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## The impact of massive migration flow on regional population structure: The case of Italy

*Antonio Golini and Anna Di Bartolomeo\**

### Abstract

Low economic growth rates are a common problem in many developed countries in Europe. This paper aims to highlight the possible role of demographic factors. Problems of low growth may be exacerbated by an increase in dependency ratios. However, large-scale migrations have been shown to positively affect the age composition of a population. Focusing on Italy, we estimate the impact of migration on the working age population ratio, population size and gross domestic product. We also show that migration may affect the economic gap between the North and South, posing a new potential problem to policymakers.

### 1 Introduction

Economic growth rates in many of Europe's developed countries have remained rather low, particularly in Italy (OECD 2008). This performance has generated a great debate mainly centred upon the effects of productivity growth, capacity utilisation and rigid institutions, especially in labour markets (see e.g. Hall and Jones 1999; Picci 1999; Aiello and Scoppa, 2000; Acemoglu et al. 2001; Leoni 2007).<sup>1</sup> Low productivity ranks consistently among the usual suspects for low growth; however, it alone cannot fully explain the observed negative outcomes. For instance, it has been noted that the same technologies driving growth in the United States are also available in developed European countries, yet the two regions' growth rates remain very different. Alesina and Zeira (2006), argue that there are different incentives for introducing capital-saving technologies in the

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\* Antonio Golini, Department of Social, Economic, Actuarial and Demographic Studies, Faculty of Statistics, "Sapienza" University of Rome, Rome, Italy.

Anna Di Bartolomeo (author of correspondence), Department of Social, Economic, Actuarial and Demographic Studies, Faculty of Statistics, "Sapienza" University of Rome, via C. Livi, 10-00168, Rome, Italy. Email: [anna.dibartolomeo@uniroma1.it](mailto:anna.dibartolomeo@uniroma1.it)

<sup>1</sup> As noticed by Feyrer (2007), Klenow and Rodriguez-Clare (1997) and Hall and Jones (1999) instead emphasise the importance of productivity differences and suggest that only half of cross-country income differences can be explained by differences in physical and human capital accumulation.

two regions due to different labour costs that ultimately depend on different state welfare systems. As a result, Europe experiences low growth rates due to low investment in capital-saving innovations, which are currently the engine of growth in other advanced economies.

Furthermore, the search for additional factors driving economic change has led scholars' to a study of the role of population dynamics in economic growth and inequality. Historically, three contrasting theories have been developed, supported by many empirical studies: population growth may spur, diminish or be independent of economic growth. In recent years, attention has shifted to the impact of age structure, since people's economic behaviours and needs differ according to their life stage (Bloom et al. 2003). Recent empirical studies have confirmed that decreases in youth dependency ratios have a positive effect on economic growth both in developing and developed countries (see among others Bloom et al. 2003; Bloom et al. 1999; Kelley and Schmidt 1995; Kelley and Schmidt 2001; Prskawetz et al. 2004). Moreover, some scholars have demonstrated a significant relationship between age structure and economic growth, inflation and savings in OECD countries (Lindh and Malmberg 1999). Bloom et al. (2007) demonstrated that the addition of age structure may significantly improve long-run economic growth forecasts in cross-sectional growth models. Finally, Higgins and Williamson (1999) found evidence of an inverse relationship between the percentage of mature working-age adults (aged 40-59) and income inequality.

This paper aims to highlight the role of demographic factors, particularly international migration, in diluting the old-age dependency ratio and thus, supporting economic growth. The hypothesis is that large-scale migration can lead to changes in age structure, a potential determinant of economic growth (ECB 2006; United Nations 2007).

The impact of demographic factors can be approached using the following GDP decomposition:

$$GDP = \frac{GDP}{Employed} \times \frac{Employed}{L} \times \frac{L}{Pop} \times Pop \quad (1)$$

In Equation (1) above, *GDP* refers to Gross Domestic Product, *Employed* indicates the number of employed individuals, *L* refers to the working age population and *Pop* to the total population. Therefore, the Gross Domestic Product is defined as a simple function of (from left to right) labour productivity (GDP per employed), the employment rate, the working age population ratio and the total population.

The impact of total and working age population ratio on GDP can be measured by holding the long-run natural rate of employment and productivity constant. Under these conditions the positive relationships between a) the GDP and the working age population ratio and b) the GDP and the population are

negligible.<sup>2</sup> Migration has a clear impact on the working age population ratio and total population size; thus according to the above identity, changes in migration will lead to changes in GDP. Indeed, according to identity (1), labour migrations will more likely spur economic activity under the following conditions: a) immigrant labour is largely complementary and not in competition with local labour; b) immigrants are quickly employed; and c) immigrants have at least the same level of productivity as natives. Identity (1) can also be transformed to evaluate the impact of the working age population ratio on per-capita income, by ignoring the negligible relationship between GDP and population and highlighting the impact of structural factors.<sup>3</sup>

The remainder of the paper is structured as follows: Section 2 presents the research hypotheses; Section 3 describes data and methods; Section 4 presents the results; and Section 5 concludes with discussion and implications.

