11%**	**13%**	**13%**	**53%**	**59%**	**65%**	**3.9%**	**4.7%**	**5.2%**
Eastern Europe	0.1%	0.1%	0.0%	10%	6%	9%	18%	23%	21%	71%	71%	70%	0.5%	0.5%	0.7%
Northern Europe	5.3%	5.5%	0.6%	53%	35%	26%	1.3%	1.8%	4.3%	24%	37%	47%	17%	20%	22%
Southern Europe	4.5%	1.7%	0.8%	61%	40%	23%	4.0%	1.9%	1.5%	26%	51%	69%	4%	6%	5%
Western Europe	12%	6.6%	1.5%	43%	40%	23%	1.3%	3.2%	9.7%	39%	45%	61%	5%	5%	5%
Oceania	**2.7%**	**2.1%**	**0.4%**	**17%**	**17%**	**18%**	**4.5%**	**2.6%**	**4.1%**	**33%**	**23%**	**19%**	**43%**	**55%**	**59%**
Australia and NZ	3.0%	2.6%	0.5%	16%	14%	13%	4.8%	3.2%	5.3%	37%	27%	25%	40%	54%	56%
Melanesia	0.5%	1.2%	0.0%	11%	17%	29%	1.9%	0.9%	0.4%	9%	11%	3.6%	78%	69%	67%
Micronesia	0.1%	1.0%	0.0%	56%	30%	64%	5.1%	4.9%	10%	2%	36%	4.0%	37%	28%	22%
Polynesia	0.3%	0.1%	0.0%	21%	33%	23%	1.4%	0.1%	0.1%	9%	8.6%	0.8%	69%	58%	76%
World	**8.6%**	**7.7%**	**7.6%**	**21.6%**	**22.0%**	**28.5%**	**35.1%**	**29.9%**	**25.0%**	**32.4%**	**37.4%**	**35.5%**	**2.3%**	**2.9%**	**3.5%**

Table 3. Migrants as a proportion of total migrants at destination (sum of columns = 100%)

Origin \ Destination	Africa			America			Asia			Europe			Oceania			World		
	1960	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**	**1960**	**1980**	**2010**
Africa	**78%**	**84%**	**97%**	**0.3%**	**1.4%**	**3.3%**	**1.3%**	**3.3%**	**8.0%**	**4.5%**	**8.8%**	**12%**	**1.5%**	**2.9%**	**5.9%**	**8.7%**	**11%**	**15%**
Central Africa	3.9%	4.2%	5.5%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.4%	0.9%	0.0%	0.0%	0.0%	0.4%	0.5%	0.8%
Eastern Africa	35%	27%	34%	0.0%	0.3%	1.1%	0.1%	0.2%	0.6%	0.2%	1.0%	1.8%	0.2%	0.8%	1.7%	3.1%	2.6%	3.7%
Northern Africa	7.2%	6.1%	6.1%	0.1%	0.5%	0.8%	1%	3%	7%	3.8%	6.6%	6.7%	0.8%	1.1%	1.1%	2.3%	4.0%	4.9%
Southern Africa	5.4%	5.7%	5.7%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.2%	0.2%	0.5%	0.5%	0.9%	2.8%	0.6%	0.6%	0.8%
Western Africa	26%	41%	45%	0.1%	0.4%	1.0%	0.0%	0.1%	0.0%	0.2%	0.7%	2.1%	0.0%	0.1%	0.2%	2.3%	3.5%	4.5%
America	**0.5%**	**1.4%**	**0.1%**	**24%**	**41%**	**54%**	**0.3%**	**0.4%**	**1.6%**	**2.7%**	**3.1%**	**7.7%**	**1.3%**	**3.3%**	**4.2%**	**6.2%**	**11%**	**19%**
Caribbean	0.0%	0.0%	0.0%	6.0%	11%	11%	0.0%	0.0%	0.0%	0.7%	0.7%	1.0%	0.0%	0.0%	0.1%	1.5%	2.8%	3.5%
Central America	0.0%	0.0%	0.0%	4.5%	12%	29%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.3%	1.0%	2.8%	8.2%
Northern America	0.4%	1.1%	0.1%	7.8%	7.3%	3.9%	0.3%	0.3%	0.6%	1.3%	1.5%	1.3%	1.2%	2.1%	2.4%	2.3%	2.4%	1.8%
South America	0.1%	0.2%	0.0%	5.5%	10%	11%	0.0%	0.0%	1.0%	0.6%	0.9%	5.1%	0.1%	1.1%	1.4%	1.4%	2.6%	5.1%
Asia	**3.0%**	**3.7%**	**1.5%**	**6.0%**	**15%**	**26%**	**82%**	**76%**	**76%**	**9.1%**	**17%**	**27%**	**5.3%**	**11.8%**	**33%**	**33%**	**33%**	**37%**
Central Asia	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	1%	3%	2%	4.5%	5.4%	8.1%	0.0%	0.0%	0.0%	2.0%	2.8%	3.5%
East Asia	0.3%	0.2%	0.2%	2.7%	5.8%	8.9%	18%	14%	12%	0.3%	0.5%	1.8%	1.3%	1.9%	10%	6.9%	5.8%	6%
South Asia	1.7%	1.1%	0.6%	0.2%	2.3%	6.7%	57%	48%	42%	1.5%	2.1%	4.5%	1.7%	2.3%	7.1%	21%	16%	14.2%
Southeast Asia	0.1%	0.1%	0.1%	0.8%	4.7%	8.1%	3%	4%	12%	1.1%	1.2%	2.2%	1.1%	4.4%	12%	1.5%	2.7%	7%
Western Asia	1.0%	2.2%	0.7%	2.1%	2.2%	2.3%	3%	7%	8%	1.7%	7.5%	11%	1.1%	3.2%	3.9%	2.1%	5.7%	6.7%
Europe	**18%**	**11%**	**1.8%**	**70%**	**42%**	**16%**	**17%**	**20%**	**14%**	**83%**	**71%**	**53%**	**86%**	**72%**	**43%**	**51%**	**45%**	**28%**
Eastern Europe	0.3%	0.4%	0.0%	13%	6%	4%	15%	19%	12%	63%	46%	28%	6.3%	3.9%	2.8%	29%	24%	14%
Northern Europe	4.2%	4.3%	0.3%	16%	10%	3%	0.2%	0.4%	0.7%	4.9%	6.0%	5.1%	49%	42%	25%	7%	6%	4%
Southern Europe	5.0%	2.0%	0.7%	27%	17%	5%	1.1%	0.6%	0.4%	8%	12%	13%	18%	17%	10%	10%	9%	7%
Western Europe	9%	4.4%	0.8%	13%	9%	3%	0.2%	0.5%	1.5%	7.5%	6.3%	6.9%	13%	9.1%	5.7%	6%	5.2%	4.0%
Oceania	**0.1%**	**0.1%**	**0.0%**	**0.2%**	**0.4%**	**0.5%**	**0.0%**	**0.0%**	**0.1%**	**0.3%**	**0.3%**	**0.4%**	**5.8%**	**10%**	**13%**	**0.3%**	**1%**	**1%**
Australia and NZ	0.1%	0.1%	0.0%	0.2%	0.2%	0.2%	0.0%	0.0%	0.1%	0.3%	0.3%	0.4%	4.7%	7.1%	8.9%	0.3%	0.4%	0.6%
Melanesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.3%	2.6%	0.0%	0.1%	0.1%
Micronesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%
Polynesia	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.2%	1.7%	0.0%	0.1%	0.1%
World	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 2b. Migrants as a proportion of total emigrants from ENC countries + Russia (as origin)

	ENC- East				ENC-South				Russia			
	1960	**1980**	**2000**	**2010**	**1960**	**1980**	**2000**	**2010**	**1960**	**1980**	**2000**	**2010**
Africa	**0.1%**	**0.1%**	**0.1%**	**0.0%**	**21.1%**	**9.4%**	**8.1%**	**5.8%**	**0.1%**	**0.1%**	**0.2%**	**0.0%**
Central Africa	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Eastern Africa	0.0%	0.1%	0.0%	0.0%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Northern Africa	0.0%	0.0%	0.0%	0.0%	19.7%	7.8%	7.1%	5.4%	0.0%	0.1%	0.2%	0.0%
Southern Africa	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Western Africa	0.0%	0.0%	0.0%	0.0%	0.9%	1.3%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%
America	**7.4%**	**3.6%**	**6.5%**	**5.3%**	**8.3%**	**7.3%**	**10.4%**	**9.6%**	**2.1%**	**0.9%**	**0.9%**	**5.1%**
Caribbean	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Central America	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Northern America	7.1%	3.5%	6.3%	5.2%	3.3%	5.7%	9.5%	9.0%	1.4%	0.5%	0.7%	4.9%
South America	0.3%	0.1%	0.1%	0.0%	4.6%	1.4%	0.8%	0.5%	0.7%	0.3%	0.1%	0.1%
Asia	**13.0%**	**18.2%**	**16.7%**	**10.6%**	**19.7%**	**29.4%**	**39.6%**	**36.7%**	**37.2%**	**38.9%**	**37.5%**	**39.0%**
Central Asia	6.9%	10.7%	8.3%	3.6%	0.0%	0.0%	0.0%	0.0%	30.8%	33.8%	30.4%	29.5%
East Asia	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%
South Asia	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Southeast Asia	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Western Asia	6.0%	7.5%	8.2%	7.0%	19.0%	29.2%	39.1%	36.6%	6.4%	5.1%	7.1%	9.4%
Europe	**79.3%**	**77.9%**	**76.6%**	**83.9%**	**49.6%**	**52.2%**	**40.3%**	**46.3%**	**60.6%**	**60.1%**	**61.2%**	**55.6%**
Eastern Europe - ENC	19.1%	10.6%	5.0%	4.9%	0.2%	0.2%	0.3%	0.2%	4.1%	1.7%	1.2%	0.8%
Eastern Europe - EU	57.8%	63.8%	66.4%	69.6%	0.0%	0.0%	0.1%	0.0%	44.6%	48.7%	42.1%	44.7%
Northern Europe	2.0%	3.3%	2.4%	1.7%	2.1%	1.5%	2.6%	2.2%	6.7%	6.8%	5.5%	4.8%
Southern Europe	0.0%	0.1%	1.0%	4.5%	2.1%	2.8%	9.3%	15.6%	0.1%	0.1%	0.5%	1.3%
Western Europe	0.3%	0.2%	1.9%	3.2%	45.2%	47.7%	28.0%	28.3%	5.1%	2.8%	11.9%	3.9%
Oceania	**0.2%**	**0.2%**	**0.2%**	**0.2%**	**1.2%**	**1.6%**	**1.6%**	**1.6%**	**0.0%**	**0.0%**	**0.2%**	**0.2%**
Australia and New Zealand	0.2%	0.2%	0.2%	0.2%	1.2%	1.6%	1.6%	1.6%	0.0%	0.0%	0.2%	0.2%
Melanesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Micronesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Polynesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total general	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 3b. Migrants as a proportion of total immigrants from ENC countries + Russia (as destination)

	ENC- East				ENC-South				Russia			
	1960	**1980**	**2000**	**2010**	**1960**	**1980**	**2000**	**2010**	**1960**	**1980**	**2000**	**2010**
Africa	**0.0%**	**0.0%**	**0.1%**	**0.0%**	**29.8%**	**33.8%**	**29.0%**	**34.7%**	**0.0%**	**0.0%**	**0.1%**	**0.0%**
Central Africa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eastern Africa	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%	2.1%	2.3%	0.0%	0.0%	0.0%	0.0%
Northern Africa	0.0%	0.0%	0.0%	0.0%	29.6%	32.0%	26.4%	32.4%	0.0%	0.0%	0.0%	0.0%
Southern Africa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Western Africa	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
America	**0.0%**	**0.0%**	**0.5%**	**0.0%**	**0.5%**	**0.6%**	**4.4%**	**1.4%**	**0.0%**	**0.0%**	**0.4%**	**0.0%**
Caribbean	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Central America	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
Northern America	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%	2.6%	0.5%	0.0%	0.0%	0.0%	0.0%
South America	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	1.8%	0.9%	0.0%	0.0%	0.1%	0.0%
Asia	**6.1%**	**10.7%**	**17.4%**	**16.9%**	**16.6%**	**27.7%**	**35.4%**	**34.3%**	**24.0%**	**32.1%**	**54.0%**	**56.3%**
Central Asia	0.0%	3.4%	9.3%	8.5%	1.1%	2.4%	6.4%	4.5%	21.1%	24.7%	37.6%	39.3%
East Asia	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	1.4%	0.0%	0.0%	0.0%	0.0%
South Asia	0.0%	0.0%	0.3%	0.3%	2.7%	5.2%	6.6%	5.9%	0.0%	0.0%	0.1%	0.0%
Southeast Asia	0.0%	0.0%	0.1%	0.0%	0.1%	0.3%	1.4%	2.4%	0.0%	0.0%	0.1%	0.0%
Western Asia	6.1%	7.3%	7.6%	8.1%	12.6%	19.8%	20.6%	20.1%	2.8%	7.4%	16.3%	17.0%
Europe	**93.9%**	**89.3%**	**82.1%**	**83.1%**	**53.0%**	**37.8%**	**30.9%**	**29.5%**	**76.0%**	**67.9%**	**45.5%**	**43.7%**
Eastern Europe - ENC	79.3%	80.9%	73.5%	78.9%	3.1%	6.9%	14.9%	19.0%	74.1%	62.7%	39.6%	41.5%
Eastern Europe - EU	14.2%	7.6%	6.9%	4.0%	17.8%	19.5%	8.5%	6.6%	1.9%	1.2%	3.7%	
Northern Europe	0.3%	0.8%	1.6%	0.1%	0.5%	0.4%	1.0%	1.3%	0.0%	4.0%	2.1%	2.2%
Southern Europe	0.0%	0.0%	0.1%	0.1%	12.1%	3.8%	1.5%	0.5%	0.0%	0.0%	0.0%	0.0%
Western Europe	0.0%	0.0%	0.0%	0.1%	19.6%	7.2%	5.0%	2.0%	0.0%	0.0%	0.0%	0.0%
Oceania	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Australia and New Zealand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Melanesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Micronesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Polynesia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total general	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 4.

	Urban Population						People living in cities with more than 1 million						People living in small and median cities					
	1960	1970	1980	1990	2000	2010	1960	1970	1980	1990	2000	2010	1960	1970	1980	1990	2000	2010
Africa	**18%**	**23%**	**28%**	**32%**	**36%**	**40%**	**7%**	**9%**	**10%**	**11%**	**12%**	**13%**	**12%**	**15%**	**18%**	**21%**	**24%**	**28%**
Central Africa	14%	19%	29%	38%	45%	52%	3%	6%	9%	11%	13%	17%	10%	14%	20%	26%	32%	36%
Eastern Africa	7%	10%	15%	18%	21%	24%	2%	3%	4%	5%	6%	6%	5%	7%	10%	13%	15%	18%
Northern Africa	31%	37%	41%	45%	49%	52%	13%	15%	16%	16%	16%	15%	19%	22%	26%	30%	33%	37%
Southern Africa	42%	44%	45%	49%	54%	59%	21%	23%	23%	24%	26%	29%	21%	21%	21%	24%	28%	30%
Western Africa	15%	21%	27%	33%	39%	45%	4%	7%	9%	11%	13%	14%	11%	15%	18%	22%	26%	30%
America	**59%**	**64%**	**69%**	**72%**	**77%**	**80%**	**29%**	**33%**	**34%**	**35%**	**37%**	**38%**	**29%**	**32%**	**34%**	**37%**	**40%**	**42%**
Caribbean	39%	44%	51%	55%	61%	66%	13%	16%	18%	19%	21%	23%	26%	29%	33%	36%	39%	43%
Central America	46%	54%	60%	65%	69%	72%	19%	24%	28%	29%	30%	30%	27%	29%	32%	36%	39%	41%
Northern America	70%	74%	74%	75%	79%	82%	38%	41%	40%	41%	43%	45%	32%	33%	34%	34%	36%	38%
South America	51%	60%	68%	75%	79%	84%	24%	28%	32%	34%	35%	38%	27%	31%	36%	41%	44%	46%
Asia	**20%**	**23%**	**26%**	**32%**	**37%**	**43%**	**9%**	**10%**	**12%**	**13%**	**15%**	**17%**	**11%**	**12%**	**15%**	**19%**	**22%**	**26%**
Central Asia	39%	43%	45%	45%	42%	42%	6%	6%	7%	6%	6%	6%	33%	36%	38%	38%	36%	37%
East Asia	20%	23%	26%	33%	40%	48%	11%	12%	13%	14%	18%	22%	9%	11%	13%	19%	22%	27%
South Asia	17%	20%	23%	26%	29%	32%	7%	8%	9%	11%	12%	13%	11%	12%	14%	16%	17%	19%
Southeast Asia	18%	21%	25%	32%	40%	48%	8%	9%	10%	11%	11%	11%	10%	12%	15%	21%	29%	37%
Western Asia	36%	45%	52%	61%	64%	67%	16%	21%	24%	26%	28%	28%	20%	24%	28%	35%	36%	39%
Europe	**57%**	**63%**	**68%**	**71%**	**72%**	**73%**	**14%**	**15%**	**15%**	**16%**	**16%**	**16%**	**43%**	**48%**	**53%**	**55%**	**56%**	**57%**
Eastern Europe -ENC	51%	59%	67%	71%	71%	71%	12%	13%	15%	15%	16%	17%	39%	46%	52%	56%	55%	54%
Eastern Europe - EU	45%	51%	58%	62%	62%	62%	7%	8%	8%	8%	8%	8%	38%	43%	50%	53%	54%	54%
Northern Europe	71%	73%	82%	83%	84%	85%	24%	22%	21%	20%	21%	21%	47%	51%	61%	62%	63%	64%
Southern Europe	52%	59%	63%	65%	66%	69%	15%	19%	20%	19%	20%	20%	37%	40%	44%	45%	46%	49%
Western Europe	68%	71%	73%	74%	75%	77%	14%	14%	14%	14%	14%	15%	54%	57%	59%	60%	61%	62%
Oceania	**67%**	**71%**	**71%**	**71%**	**70%**	**71%**	**38%**	**41%**	**43%**	**42%**	**41%**	**40%**	**29%**	**30%**	**29%**	**29%**	**29%**	**31%**
Australia and New Zealand	80%	85%	85%	85%	87%	89%	48%	51%	54%	54%	55%	54%	33%	33%	31%	31%	32%	35%
Melanesia	9%	15%	18%	20%	19%	19%	0%	0%	0%	0%	0%	0%	9%	15%	18%	20%	19%	19%
Micronesia	27%	35%	41%	48%	52%	52%	0%	0%	0%	0%	0%	0%	27%	35%	41%	48%	52%	52%
Polynesia	26%	32%	35%	37%	36%	38%	0%	0%	0%	0%	0%	0%	26%	32%	35%	37%	36%	38%
World	**33%**	**36%**	**39%**	**43%**	**47%**	**51%**	**13%**	**14%**	**15%**	**16%**	**18%**	**19%**	**20%**	**22%**	**24%**	**27%**	**29%**	**32%**

Table 4b.

		Urban Population						People living in cities with more than 1 million						People living in small and median cities					
		1960	**1970**	**1980**	**1990**	**2000**	**2010**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**
AM	Armenia	51%	60%	66%	68%	65%	64%	29%	31%	34%	33%	36%	36%	23%	29%	32%	34%	29%	28%
AZ	Azerbaijan	48%	50%	53%	54%	51%	52%	26%	25%	26%	24%	22%	22%	22%	25%	27%	29%	29%	30%
BY	Belarus	32%	44%	57%	66%	70%	74%	7%	10%	14%	16%	17%	20%	26%	34%	43%	50%	53%	55%
GE	Georgia	42%	48%	52%	55%	53%	53%	20%	23%	24%	25%	25%	25%	23%	25%	27%	30%	28%	28%
MD	Moldova	23%	32%	40%	47%	45%	41%	0%	0%	0%	0%	0%	0%	23%	32%	40%	47%	45%	41%
UA	Ukraine	47%	55%	62%	67%	67%	68%	8%	10%	12%	12%	13%	14%	39%	45%	50%	54%	54%	54%
Total ENC- East		**44%**	**52%**	**59%**	**64%**	**64%**	**65%**	**10%**	**12%**	**14%**	**15%**	**15%**	**16%**	**34%**	**40%**	**45%**	**49%**	**49%**	**48%**
DZ	Algeria	31%	40%	44%	52%	60%	67%	8%	9%	9%	7%	7%	8%	22%	30%	35%	45%	52%	59%
EG	Egypt	38%	42%	44%	44%	43%	43%	19%	21%	22%	21%	20%	19%	19%	21%	22%	22%	22%	24%
IL	Israel	77%	84%	89%	90%	91%	92%	47%	45%	46%	56%	58%	57%	30%	39%	42%	34%	34%	35%
JO	Jordan	51%	56%	60%	72%	78%	79%	26%	26%	29%	27%	21%	18%	25%	30%	31%	45%	57%	60%
LB	Lebanon	42%	60%	74%	83%	86%	87%	29%	37%	58%	44%	40%	46%	13%	22%	16%	39%	46%	41%
LY	Libya	27%	50%	70%	76%	76%	78%	13%	20%	22%	20%	20%	17%	14%	30%	48%	56%	57%	60%
MA	Morocco	29%	35%	41%	48%	53%	57%	13%	15%	18%	18%	19%	19%	17%	19%	24%	30%	34%	37%
SY	Syria	37%	43%	47%	49%	52%	55%	27%	30%	32%	31%	32%	34%	10%	14%	15%	18%	20%	21%
TN	Tunisia	38%	44%	51%	58%	63%	67%	0%	0%	0%	0%	0%	0%	38%	44%	51%	58%	63%	67%
Total ENC-South		**36%**	**43%**	**47%**	**51%**	**54%**	**56%**	**16%**	**19%**	**20%**	**20%**	**20%**	**20%**	**20%**	**24%**	**27%**	**32%**	**35%**	**37%**
Total ENC		**40%**	**47%**	**52%**	**56%**	**57%**	**59%**	**13%**	**16%**	**18%**	**18%**	**18%**	**19%**	**27%**	**31%**	**34%**	**38%**	**39%**	**40%**
RU	Russia	54%	63%	70%	73%	73%	73%	14%	15%	16%	17%	17%	18%	40%	47%	53%	57%	56%	55%
Total ENC + Russia		**47%**	**54%**	**60%**	**63%**	**63%**	**63%**	**13%**	**15%**	**17%**	**17%**	**18%**	**18%**	**33%**	**39%**	**42%**	**45%**	**45%**	**45%**

Note: Palestinian territory is not considered due to the lack of data

As the main objective of this paper is to analyse the relationship between urbanisation and migration processes I next analyse the correlation between these concepts. Table 5 display the correlation coefficients between migration and urbanisation rates considering the raw data and the information once time and country effects are removed.[5]

Population growth is positively correlated with emigration rates and negatively correlated with immigration rates. The sign and significance persists when the time effect is removed, but disappears country effects are not present. Consequently, the observed correlation is a country-effect: countries with higher population growth are the ones with less emigration and more immigration.