## 2 Research hypotheses

Several recent studies have attempted to estimate the demographic impact of migrants. When flows are low, studies have mainly demonstrated that migration does not significantly impact age structure. While low migration flows may thus do little to stop population ageing (Golini et al. 1995; Lesthaeghe et al. 1988; Lambert 2008); evidence suggests that it can at least partially delay this phenomenon (Leridon 2000). At the same time, many scholars have stressed the positive impact of migration on national economies, if international migration flows are accompanied by rational migratory policies that consider the size and age structure of labour migration flows (Blanchet 1988 and 2002; IMF 2004). In order to derive economic benefit, these flows have to be composed of labour migrants, quantitatively significant (Blanchet 2002; Dekle 2004; United Nations 2001), and directed by migratory policies which are intertwined with family and social policies (Kohli 2008). In an articulate report, Prskawetz et al. (2007) also highlight migrants' significant contribution to per-capita income growth in industrialised countries with a positive current net migration. In Italy, Unioncamere (2008) estimates that migrants contribute greatly to the national

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<sup>2</sup> The demographic issue is particularly relevant in Italy, where productivity has grown very slowly over the past 20 years and there has been little variability in the unemployment rate. The average productivity growth rate over the 20-year period from 1987 to 2007 was 1.03% per year, while the average unemployment rate from 1998 to 2008 was 1.49% per year (Istat 2009). It is worth noting that due to the labour market reforms of the 1990s, there was a significant reduction in the unemployment rate. However, there was also a corresponding change in the composition of the employed portion of the population, with an increase in part-time workers and other flexible forms of work.

<sup>3</sup> Using a logarithmic transformation it is also easy to transform the decomposition from levels to growth rates.

GDP (9.2% in 2006); in some northern regions (e.g. Lombardy, Veneto, Emilia Romagna and Umbria), this contribution reaches 11.0%.

This paper aims to ascertain whether labour migrations may be considered a resource in supporting the Italian working age population ratio, population size and potentially, the gross domestic product. By doing this, two research hypotheses, corresponding to two levels of analysis (aggregate and disaggregate), have been developed and tested.

At an aggregate level, we hypothesise that massive labour migration flows may positively impact the working age population ratio, population size and, *ceteris paribus*, the GDP. In fact, despite strong debate over the impact of migrants on population age structure, this hypothesis is based on two factors specific to the Italian demographic situation. First, rapid population ageing would imply a strong reduction in GDP as it tends to lower the working age population ratio.<sup>4</sup> Second, very low fertility is expected to have an impact on the working age population ratio (see e.g. Golini 1998a; Billari et al. 2002; Billari and Kohler 2004) leading to an inability of young workers to support an increasingly large dependent elderly population. In this context, massive labour migration flows may supplement the diminishing working age population, thereby increasing the working age population ratio and population size in general.

We also consider the effects of migration flows on the working age population ratio at a disaggregate level by investigating the demographic trends of specific regions in Italy. The different observed behaviours may, in fact, lead to some unexpected consequences. In our second hypothesis we focus on two demographic dimensions—migrants' distribution and fertility trends—in order to demonstrate a positive relationship between labour migration flows and an increasing economic gap between Northern and Southern Italy.