Urbanisation rates are positively correlated with both emigration and immigration rates and again the country effect dominates. More urbanised countries are the ones with higher propensity to migration, and this is particularly true for countries with higher urbanisation rates in small and median cities. Interestingly, the significance of the correlation coefficient only holds when removing time and country effects for the immigration rate for different urbanisation rates, and displaying conflicting signs: the urbanisation rate in cities of more than one million displays a negative sign, while the urbanisation rate in small and medium cities is positively correlated with the immigration rate. In other words: it looks like international immigration is being directed to smaller cities than to bigger cities.

We finally have looked also at the growth in urbanisation rates. The correlations are generally not significant, with the only exception of the urbanisation rate in large cities and the immigration rate: countries with a bigger growth in large cities are the ones experiencing a smaller international immigration rate.

These results are in line of what we found in the previous tables: more developed countries, that are usually the more urbanised ones, are the ones with higher migration rates, particularly the immigration ones. We also see a quick growth in small and median cities all over the world, while in several developed countries the proportion of people in

[5] In order to remove country and time effects I regressed every variables against time and/or country fixed effects. The residuals of every regression are used to compute the new correlations.

large cities remained almost constant. Overall it can be argued that urbanisation is more a pull than a push factor, as it is more correlated with immigration rates.

Table 5. Correlation coefficients between migration and urbanisation rates

	Emigration rate at Origin				Immigration rate at Destination			
	Raw data	Removing time effects	Removing country effects	Removing time and country effects	Raw data	Removing time effects	Removing country effects	Removing time and country effects
Population Growth	-0.1236*	-0.1161*	-0.0437	-0.0246	0.2325*	0.2536*	-0.0675*	-0.0154
Urbanisation rate	0.0945*	0.0859*	0.0336	-0.0119	0.5024*	0.5095*	0.1384*	0.0383
Urbanisation rate - 1 Million	-0.0823*	-0.0865*	0.0265	0.0035	0.2034*	0.1998*	-0.0591*	-0.1406*
Urbanisation rate - Small and median cities	0.1657*	0.1605*	0.0288	-0.0144	0.4122*	0.4129*	0.1830*	0.1138*
Urbanisation Growth rate	-0.0542	-0.0505	-0.0286	-0.0213	-0.0964*	-0.0874*	-0.0963*	-0.0534
Urbanisation rate - 1 Million - Growth rate	-0.038	-0.0373	-0.0019	-0.0002	-0.0817*	-0.0761*	-0.0067	0.0186
Urbanisation rate - Small and median cities - Growth rate	-0.0356	-0.0312	-0.0275	-0.0205	-0.0559	-0.0479	-0.0925*	-0.0612

Note: asterisks indicate statistical significance at 5%.

In order to see if there are different patterns all over the world we have divided the sample into developed and developing regions and we have computed again the correlation coefficients.[6] Table 6 presents these results.

The basic figures are generally similar to the global ones, as can be expected, particularly when we look at the raw data. Consequently, I focus the next analysis in the correlations once country and time effects are removed. Firstly, in more developed countries population growth is significantly correlated with immigration rates. On the contrary, the urbanisation rates are negatively correlated with immigration rates in more developed countries while positively correlated in less developed countries. The main driver of these differences is the urbanisation rate in small and median cities, negatively correlated in more developed countries and positively correlated with immigration in less developed countries ones, for which larger cities display a negative correlation.

[6] In order to classify every country as developed or developing, we have followed the United Nations composition of economic regions, available at http://unstats.un.org/unsd/methods/m49/m49regin.htm#ftnc. Developed countries are the ones included in the following regions: Europe, North America, Japan, Autralia and New Zealand.

How can be interpreted these negative signs? In my view it means that immigration is taking place in countries with higher urbanisation rates (positive and significant coefficients when we look at the raw data) but the *increase* in urbanisation rates is not driven by international immigration. This result is confirmed by the correlations between immigration rates and the growth in urbanisation rates (last three lines in all tables), that are mostly negative or non significant.

Table 6. Correlation coefficients between migration and urbanisation rates, by level of development

	Emigration rate at Origin				Immigration rate at Destination			
More developed countries	Raw data	Removing time effects	Removing country effects	Removing time and country effects	Raw data	Removing time effects	Removing country effects	Removing time and country effects
Population Growth	-0.087	-0.0377	-0.1727*	-0.0759	0.1867*	0.2758*	0.0031	0.2587*
Urbanisation rate	-0.1602*	-0.2072*	0.1749*	0.0653	0.3731*	0.3432*	0.2478*	-0.2070*
Urbanisation rate – 1 Million	-0.3273*	-0.3332*	0.0495	-0.0177	-0.0378	-0.0486	0.1674*	-0.0447
Urbanisation rate - Small and median cities	0.0932	0.0694	0.1771*	0.0749	0.3590*	0.3336*	0.2218*	-0.1905*
Urbanisation Growth rate	0.0308	0.0811	-0.0442	0.0446	-0.0437	0.0053	-0.0757	0.107
Urbanisation rate - 1 Million - Growth rate	-0.019	-0.013	0.0733	0.0926	-0.0538	-0.0346	-0.1265	-0.0494
Urbanisation rate - Small and median cities - Growth rate	0.0393	0.0863	-0.071	0.0113	-0.0241	0.0198	-0.0375	0.1252

	Emigration rate at Origin				Immigration rate at Destination			
Less developed countries	Raw data	Removing time effects	Removing country effects	Removing time and country effects	Raw data	Removing time effects	Removing country effects	Removing time and country effects
Population Growth	-0.1348*	-0.1285*	-0.0393	-0.0231	0.3202*	0.3408*	-0.0768*	-0.0464
Urbanisation rate	0.1148*	0.1079*	0.0281	-0.016	0.5365*	0.5530*	0.1234*	0.0695*
Urbanisation rate – 1 Million	-0.0674*	-0.0716*	0.0262	0.0045	0.2433*	0.2408*	-0.0848*	-0.1518*
Urbanisation rate - Small and median cities	0.1903*	0.1874*	0.0225	-0.0194	0.4336*	0.4423*	0.1783*	0.1545*
Urbanisation Growth rate	-0.0627	-0.0607	-0.0304	-0.0264	-0.0985*	-0.0941*	-0.1025*	-0.0818*
Urbanisation rate – 1 Million - Growth rate	-0.0389	-0.0384	-0.0048	-0.0036	-0.0784*	-0.0743*	0.0077	0.0263
Urbanisation rate - Small and median cities - Growth rate	-0.0425	-0.0402	-0.0272	-0.0235	-0.0573	-0.0543	-0.1043*	-0.0927*

3. THEORETICAL BACKGROUND

While Massey et al (1993) described six theoretical frameworks of the theories on international migration (neoclassical theory, new economics theory, dual labour market theory, world system theory, social capital theory and cumulative causation theory), most economic literature on the topic assumes the basics of the neoclassical theory: migration is caused by geographic differences in the supply of and demand for labour: resulting differential in wages causes workers from the low-wage country (region) to move to the high-wage one.

As stressed by Bertoli and Fernández-Huertas Moraga (2011), and following Hanson (2010), there is a long tradition of “estimating bilateral migration flows as a function of characteristics in the source and destination countries only". Several recent examples of this strategy are Pedersen et al., 2008; Mayda, 2010; Caragliu et al. 2012, and Belot and Ederveen, 2012), and they are not far away of similar models applied to bilateral flows, such as international trade. Nevertheless, since the work of Anderson and van Wincoop (2003) for trade, there is a growing body of literature where the econometric analysis is consistent with a theoretical background. The migration literature has a similar evolution and one can find recent works following by Douglas and Wall (1993), Douglas (1997), Wall (2001), such as Faggian and Royuela (2010). Alternatively other works follow McFadden (1974), such as Grogger and Hanson, (2011), Ortega and Peri, (2009), Beine, et al. (2011) and Bertoli and Fernández-Huertas Moraga (2011). Both approaches assume model of migration choice across multiple locations and derive an estimating equation from the model.

In this work I follow the model presented in Faggian and Royuela (2010), based on the work by Douglas and Wall (1993), Douglas (1997), Wall (2001) and Guimarães et al. (2000, 2003) and I relate it with the theoretical models based in the McFadden’s qualitative choice behaviour’s model.

Wall (2001) and Douglas (1997) developed a theoretical model in which each individual faces the decision whether to move to another location based on the comparison between the utility of the current location (origin) and that of the alternative location (destination). The utility of the *i-th* location for the *k-th* individual can be formally expressed as:

$$U_i^k = u\left(A_i, E_i\right) + \varepsilon_i^k \quad (1)$$

where the total utility U is made of a deterministic part u, 'common' to all individuals (i.e. on which there is 'consensus' among people) and a stochastic part ε_i^k (with expected value equal to zero by assumption) which reflects individual idiosyncratic tastes. The 'common' part u is, in turn, function of a vector of amenities (A_i), a vector of economic variables (E_i).

Let us assume each individual, k, can migrate from location i (origin) to location j (destination). If the individual decides to migrate to j, then we define the variable M_{ij}^k being equal to 1, 0 otherwise. The probability that a randomly selected resident of i migrates to j can be expressed as a function of the difference in utility between the destination and the origin, the moving costs (C_{ij}), and the utility differentials between j and the all the other possible r alternative locations.[7]

$$\Pr\left(M_{ij}^k = 1\right) = F\left(U_j - U_i - C_{ij}, U_j - U_1 - C_{ij} + C_{j1}, \ldots, U_j - U_r - C_{ij} + C_{jr}\right) \quad \text{with } r \neq i \quad (2)$$

By defining Δ_{ji}^k as being equal to the difference in the expected values of the idiosyncratic components associated to two alternative locations for individual k, i.e. $\Delta_{ji}^k = E(\varepsilon_j^k) - E(\varepsilon_i^k)$ and assuming a linear functional form, we can re-write equation (2) as:

$$\Pr\left(M_{ij}^k = 1\right) = \alpha\left(u_j - u_i - C_{ij} + \Delta_{ji}^k\right) + \beta\left(\sum_{r=1}^{R} u_j - u_r - C_{ij} + C_{jr} + \Delta_{jr}^k\right) \quad \text{with } r \neq i \quad (3)$$

The probability of moving from i to j is strictly increasing in the 'common' part of utility of location j and strictly decreasing in the 'common' part of utility associated with location i and moving costs. In equations (2) and (3) it is implicit that if the worst location (say location l) is getting worst, there will increase the probability of moving from i to j, but not because of an increase of utilities in location j, but because j becomes a better

[7] Following Wall (2001) any individual-specific cost of moving is included in the idiosyncratic term.

location compared to the rest. This is what has been called as Multilateral Resistance (see Anderson and van Wincoop, 2003 for trade and Bertoli and Hernández-Huertas Moraga, 2011 for migration), the influence of the attractiveness of other locations in the flows between a given pair of origin-destination.

The estimation of equation (3) is problematic for two reasons. Firstly, it is at an 'individual' level, while many migration statistics are at a more 'aggregate' level (such as municipalities, regions, countries, etc.). And secondly, we need appropriate 'aggregation procedures' across locations belonging to the same country to make results robust and consistent. As there is no information on intra-country location differences, Wall (2001) recognises the need to assume that the basic 'common' part of the utility is similar across all different locations within the same country *j*, so that only individual-specific evaluations (the idiosyncratic part of utility) differ. In our specific case this means that the number of migrants from location *i* belonging to country *A* to location *j* belonging to country *B*, M_{ij}, can be re-written as:

$$E\left(M_{ij}\right)=L_j\sum_{k=1}^{P_i}\Pr\left(M_{ij}^k=1\right) \tag{4}$$

Where L_j accounts for all different locations within the same region *j*, and P_i is the population of the origin *i.* Wall (2001) demonstrates that, if P_i is large enough, equation (4) approaches:

$$E\left(M_{ij}\right)=L_jP_i\Pr\left(M_{ij}^k=1\right) \tag{5}$$

Rearranging the terms this is equivalent to:

$$\Pr\left(M_{ij}^k=1\right)=E\left(\frac{M_{ij}}{L_jP_i}\right)=E\left(m_{ij}\right) \tag{6}$$

where m_{ij} can be interpreted as an index of *"migration opportunities"* that the residents in *i* have across the locations in *j*.

The second problem with estimating equation (3) relates to the fact that it includes all the possible alternative locations (different from the origin and the destination). The first problem is normally solved by using *net* migration flows (see Douglas, 1997 and Wall, 2001) instead of gross migration flows with the assumption that this is an acceptable linear approximation of (3) where β is negligible. Guimarães et al (2000, 2003) propose using a discrete choice model as a starting point instead of the traditional linear OLS. They show that the number of choices in a conditional logit is equal to the number of observations in a Poisson regression, so that, under certain conditions, estimating a model for individuals where every person can migrate to a number of countries is equivalent to estimating a model which simply counts how many people migrate to each country. The second approach is much easier to implement econometrically.

As a Poisson variable is equal to a very big sum of very small probabilities, equation (2) can be re-written as:

$$\Pr\left(Y_{ij} = M_{ij}\right) = F\left(u_j - u_i - C_{ij} + \Delta_{ji}^{k},\ \ldots\ , u_j - u_r - C_{ij} + C_{jr} + \Delta_{jr}^{k}, P_i, L_j \right) = \frac{e^{-M_{ij}} \mu_{ij}^{M_{ij}}}{M_{ij}!} \qquad (7)$$

where Y_{ij} is a random Poisson distributed variable with parameter μ_{ij} defined as:

$$\mu_{ij} = \exp(\eta) = F\left(u_j - u_i - C_{ij}, P_i, L_j \right) \qquad (8)$$

In equation (8), similarly to equation (3), migration flows between *i* and *j* increase with an increase in 'common' utility differentials between destination and origin (in turn dependent upon amenities and economic variables), a decrease in moving costs and an increase in "migration opportunities" (in turn function of the size of the origin and the amount of locations in the country chosen as destination).

One of the main problems of the Poisson distribution is that it assumes the equality between mean and variance (equidispersion) or analytically:

$$\mu_i = \exp(\mathbf{x}_i \beta) = E[y_i \mid \mathbf{x}_i] = Var[y_i \mid \mathbf{x}_i] \qquad (9)$$

where $\mathbf{x}_i$ is the vector of explanatory variables.

This can be a problem as it does not fit most real data. Very often data shows *overdispersion*, i.e. a variance well above the value of the mean. As such, the conventional Poisson mean-variance restriction may produce seriously biased parameter estimates (see Cameron and Trivedi 1998, and Wang *et al.* 1996).

One alternative is to use *mixture models*. These models explicitly model heterogeneity among observations by adding an extra parameter, which is a function of *unobserved* heterogeneity. In other words the mean in Equation (9) is replaced by:

$$\mu_i^* = \exp(\mathbf{x}_i \beta) \exp(\varepsilon_i) \tag{10}$$

The negative binomial model is a specific case of mixture models in which $\exp(\varepsilon_i)$ is supposed to be drawn from a gamma distribution so that the probability density is:

$$\Pr\left(y = M = \mathbf{x}\right) = \frac{\Gamma(y+\alpha^{-1})}{y!\Gamma(\alpha^{-1})}\left[\frac{\alpha^{-1}}{\alpha^{-1}+\mu}\right]^{\alpha^{-1}}\left[\frac{\mu}{\alpha^{-1}+\mu}\right]^{y} \tag{11}$$

where Γ indicates the standard gamma function and α determines the degree of dispersion in the predictions (the larger α, the more spread are the data). If α=0, the binomial negative model reduces to the Poisson regression model.

Another common problem when working with real data is accounting for a large number of observations whose value is zero. Lambert (1992) introduced the idea of 'zero-inflated' count models. These are two-step models. The first step is used to model the probability of belonging to the zero-group vs. the non-zero group (a binary process) while the second step is a traditional count model (either Poisson or negative binomial regression). Formally, the density function becomes (see Cameron and Trivedi, 2005):

$$g(y) = \begin{cases} f_1(0) + (1 - f_1(0)) f_2(0) & \text{if y=0} \\ (1 - f_1(0)) f_2(y) & \text{if y} \geq 1 \end{cases} \tag{12}$$

where $f_1(.)$ is a logit or a probit model and $f_2(.)$ can be either a Poisson or a negative binomial density. This kind of models capture two different processes: one related with the decision to migrate or not (a 0-1 decision, summarised in the logit or probit model), plus another one that summarised the amount of moves (summarised in the Poisson or negative binomial model). It is important to notice that the different variables may influence different processes.

The theoretical approach based on the works of Douglas and Wall is not so far away from other methods based on the McFadden's qualitative choice behaviour's model. Next we follow the model displayed in Bertoli and Fernández-Huertas Moraga (2011). Here the utility that the individual i from country j obtains from migrating to destination k, U_{ijk}, is explained by pair-specific elements, V_{ij}, which we assume that follow a linear function, and by individual specific elements, ε_{ijk}:

$$U_{ijk} = V_{ij} + \varepsilon_{ijk} = x'_{ij}\beta + \varepsilon_{ijk} \qquad (13)$$

Assuming that the error term follows a Generalized Extreme Value distribution, the probability that that individual i will opt for destination k among all possible destinations is given by:

$$p_{ijk} = \frac{e^{V_{jk}/\tau_{d(j,k)}}}{e^{(1-\tau_{d(j,k)})IV[d(j,k)]}}\left[\sum_{d_j} e^{\tau_{dj}IV[dj]}\right]^{-1} \qquad (14)$$

Where IV is the inclusive value, the log of the sum of the deterministic component of utility over all locations. The ratio of the probability of migrating from i to k, p_{ijk}, over the probability of opting for the origin country j, p_{ijj}, is given by:

$$\frac{p_{ijk}}{p_{ijj}} = \frac{e^{V_{jk}/\tau_{d(j,k)}}}{e^{(1-\tau_{d(j,k)})IV[d(j,k)]}}\frac{e^{(1-\tau_{d(j,j)})IV[d(j,j)]}}{e^{V_{jj}/\tau_{d(j,j)}}} \qquad (15)$$

This ratio depends on the deterministic component of utility in location j and k, and on the deterministic components of utility in all locations. Taking logs of and using the definition of the inclusive value, one gets:

$$ln\left(\frac{p_{ijk}}{p_{ijj}}\right) = \left(\frac{x_{jk}}{\tau_{d(j,k)}} - x_{jj}\right)' \beta - \left(1 - \tau_{d(j,k)}\right) ln\left(\sum_l e^{V_{lk}/\tau_{d(l,k)}}\right) \quad (16)$$

Finally, as the individual migration decisions are observed over a set T of periods; the log of the scale of migration flows to country k at time t over the size of the population which opts for the origin country j, y_{jkt}, can be derived by averaging over the set of individuals i:

$$y_{ijk} = \left(\frac{x_{jk}}{\tau_{d(j,k)}} - x_{jj}\right)' \beta + r_{jkt} + \eta_{jkt} \quad (17)$$

In this model are present the elements that typically characterise the gravitational model. The size of the origin countries is present as the endogenous variable is the log of the share of emigrants over total population. Consequently, when working with the amount of migrants, population size would present in the right hand side of the equation, with elasticity equal to one. The size of the destination country, that we found in the model based on the works of Douglas and Wall, is not explicitly displayed, although can be included in the predetermined elements of the equation, x. Equally, the distance between countries can be included in such group of country characteristics.

Another element in the proposed equation is the multilateral resistance to migration, r_{jkt}. As it has been controlled in several papers through a fixed effect, we notice that including country-specific fixed effects would capture also the size of the countries and migration costs specific to every country (Ortega and Peri, 2009), plus demographic factors and migrant networks (Bertolli and Hernández-Huertas Moraga, 2011). Consequently, the inclusion of a particular structure of fixed effects will be an important issue for dealing with heterogeneity, as it may reduce substantially the variability in the data that would be exploited.[8]

Additional econometric issues arise when estimating the empirical model that follows the random utility maximization that ends in a log-normal formulation. Flowerdew and Aitkin (1982) pointed to several problems: the bias created by the logarithmic transformation, the failure of the assumption that all error terms have equal variance, and the sensitivity of research results to zero-valued flows. Several alternatives are being used in the literature to overcome these problems, such as the Poisson (Santos Silva and Tenreyro, 2006), the Negative Binomial and the Zero-Inflated versions of both of them (Burger et al 2009).

A key issue in the estimation of the empirical model is the treatment of heterogeneity. As Santos Silva and Tenreyro (2006) argue, the pattern of heterokedasticty can affect not just the efficiency of the estimator but also its consistency, because of the nonlinear transformation of the endogenous variable. Additionally Cheng and Wall (2005) show that the treatment of heterogeneity using paired-fixed effects factors can alter gravity model estimates and that alternative fixed-effects models are special cases of the general model not supported statistically and inducing biased estimates for the parameters of the control variables. The use of paired-fixed effects is also the strategy followed by Ortega and Peri (2009) to control for multilateral resistance to migration, while Bertoli and Hernández-Huertas Moraga (2011) expands the multilateral resistance measurement and do not consider pair-specific dummies, as they focus in a single country, Spain. All these works include an origin country-time fixed effect which captures any economic, demographic and cost determinant of migration out of the origin country (Ortega and Peri, 2009). Cheng and Wall (2005) include global time times and interpret them as indicators of the extent of 'globalization', as a common trend toward greater flows volumes independent of the size of the economies.

Overall, introducing this complex structure of fixed effects allows to control for the determinants of migration which evolve at a pace of that is slower than the frequency of the panel data, and of course it is a measure of our ignorance, as we do not know exactly

[8] Other works, such as Ruiz and Villarubia (2007) perform a gravitational model controlling multilateral resistance by including both country origin and country destination time dummies, what result in 2*N*T dummies to be included in the model.

which variables are responsible for a potential heterogeneity bias. Nevertheless, in a massive data set as the one considered here, the amount of dummy variables expands exponentially and, as we will see below, we may face a virtually computationally unfeasible problem.

4. EMPIRICAL MODEL

The first step to operationalise the theoretical framework into a workable empirical model is to specify the 'common' part of the utility function. This implies both identifying push and pull factors together with costs. Regarding the explanatory variables, we face a typical problem in applied economics: to instrumentalise the generic economic concepts included in the predetermined component of the utility function.

Among all papers analysed in the literature review of migration, the utility that an individual expects to obtain thanks to migrating is usually based in the actual income differences (GDP per capita, income per capita, income per worker, activity rate, and unemployment rate), demographic and education differences between countries, and even social aspects, such as inequality, poverty or civil rights and democratic variables. Many of them are pull factors, while others can be considered as a measurement of distance between countries. In introduction of physical distance has been complemented in recent works with cultural distances and even with financial distances.

Individuals may only look for a monetary result of their investment in migration, although many other factors may play a role as well. If these additional factors influence subsequently economic growth, a model with just GDP per capita as an explanatory variable would be the reduced form of a wider structural model in which all factors matter. Alternatively one could skip the use of GDP per capita and try with a bunch of development explanatory factors. The economic growth literature has vastly analysed dozens of alternative variables partially correlated with the long-term rate of economic growth. Sala-i-Martin et al. (2004), using Bayesian Averaging of Classical Estimates, found that of 67 explanatory variables tested, 18 were significantly and robustly partially correlated with long-term growth, although just five different concepts are usually enough to capture the main determinants of the concept under study: initial levels of per capita

GDP -the neoclassical idea of conditional convergence- and variables for natural resource endowments, physical and human capital accumulation, macroeconomic stability, and productive specialization.

As stressed above, many papers estimate bilateral migration flows as a function of characteristics in the source and destination countries. Other works, more theoretically grounded, include a shorter list of variables, although in our view it is really hard to short the list. For example, Ortega and Peri (2009) include income per capita, but they also try the use of income in logarithms, decompose income per worker and the employment rate, and even include several controls such as population size, inequality and demographic variables.

As the aim of this paper is to relate urbanisation with international migration flows, next we devote a particular emphasis to the analysis of urbanisation as an explanatory variable in international migration processes. Urbanization, industrialization and economic development tend to be parallel processes. Theory and evidence point towards a positive effect of agglomeration on economic growth. “Due to localized spillovers, geographical agglomeration fosters growth” (Dupont 2007). Adopting various measures of urbanization, some studies empirically report a growth-enhancing effect on countries’ income in the long run (Henderson 2003; Brülhart and Sbergami 2009). Additionally the degree of urban concentration may be more important than urbanization per se; the growth-enhancing effects of urbanization, related to scale and agglomeration economies, and particularly in developing countries, are significant for large urban agglomerations but not for small ones (Duranton and Puga 2004; Rosenthal and Strange 2004; Bertinelli and Strobl 2007).

Of course, urbanisation may be the result of a push rather than a pull process, due to violence and social conflict, natural catastrophes or a lack of opportunities. When urbanization takes place as a result of the forced displacement of people from the rural areas it usually takes place in a non-planned way and is, therefore, more likely to delay economic growth. Bloom et al. (2008) compare industrialization-driven urbanization in Asia (considered as likely to enhance economic growth) with urbanization due to population pressure and conflict in Africa, which is more than likely to be detrimental for growth. In Latin America, the absence of proper urban planning is also evident in certain countries (Angotti, 1996).

Thus, if urbanisation is expected to promote economic growth, it is likely to be associated with higher opportunities and larger migration flows. In this line, the influence of the urbanisation rate in international migrations has been analysed previously in the literature (Kim and Cohen, 2010). Neumayer (2005) suggests that people living in cities in the origin country are likely to be better informed than rural inhabitants. Martin (2003) argues that migrants go to cities in developing countries to get visas or make arrangements for legal or illegal migration. In the destination country, large and growing urban areas indicate better job opportunities and higher salaries. The world system theory, one of the Massey et al (1993) theoretical frameworks on international migration, supports the idea of expanding global cities concentrating educated and well paid workforce that demands unskilled workers, usually coming from international migration. This idea can be expanded from global cities (New York, London, etc.) to the gateway cities: in many countries there are a small number of traditional gateway cities, which are usually the largest metropolitan areas (Burghardt, 1971, Johnston 1982, Frey, 1996, etc.). Consequently, large and increasing urban areas are expected to be associated with international migration. Nevertheless, size is not all: Frey (2002) has referred to a secondary migration process where immigrants move from the gateway cities to the "domestic migration magnet" cities in the United States. This is in line with recent OECD results, stressing that median and small agglomerations enjoy strong levels of development. Several OECD reports (2009 a, b, and c) highlight the idea that growth opportunities are both significant in big urban areas as well as in smaller more peripheral agglomerations. In this line, some authors have recently highlighted that economic growth does not need to depend exclusively on increasing urban concentration: "mega-urban regions are not the only possible growth pattern... context and institutions do matter when we consider economic geography" (Barca et al. 2012).

Finally, as stressed by Rodríguez-Pose and Ketterer (2012) "economic and noneconomic territorial features have been found to be essential elements determining utility differentials, and hence migration incentives of potential movers, across different territories" (p. 536). If amenities such as climate have been found important in the literature (Florida, 2002; Partridge and Rickman, 2003, 2006 in the US and Chesire and

Magrini, 2006 and Rodríguez-Pose and Ketterer, 2012 for Europe), a large amount of man-made amenities are efficiently provided in cities and consequently urbanisations does not only provide higher wages but also more opportunities, in line with Sen's concept of capabilities. Sen (1987) claims that the selection of indicators should consider two issues: the actual outcome of peoples' decisions, and their capabilities, the opportunities they have, and in our view they are wider in cities than in rural areas.

Overall, I will consider a double strategy to explain the observed international migration between countries at every point in time, m_{jkt}.

1) We will consider a los linear function following Ortega and Peri (2009), but in our case we will include two sets of fixed effects (the size of our ignorance): paired origin and destination country fixed effects (as in Bertoli and Hernández-Huertas Moraga, 2011), and origin country-time fixed effects.[9] Once we account for any origin specific cost of migration plus multilateral resistance aspects and permanent distance effects, we include in the vector of deterministic components of utility of the destination country the GDP per capita (the variable usually posed in international migration) and urbanisation (the one that focuses the main attention here). These estimates will be performed both for the full data set and for the migration matrix between the EU27 and the ENC countries + Russia.

2) The second alternative will be to consider a model following Faggian and Royuela (2010) in which I estimate consider a set of non-linear models. In this case I do not include a vast amount of fixed effects, as it becomes a computationally unfeasible problem, and consequently I estimate a typical gravitational model with control variables for both origin and destination countries. Finally I restrict the sample to the migration matrix between the EU27 and the ENC countries + Russia and I run the model following the Ortega and Peri (2009) specification using Poisson and Negative Binomial regressions.

[9] This set of fixed effects represents dozens of thousands dummy variables: NxN plus NxT.

5. DATA AND ESTIMATION RESULTS

The dependent variable is the stock of migrants between every pair of each of the 197 considered countries at every given year (every decade from 1960 to 2010).[10] As the variable mainly represents the flows between neighbouring or big countries and also very distant and small countries, we can expect a very large amount of flows between countries equal to zero.

Table 7 displays the main features of the dependent variable of our model. We can see how in almost all considered years 50% of the observations hold a value equal to zero, being the variable extremely skewed to the right. We can also see several extreme values, such as the 11.6 million Mexican migrants living in USA in 2010. As expected, this particular framework will force us to work with a probability model beyond a simple Poisson regression as, for instance, the variance is much larger than the mean. Besides, if we remove the zeros from the data base the variance of the resulting variable has a standard deviation ten times larger than the mean. Consequently we are likely to be working with a zero inflated negative binomial model, although we will try to test that hypothesis later on.

Table 7. Migration flows descriptive statistics

	1960	1970	1980	1990	2000	2010
25%	0	0	0	0	0	0
50%	0	0	0	0	1	0
75%	6	9	13	23	39	1
90%	153	232	323	497	822	709
95%	924	1320	1968	2929	4448	5624
99%	23394	29796	39985	52226	65444	98270
Largest	8662538	8141307	4803152	5211922	9367910	11635995
Observations	38612	38612	38612	38612	38612	34888
Mean	2335.6	2655.5	3007.1	3548.4	4118.7	5407.1
Std. Dev.	66737.7	64817.97	59515.93	63774.57	72785.31	88368.5
Skewness	88.44	78.00	52.58	51.78	71.93	76.58
Kurtosis	9805.53	8037.65	3433.78	3428.72	7762.56	8945.26

Source: MIGW_SEARCH dataset

[10] As expressed by Ortega and Peri (2009), the theoretical model can be interpreted as determining the relationship for stocks of migrants, or the analogous flows. Finally, they also use stocks rather than flows.

This result differs of what we observe for the migration flows from the ENC countries + Russia towards the EU27 countries (see table 7). Now the proportion of zeros is much smaller than before, and consequently it is likely that the mixed models will not be necessary.

Table 7b. Migration flows descriptive statistics. ENC+Russia towards EU27

	1960	1970	1980	1990	2000	2010
10%	0	0	0	0	6	0
25%	1	2	4	14.5	70	71.4436
50%	27.5	40	81.5	187	445	563.5431
75%	423.5	481	799.5	2061	2682	4338.763
90%	3290	4013	7386	11517	15422	24430.77
95%	15132	26498	28155	50126	53535	61358.4
99%	286209	297315	348740	384423	286498	332950.2
Largest	1177694	1493990	1424707	1375771	1057135	913793.9
Observations	432	432	432	432	432	432
Mean	10418.96	12938.33	13504.44	16422.48	14737.72	17470.37
Std. Dev.	72642.56	94316.27	88348.62	95442.04	78584.72	81166.92
Skewness	11.89035	12.20322	11.66869	10.15339	10.36596	8.343577
Kurtosis	170.7755	172.245	165.9878	123.204	126.8668	81.03178

Finally, when working with the log linear model we will add 1 to every migration stock before computing the natural logarithms, as in Ortega and Peri (2009).

Tables 8 and 8b display the results for the log linear models in which we have included subsequently no fixed effect (model 1), origin-time fixed effects (model 2) country-pair fixed effects (model 3) and finally both origin-time fixed and country-pair fixed effects (model 4). The final model considers more than forty thousand dummy variables. Following Ortega and Peri (2009) the estimates have been weighted by the destination country population to account for heterokedasticity, but we have not been able to compute the standard errors clustered by destination countries to control for correlation within those, due to computational issues. We display the estimates considering different rates of urbanisation: total, urbanisation rate in large cities (more than 1 million) and in medan and small cities (below 1 million).

The results confirm the theoretical expectations: GDP per capita matters for migration, both in logs and in levels. The results can be compared to that of Ortega and Peri (2009).

There, for a subset of 14 OECD receiving countries they obtain an elasticity of income in logarithms equal to 0.29, while our estimates is 0.36, once we account for country-pair fixed effects (Ortega and Peri consider origin country-period fixed effects and destination country fixed effects, and include a list of distance variables as controls, such as physical distance, land border, colonial ties and sharing a language). Consequently, for our data set we obtain significantly larger results than they. It is important to notice that once the full structure of fixed effects is included the net effect of GDP per capita shrinks from 1.16 to 0.36. Additionally, when we include subsequently origin country-time fixed effects and country-pair fixed effects we see that the elasticity has still large values. It implies in my view that the short run fixed effect, obtained in the model with fixed effects, is small compared with the long run structural effect.

When looking at urbanisation rates we see a complex structure. On one side we see that in model 4 (including the full fixed effects structure) urbanisation rates are non significant (model with GDP pc in logs) or significant (GDP pc in levels). Additionally, in intermediate models (particularly in model 3) the effect is negative. I interpret this result in the following terms. Model 3 controls for permanent differences between origin and destination countries, but not for the changing conditions at the origin country. Consequently the negative result in model 3 implies that migration an urbanization at destination are taking place at an inverse rhythm. This is not surprising, as developing countries both expulse people to richer countries and increase their urbanisation rates, as we have seen in previous sections.

What is more striking is the fact that the proportion of people living in large cities (more than 1 million) displays negative elasticity with migration in model 4. This result confirms a previous finding (tables 5 and 6), and contrasts with the significantly positive parameter for median and small cities. Again, we have to consider the global trends: in developed countries the *increase* in urbanisation have been particularly strong in small and median cities, while the proportion of people in large cities have been stagnated (Western Europe) or even decreased (Northern Europe). Inversely, large cities have experienced a large increase in countries that are not receiving immigration, such as African countries. Overall, urbanisation and urban concentration are not being synonymous. On the contrary: migrants go to prosperous countries offering not only higher wages but also more and better services and opportunities, but they are offered more spatially balanced over time.

At the same time, large cities in developing countries are not playing the right role as services providers, probably due to congestion and disordered urban growth.

Table 8b displays the results for migration from ENC countries to EU27 countries. The results confirm the importance of income as the key pull factor and shows a large differential compared with the elasticity observed in table 8: 2.77 in the model with the global urbanisation rate, 1.48 when considering the model with urbanisation in large cities, and 2.56 in the model with urbanisation in median and small cities. Cleary the increasing GDP per capita differential together with the proximity between the EU and the ENC countries has driven large migration flows compared with the full international sample.

Contrary to what is observed in table 8, migration flows from ENC countries + Russia are driven to countries in which the urbanisation rate in large cities has increased more, particularly in Southern Europe (see table 4 for the urbanisation rates and tables 2b and 3b for the destination flows from ENC countries). On the contrary, the urbanisation rate in small and median cities display non-significant parameters, what contrasts with the results of the full sample. Consequently, the arguments displayed for the full sample change for the ENC countries. Now people have migrated to countries where has increased more spatial concentration and income, countries where opportunities happen in large cities rather than on small and medium cities. For checking robustness, I have run several regressions for a restricted sample in which the last year migration data (2010) is not included. In this case the regressions (not reported here) weight more the observations before the political change of communism and, as one could expect, migration happened between countries belonging to the same 'side' of Europe and consequently, as one could expect, the parameter for GDP per capita arises as negative rather than the positive value that theory would predict.

Table 8. Log-linear regression estimates. Full sample of countries

	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	GDP pc in logs				*GDP pc in levels*			
GDP pc	1.164***	1.107***	0.525***	0.363***	0.000178***	0.000177***	0.000119***	0.000172***
	0,0129	0,0109	0,0175	0,0205	1,41E-06	1,17E-06	1,67E-06	1,58E-06
Urbanisation rate	-0.0310***	-0.0203***	-0.0302***	-0,00014	0.00458***	0.0115***	-0.0235***	0.0260***
	0,000962	0,000826	0,00109	0,00121	0,000511	0,000439	0,000773	0,00117
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	134260	134260	134260	134260	134260	134260	134260	134260
Adj R2	0,153	0,405	0,841	0,877	0,197	0,453	0,847	0,89
	GDP pc in logs				*GDP pc in levels*			
GDP pc	0.771***	0.867***	0.380***	0.362***	0.000187***	0.000196***	0.000122***	0.000165***
	0,00819	0,00709	0,0146	0,0205	1,40E-06	1,17E-06	1,67E-06	1,56E-06
Urb. - 1 Million	0.00218**	-0,000872	-0.0600***	-0.0133***	0,000208	0.00231***	-0.0727***	-0.0150***
	0,0011	0,000931	0,00237	0,00234	0,000915	0,000761	0,00203	0,00221
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	134260	134260	134260	134260	134260	134260	134260	134260
Adj R2	0,147	0,403	0,841	0,877	0,197	0,451	0,848	0,89
GDP pc	0.948***	0.957***	0.433***	0.357***	0.000181***	0.000185***	0.000113***	0.000179***
	0,00754	0,00636	0,017	0,0206	0,00000116	9,64E-07	0,00000164	0,0000016
Urb.Median & Small	-0.0252***	-0.0154***	-0.0316***	0.00556***	0.00693***	0.0168***	-0.0239***	0.0498***
	0,000846	0,000733	0,00146	0,00154	0,000633	0,00055	0,00105	0,00149
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	134260	134260	134260	134260	134260	134260	134260	134260
Adj R2	0,153	0,405	0,84	0,877	0,197	0,454	0,847	0,891

Table 8b. Log-linear regression estimates. ENC-EU27 countries

	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	GDP pc in logs				*GDP pc in levels*			
GDP pc	1.725***	1.688***	2.402***	2.767***	0.000183***	0.000179***	0.000163***	7.78e-05**
	(0.130)	(0.111)	(0.220)	(0.517)	(1.41e-05)	(1.32e-05)	(1.41e-05)	(3.05e-05)
Urbanisation rate	0.0113	0.0137*	0.0153	0.0674***	0.0105	0.0154**	0.0419***	0.0653***
	(0.00884)	(0.00750)	(0.0180)	(0.0196)	(0.00897)	(0.00781)	(0.0157)	(0.0199)
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568
Adj R2	0.176	0.444	0.817	0.847	0.172	0.429	0.819	0.844
	GDP pc in logs				*GDP pc in levels*			
GDP pc	2.007***	2.021***	2.404***	1.480***	0.000202***	0.000211***	0.000187***	0.000128***
	(0.102)	(0.0902)	(0.139)	(0.520)	(1.08e-05)	(1.03e-05)	(9.81e-06)	(2.97e-05)
Urb. - 1 Million	-0.0642***	-0.0622***	0.216***	0.337***	-0.0462***	-0.0486***	0.341***	0.406***
	(0.00910)	(0.00781)	(0.0414)	(0.0408)	(0.00901)	(0.00785)	(0.0397)	(0.0402)
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568
Adj R2	0.200	0.465	0.821	0.854	0.185	0.442	0.829	0.856
	GDP pc in logs				*GDP pc in levels*			
GDP pc	1.585***	1.596***	2.746***	2.561***	0.000168***	0.000170***	0.000195***	6.03e-05**
	(0.108)	(0.0923)	(0.205)	(0.529)	(1.20e-05)	(1.10e-05)	(1.44e-05)	(3.03e-05)
Urb.Median & Small	0.0373***	0.0378***	-0.0223	-0.00581	0.0310***	0.0343***	-0.00910	-0.0236
	(0.00639)	(0.00548)	(0.0172)	(0.0191)	(0.00666)	(0.00573)	(0.0163)	(0.0189)
Origin-time FE	NO	YES	NO	YES	NO	YES	NO	YES
Origin-destination FE	NO	NO	YES	YES	NO	NO	YES	YES
Sample size	1,568	1,568	1,568	1,568	1,568	1,568	1,568	1,568
Adj R2	0.192	0.460	0.817	0.845	0.183	0.441	0.818	0.842

The non-linear models (Poisson, Negative Binomial , etc.) deserve another approach, as it is not feasible to perform the estimates for such a large amount of fixed effects. Consequently I have followed a different strategy, consisting on using the characteristics in origin and destination countries as variables to be controlled for. We subsequently analyse the role of urbanisation in every regression once we look at the best option between all non-lineal models considered.

In the more complex models (mixed model), there is a first part modelling the decision to migrate or not (a 0-1 decision, summarised in the logit or probit model), plus another one that summarises the amount of moves (summarised in the Poisson or negative binomial model). In the logit (or probit) model we just include the variables usually included in the gravitational model: population at origin and destination, plus the distance between them.

In the count model we include traditional variables regarding every alternative concept. It is important to notice that not all variables have the same amount of observations. Consequently, every enlargement of the model with additional variables will result in a decrease in the data set, what will decrease the sample in the least developed countries, as the data availability for them is much smaller. Consequently, we expect that as we enrich the variable setting of our model specification we will have a smaller amount of observations and also a smaller amount of zeros, what will drive us to potentially use simpler models other than the zero inflated negative binomial ones.

Thus, I first propose a model in which I include the basic variables of the gravitational model plus several others such as the ones related with colonial relationship between countries. The results, reported in table 9, support the basic grounds of the gravitational model: large population increase the probability of migration and the amount of migrants, longer distances decrease the endogenous variables, and sharing a border or having historical ties increase the amount of moves between countries, although having a common colonial ties display conflicting results in the models. I have included year dummies in all count and inflation models and they were always significant. The amount of observations is significantly large: for the inflated models we face 225,615 observations, being the preferred specification the Zero Inflated Negative Binomial model.

Table 9. Regression results. Basic gravitational non-linear models.

	Poisson	Negative Binomial	Zero Inflated Poisson	Zero Inflated Negative Binomial
Count model				
pop_o	2.213e-09***	1.858e-08***	1.945e-09***	8.878e-09***
pop_d	2.231e-09***	1.831e-08***	2.065e-09***	1.283e-08***
contig	2.1602479***	3.0467779***	2.0517807***	2.8425224***
dist	-.00017588***	-.00014436***	-.00011159***	-.00011611***
comlang_ethno	.85136764***	.81966966***	.69269163***	.68152661***
colony	1.5827023***	3.5973908***	1.3893715***	3.3870441***
comcol	.18687581***	-.30182673***	.19505248***	-0.00405855
col45	1.3404284***	-1.1043588***	1.1632356***	-.83037746***
smctry	.45452297***	.75947663***	.39096277***	.37607558***
Year dummies	YES	YES	YES	YES
_cons	7.8552433***	6.1012994***	8.2670053***	6.7027951***
Lnalpha (NB)		2.8843946***		2.4925929***
Zero Inflated Model				
Year dummies			YES	YES
pop_o			-6.285e-09***	-2.727e-07***
pop_d			-2.677e-09***	-7.624e-08***
distw			.00013115***	.00020783***
_cons			-.36430325***	-.74539772***
Observations	227948	227948	225615	225615
Zeros			132516	132516
Log Likelihood	-1.93E+09	-751369.21	-1.66E+09	-734520.35
Chi-squared (p-value)	3.45E+09 (0.000)	41924.3 (0.000)	2.55E+09 (0.000)	35670.2 (0.000)
AIC	3.86E+09	1502766.4	3.32E+09	1469086.7
Voung test (p-value)			447.42 (0.000)	56.71 (0.000)

Note: the null hypothesis under the Vuong test considers the more parsimonious model.
Legend: * p<.05; ** p<.01; *** p<.001

The following model specifications include sequentially variables related with all concepts listed above: economic, institutional, demographic and urbanisation. We always consider the Zero Inflated Negative Binomial model as the standard model in these new estimates. Table 10 display the main results. First of all it can be seen that the sample size of every estimate differ substantially basically due to the amount of information on every considered variable.

Regarding the economic variables we see in all estimates that GDP per capita at the destination country matters. Interestingly, the GDP per capita at the origin country displays a significantly positive parameter in two out of the three estimates where it is included. Rather than interpreting this result as contrary to the intuition (according to the neoclassical theory one should expect a negative sign), it means that people in more developed countries display a higher propensity to migration. The same result can be obtained for other economic variables, such as telephone lines per capita. This variable displays a negative parameter in the full specification, what I interpret as decreasing propensity to migrate as countries get richer.

Table 10. Gravitational models. Zero Inflated Negative Binomial Regressions

	Economic variables			Institutional	Demographic	Urbanisation	All variables
	(a)	(b)	(c)				
Count model							
pop_o	9.901e-09***	8.802e-09***	1.045e-08***	8.669e-09***	7.753e-09***	8.602e-09***	5.442e-09***
pop_d	6.812e-09***	1.182e-08***	6.681e-09***	1.505e-09***	1.131e-08***	1.072e-08***	2.472e-09***
contig	3.3509874***	2.6621882***	3.2831053***	3.3133917***	3.712183***	3.5644716***	3.5054234***
dist	-.00021148***	-.00012406***	-.00020197***	-.00019814***	-.00019381***	-.00022128***	-.00022665***
comlang_et~o	.63805573***	1.0996006***	.94508094***	1.0503358***	1.2947561***	.70916256***	.78463617***
colony	3.0371457***	2.5912563***	2.3988538***	2.8910996***	2.4066868***	2.9421941***	2.366422***
comcol	.96803943***	-.39209972***	.81155436***	.35954577***	.83242768***	.70050621***	.76651573***
col45	-0.18277009	-0.0845153	.65753666***	-.93976265***	0.12401405	-0.01772885	0.14560993
smctry	.73118121***	.6105464***	.81845719***	.64089519***	.61378256***	.86328202***	1.0318595***
gdppc_o	-9.895e-06***		8.202e-06**				.00004702***
gdppc_d	.00011567***		.00011693***				.00007732***
teleph_pc_o	.02866039***		.02200012***				-.01937779***
teleph_pc_d	.02267522***		.0236858***				-.00806678***
agr_land_o		.02379365***	.01560558***				.00883773***
agr_land_d		.00713965***	.01700718***				.0093277***
food_PI_o		.0026246***	0.00047947				-.00156916***
food_PI_d		-.00185894***	-.00328656***				-.00384519***
van_index_o				.0357459***			.01145639***
van_index_d				.04611051***			.01093526***
migstock_o				7.486e-08***			7.357e-08***
migstock_d				7.486e-07***			3.641e-07***
female_o					.1597438***		.20871605***
female_d					-.4978674***		-0.00176602
pop_0_14_o					-.05407122***		-.06185713***
pop_0_14_d					-.01444706***		-0.0044469
pop_m65_o					.0227792***		-.09152535***
pop_m65_d					.27838161***		-.04187864***
pop_urb_p_o						.00941566***	.00378722***
pop_urb_p_d						.05908297***	.0343219***
_cons	6.5833118***	5.2968484***	5.2032734***	5.8273727***	24.58067***	4.1425574***	-2.610983***
Year dummies	YES	YES	YES	YES	YES	YES	YES
Inflated model							
pop_o	-2.049e-07***	-1.990e-07***	-1.843e-07***	-1.443e-07***	-2.345e-07***	-2.727e-07***	-9.306e-08***
pop_d	-1.305e-07***	-6.605e-08***	-8.238e-08***	-2.125e-07***	-1.928e-07***	-1.311e-07***	-5.968e-08***
distw	.00019032***	.00020719***	.00018978***	.00019411***	.00017739***	.0001964***	.00015982***
_cons	-1.2107659***	-1.1566947***	-1.284593***	-1.8277002***	-.48118769***	-.52073944***	-2.0680414***
Year dummies	YES	YES	YES	YES	YES	YES	YES
lnalpha	2.2727007***	2.3910955***	2.213378***	2.2032637***	2.3248522***	2.362852***	2.0064702***
Observations	119928	178734	111956	132120	190814	223488	87712
Zeros	61986	99226	57166	66355	103540	130740	41513
% zeros	52%	56%	51%	50%	54%	58%	47%
Log Likelihood	-459092.74	-626579.46	-433388.21	-512831.87	-678713.62	-720091.67	-364326.22
Chi-squared (p-value)	35634.964	32760.367	36683.627	46100.428	57049.923	59066.643	39688.299
AIC	918239.47	1253212.9	866838.42	1025717.7	1357485.2	1440233.3	728738.43
Voung test (p-value)	35.49 (0.00)	54.46 (0.00)	36.93 (0.00)	42.61 (0.00)	47.74 (0.00)	54.91 (0.00)	45.88 (0.00)

We have included a list of variables related with the agriculture sector. These two variables (Agricultural land as a proportion land area and a Food production index) capture the sectoral composition of the country and in particular the productivity of the agriculture sector, that can be linked to the rural-urban transformation of developing countries. Overall we see that higher agricultural weight in every country economy diminishes the propensity to migration.

Institutional aspects such as the Van Hanen Index of Democratization and the initial stock of migrants matters. Overall we see again that more developed countries (usually related with higher levels of democracy) display higher migration outcomes, and that having social networks at the other country strongly influence higher levels of migration.

Regarding demographic issues we see that countries with higher proportion of women show higher emigration rates and receive fewer immigrants, while countries with younger population exhibit less migrations. Again these variables are related with development, as more developed countries are usually characterised by higher proportions of people over 65 years old and a more balanced proportion between genders.[11]

Finally, the variables related with urbanisation display positive results. As developed countries are the more urbanised ones, this result suggests again that migration levels are higher in more developed countries. The parameter of the destination country is about 7 times larger than the parameter of the origin country. It means that more urbanised countries display higher proportion of immigrants than what they expulse. Interestingly this asymmetry, typical in migration gravitational models, is much larger than the one observed between origin and destination GDP per capita and to any other variable.

In the last exercise we do the same regressions and include the growth of urban population and also the proportion of people living in large (more than one million inhabitants) and medium sized cities. Table 11 displays the basic results of the full model (see last column in table 10) but only focused in the variables concerned with urban issues. Next I list the basic findings:

- Urban growth matters, particularly at home: people prefer migrate from own rural to own urban rather than migrating away
- Again, it is related with development, as less developed countries have increased more their urban level.
- Large cities have a stronger influence than median cities (gateway cities)

[11] Interestingly, the linear correlation between per capita GDP and the proportion of women is negatively significant (-0.16).

Table 11. Results for urbanisation variables

	(a)	(b)	(c)	(d)
pop_urb_p_o	.00402653***	.02865663***		
pop_urb_p_d	.03086862***	.03871773***		
urban_1M_p_o			.00846658*	.00774332
urban_1M_p_d			.03855981***	.03651132***
urban_me p_o			.00525746	.00723197
urban_me p_d			.02852118***	.02635642***
pop_g_urban o		-.26673529***		-.22947129***
pop_g_urban d		-.07567707**		-.12660148***
Observations	70228	13182	6987	6987

The final set of regressions considers the restricted sample of international migration from ENC countries + Russia to EU27. I work with the Ortega and Peri (2009) specification, in which I include origin country-time fixed effects (NxT dummy variables) plus destination-country fixed effects (N dummy variables). In this case the Vuong tests cannot reject the null hypothesis (only 10% of the observations are zero) and consequently we estimate the negative binomial models, as they show, again, a superior behaviour than the Poisson model. As in Ortega and Peri (2009), in order to account for fixed migration costs between countries, I include distance variables. After considering a wide set of variables, I have included the weighted distance between countries plus a dummy variable for contiguity between countries.

Table 12 displays the main results. We can see there how GDP pc is not a pull factor in these models, while regarding urbanisation rates the only indicator is the urbanisation rate in large cities (larger than 1 million). Again, it is confirmed the fact that international migration from ENC countries + Russia towards EU27 countries have been directed towards countries where large cities have experienced higher increases. This result confirms what was found for the full set of countries, with the main difference that now the set of dummy variables largely controls for the origin country circumstances

Table 12. Negative binomial regression models.

Migration flows from ENC countries +Russia to EU27

	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	GDP pc in logs			GDP pc in levels		
GDP pc	-0.0837	-0.29	-0.0475	7.72E-05	9.20E-05	8.46E-05
	(0.817)	(0.866)	(0.883)	(0.0000951)	(0.0000947)	(0.000098)
Urbanisation rate	0.084			0.0772		
	(0.0528)			(0.0536)		
Urbanisation 1 Million		0.203***			0.210***	
		(0.0734)			(0.0715)	
Urbanisation Small & median cities			0.00688			-0.00274
			(0.0386)			(0.0381)
distw	-0.00154***	-0.00158***	-0.00155***	-0.00155***	-0.00157***	-0.00155***
	(0.000505)	(0.000481)	(0.000505)	(0.000494)	(0.000468)	(0.000492)
contig	2.926***	2.802***	2.820***	2.789***	2.661***	2.675***
	(0.538)	(0.547)	(0.517)	(0.601)	(0.59)	(0.579)
Constant	4.445	7.355	8.576	3.255	3.704**	7.616***
	(7.721)	(7.656)	(8.043)	(3.15)	(1.791)	(1.748)
		0.951***	0.964***	0.953***	0.943***	0.958***
lnalpha (Neg Bin)	(0.958***)	(0.137)	(0.136)	(0.134)	(0.136)	(0.136)
	0.135					
Origin-time FE	YES	YES	YES	YES	YES	YES
Destination FE	YES	YES	YES	YES	YES	YES
Observations	1568	1568	1568	1568	1568	1568
Log pseudo likelihood	-12040.798	-12038.467	-12051.91	-12040.798	-12031.255	-12045.895

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses

6. CONCLUSIONS

This work has tried to shed light on the relationship between international migration and agglomeration economies. In order to do that I have developed the following **tasks**:

1. Review of the international migration facts all over the world and at the ENC countries + Russia over the 1960-2010 period.
2. Analysis of population growth, and international emigration and immigration rates.
3. Review of the urbanisation trends I global terms and also in large cities (more than 1 million inhabitants) and small and median cities.
4. Literature review of international migration theories, posing the debate at the current state of the art, where macro empirical models follow a theoretically based microeconomics model.

5. Literature review of international migration empirical models, proposing both log linear and non-linear count models (Poisson, Negative Binomials, and mixed zero inflated models), and going one step beyond by analysing a complex structure of fixed effects with dozens of thousands of dummy variables, what allows for capturing the net effect of pull factors of international migration.
6. Joint analysis of international migration flows for both the whole world data set and for the ENC countries + Russia towards EU27 countries.

The main **conclusions** of this work can be summarised in the following bullets.

- International migration has increased in absolute terms, although in relative terms it only experienced a rebound in 2000, and is still below the 1960 figures. In ENC countries + Russia international migration represents much larger figures than in the rest of the world, being particularly large (around 15% of local population are emigrants) in ENC-East countries.
- Population growth has decreased from 2% in 1960 to 1.2% in 2010. The only subregion in the world with population losses is Eastern Europe in the period 1990-2010, being ENC-East and countries Russia the main driver of such evolution. On the contrary ENC – South countries display very large demographic growth rates (1.7% in the 2000-2010 period).
- Urbanisation rates are getting large all over the world, particularly in world regions that had low figures 50 years ago. In 2010 the urbanisation rate is 51%. Among urban citizens, 40% live in large cities (more than 1 million inhabitants), and that figure is roughly constant over the last 50 years, although world region differences are important. ENC East countries + Russia have higher urbanisation rates than ENC East countries, although large cities are more important in the latter countries.
- Emigration rate is positively correlated with urbanisation rates, although when one accounts for country and time fixed effects that correlation vanishes. It implies that urbanisation is not a push factor. When one looks at the relationship between immigration rates and urbanisation one sees that international migration is correlated with the growth in small and median cities with in less developed countries, and with the growth of larger cities in developed countries.

- Most economic literature assumes that migration is caused by differences in the supply and demand for labour, being the differential in wages and labour opportunities the main driver for migration. Recent academic works assume a model of migration choice across multiple locations and derive an estimating equation from the model. I have reviewed two alternative and complementary approaches, which can be summarised in the works of Royuela and Faggian (2010) and Ortega and Peri (2009), resulting in two alternative empirical models. I assume the critiques posed in Santos Silva and Tenreyro (2006) and estimate not only log linear models coming from Ortega and Peri (2009) but also count models, following Royuela and Faggian (2010).
- Urbanisation can be considered a pull factor, as immigrant workers not only look for monetary outcomes from migrating, but also non-economic territorial features, that have been found to be essential elements determining utility differentials.
- The final estimates report the following results: international migration flows all over the world accounts for an elasticity of the log of GDP pc of 0.36, larger than the result obtained for OECD countries by Ortega and Peri (0.29). Restricting the model to international migration from ENC countries + Russia towards EU27 we account for a much larger elasticity (2.77), what highlights the large migration flows responding to large and increasing GDP pc differentials between neighbouring countries.
- Urbanisation rates matter for international migration. In the international sample the urbanisation rate in small and median cities is positive and significantly correlated with migration, while the urbanisation in large cities display a negative and significant sign, clearly influenced by the decreasing or stagnated evolution of the urbanisation rate in large cities in more developed countries in Western and Northern Europe. The result is just the opposite for ENC countries + Russia, as migration is more driven to Southern Europe, a region that has experienced important increases in larger cities.
- Gravitational models report the following resuts: urban growth matters, particularly at home: people prefer migrate from own rural to own urban rather than migrating away; migration is related with development, as less developed countries have increased more their urban level; and large cities have a stronger influence than median cities (gateway cities).

- The count models a-la-Ortega and Peri (2009) stress the influence of urbanisation issues in the restricted sample of international migration from ENC countries + Russia towards EU27, as GDP pc arises as non-significant in all models, while urbanisation rates in large cities arises as a pull factor. Again, migrants from ENC countries are directed towards EU27 countries where urbanisation rate in large cities have increased most.

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Annex 1. Considered countries, classified by continents and geographical regions

The countries classification by geographical regions corresponds to the United Nations Geoscheme, that can be accessed at http://unstats.un.org/unsd/methods/m49/m49.htm

Africa

Central Africa
- Angola
- Cameroon
- Central African Republic
- Chad
- Congo
- Equatorial Guinea
- Gabon
- Sao Tome and Principe

Northern Africa
- Algeria
- Egypt
- Libya
- Morocco
- Sudan
- Tunisia

Eastern Africa
- Burundi
- Comoros
- Djibouti
- Eritrea
- Ethiopia
- Kenya
- Madagascar
- Malawi
- Mauritius
- Mozambique
- Rwanda
- Seychelles
- Somalia
- Tanzania
- Uganda
- Zambia
- Zimbabwe

Southern Africa
- Botswana
- Lesotho
- Namibia
- South Africa
- Swaziland

Western Africa
- Benin
- Burkina Faso
- Cape Verde
- Cote d'Ivoire
- Gambia
- Ghana
- Guinea
- Guinea-Bissau
- Liberia
- Mali
- Mauritania
- Niger
- Nigeria
- Senegal
- Sierra Leone
- Togo

America

Caribbean
- Antigua and Barbuda
- Aruba
- Bahamas
- Barbados
- Cayman Islands
- Cuba
- Dominica
- Dominican Republic
- Grenada
- Haiti
- Jamaica
- Puerto Rico
- St Kitts and Nevis
- St Lucia
- St Vincent and the Grenadines
- Trinidad and Tobago
- Turks and Caicos Islands

Central America
- Belize
- Costa Rica
- El Salvador
- Guatemala
- Honduras
- Mexico
- Nicaragua
- Panama

Northern America
- Bermuda
- Canada
- Greenland
- United States

South America
- Argentina
- Bolivia
- Brazil
- Chile
- Colombia
- Ecuador
- Guyana
- Paraguay
- Peru
- Suriname
- Uruguay
- Venezuela

Asia		
Central Asia	**East Asia**	**Western Asia**
Kazakhstan	China	Armenia
Kyrgyzstan	Hong Kong	Azerbaijan
Tajikistan	Japan	Bahrain
Turkmenistan	Korea, North	Cyprus
Uzbekistan	Korea, South	Georgia
South Asia	Macao	Iraq
Afghanistan	Mongolia	Israel
Bangladesh	**Southeast Asia**	Jordan
Bhutan	Brunei	Kuwait
India	Cambodia	Lebanon
Iran	Indonesia	Oman
Maldives	Laos	Qatar
Nepal	Malaysia	Saudi Arabia
Pakistan	Myanmar	Syria
Sri Lanka	Philippines	Turkey
	Singapore	United Arab Emirates
	Thailand	Yemen, North
	Vietnam	

Europe		
Eastern Europe	**Northern Europe**	**Southern Europe**
Belarus	Denmark	Albania
Bulgaria	Estonia	Bosnia and Herzegovina
Czech Republic	Faroe Islands	Croatia
Hungary	Finland	Gibraltar
Moldova	Iceland	Greece
Poland	Ireland	Italy
Romania	Latvia	Macedonia
Russia	Lithuania	Malta
Slovakia	Norway	Portugal
Ukraine	Sweden	San Marino
Western Europe	United Kingdom	Slovenia
Austria		Spain
Belgium		
France		
Germany		
Luxembourg		
Netherlands		
Switzerland		

Oceania		
Australia and New Zealand	**Micronesia**	**Polynesia**
Australia	Kiribati	French Polynesia
New Zealand	Marshall Islands	Samoa
Melanesia	Micronesia	Tonga
Fiji	Northern Mariana Islands	Tuvalu
New Caledonia	Palau	
Papua New Guinea		
Solomon Islands		
Vanuatu		

Annex 2. Full set of considered variables for the gravitational model (tables 9 to 11)

- Gravitation model: we use the population of origin (pop_o) and destination (pop_d).

- Migration costs:
  - We consider several alternative geographic distance measurements: Simple distance between capitals (distcap), Weighted distance (distw), Alternative weighted distances (distwces), Simple distance between most populated cities (dist), Contiguity (contig)
  - Plus several social distance measurements: Common official language (comlang_off), Common language spoken by at least 9% of the population (comlang_ethno), Former colonial relationship (colony), Common colonizer (comcol), Current colonial relationship (curcol), Common colonizer post 1945 (col45), Were or are the same country (smctry).

- Economic variables:
  - GDP per capita differences (dgdppcc)
  - Unemployment rate differences (dur)
  - Inflation, consumer prices (annual %) (infl_CPI), Inflation, GDP deflator (annual %) (infl_GDPd)
  - Telephone lines (per 100 people) (teleph_pc)
  - Sectoral variables (agriculture): Agricultural land (% of land area) (agr_land), Arable land (% of land area) (arab_land_p), Arable land (hectares per person) (arab_land_pc), Food production index (2004-2006 = 100) (food_PI)

- Institutional variables:
  - Democracy - Freedom House/Polity (fh_ipolity2), Institutionalized Democracy - Polity IV (p_democ), Index of Democratization – Van Hanen (van_index)
  - ICRG indicator of Quality of Government (icrg_qog), Human Development Index (undp_hdi)
  - Economic freedom indicators: EFW chain index (FI_CI_SUM) plus 5 components: Size of Government: Expenditures, Taxes, and Enterprises (FI_CI1_GOVSIZE); Legal Structure and Security of Property Rights (FI_CI2_LEGAL); Access to Sound Money (FI_CI3_SOUNDMONEY); Freedom to Trade Internationally (FI_CI4_TRADE); Regulation of Credit, Labor, and Business (FI_CI5_REG). Information on the index of Labor market regulations is also provided (FI_CI5b_LABREG)
  - KOF index of globalization (DR_IG)
  - Freedom of Religion (NEW_RELFRE)
  - Former stock of migrants (migstock)

- Demographic variables:
  - Population, female (% of total) (female),
  - Life expectancy at birth, total (years) (life_exp), Mortality rate, infant (per 1,000 live births) (mort_inf),
  - Population ages 0-14 (% of total) (pop_0_14), Population ages 15-64 (% of total) (pop_15-64), Population ages 65 and above (% of total) (pop_m65)

- Urbanisation variables:
  - Population density (people per sq. km of land area) (pop_dens), Population, total (pop_total)
  - Rural population (pop_rur_tot), Rural population (% of total population) (pop_rur_p)
  - Urban population (pop_urb_t), Urban population (% of total) (pop_urb_p)
  - Population in urban agglomerations of less than 1 million (total) (urban_median), Population in urban agglomerations of less than 1 million (% of total population) (urban_median_p)
  - Population in urban agglomerations of more than 1 million (urban_1M), Population in urban agglomerations of more than 1 million (% of total population) (urban_1M_p)
  - Population in largest city (pop_largest), Population in the largest city (% of urban population) (pop_larg_p)
  - Population growth (annual %) (pop_growth), Rural population growth (annual %) (pop_g_rural), Urban population growth (annual %) (pop_g_urban)

- Time: we include a dummy variable for every considered year in the data set.