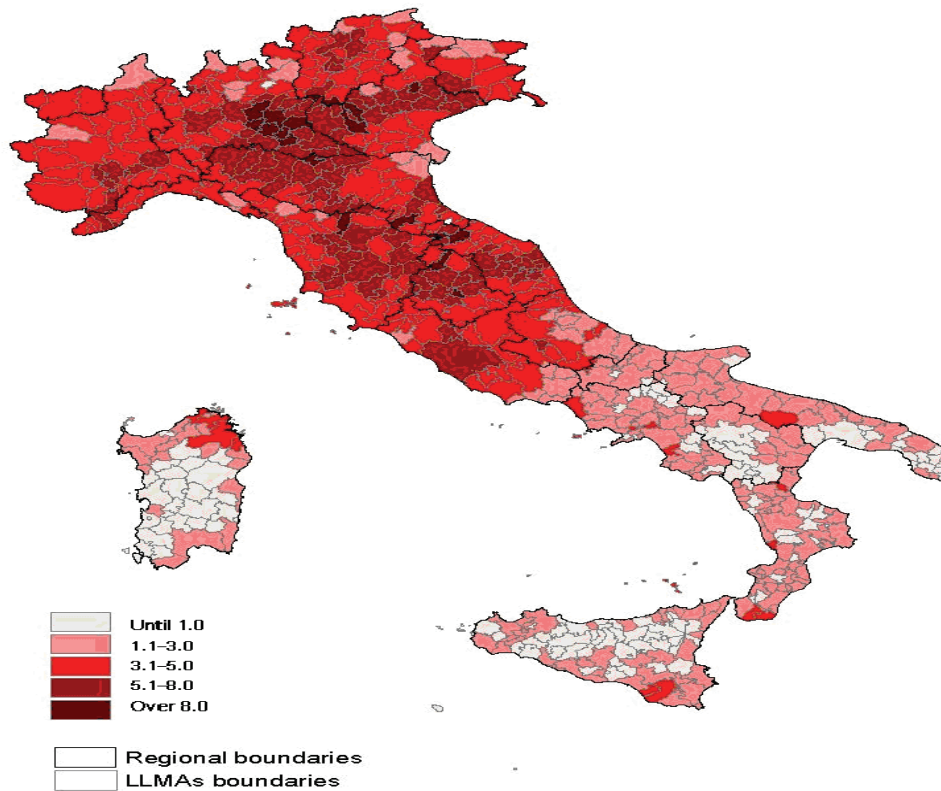
Migrants are unevenly distributed among regions in Italy (see Figure 1) with more migrants concentrated in the northern regions. It is well known that the most attractive areas for migrants are located in the northern part of the country given more conducive labour market conditions.<sup>5</sup>

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<sup>4</sup> The reduction can be moderated by some (endogenous) mechanisms that might also apply. For instance, a decrease in the labour force tends to increase both wages and worker participation, as it changes the proportion between active and inactive people in a job search. Moreover, it can also change the social behaviour and constraints, generating policies that extend the statutory retirement age, for example.

<sup>5</sup> The following are considered northern regions: Piedmont, Aosta Valley, Lombardy, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Liguria, Emilia Romagna, Tuscany, Umbria, Marche and Lazio; the South, consists of Abruzzo, Molise, Campania, Apulia, Basilicata, Calabria, Sicily and Sardinia.

**Figure 1:**  
Percentage of foreigners in local labour markets, 2007 (per 100 residents)



Source: Albani et al. 2008.

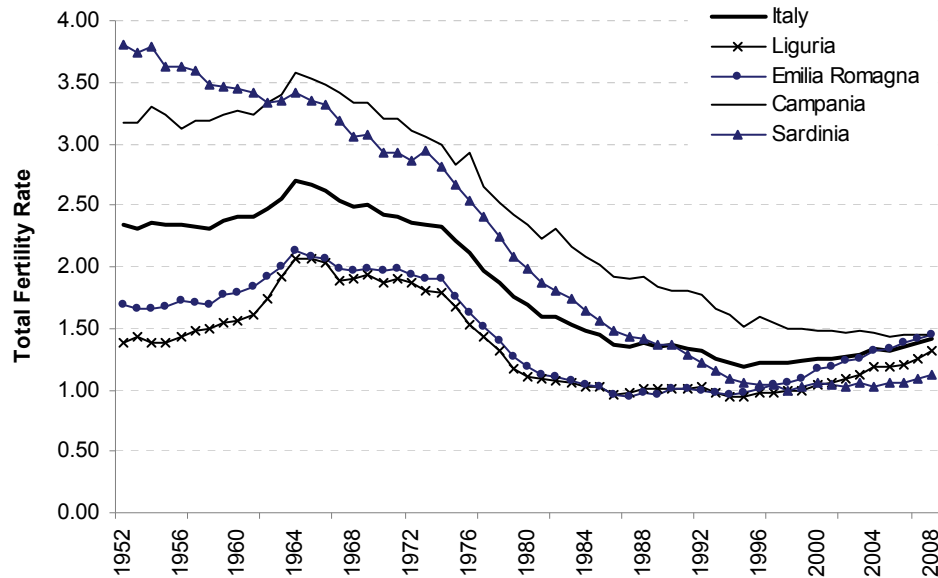
Furthermore, fertility levels among Italian regions have recently begun to converge (see Figure 2), which implies that the historical advantage in terms of fertility dynamics of southern regions as compared to northern ones is destined to disappear in a short time.

By combining the heterogeneous distribution of migrants and the recent fertility convergence, we expect labour migration flows to have a positive economic impact in northern Italy and to increase the geographic differential between North and South.

To summarise, this paper aims to show that migration significantly contributes to the working age population ratio in Italy (and thus potentially to economic growth), and that the importance of migration will grow over time in the absence of demographic change. Nevertheless, drawbacks may emerge. We hypothesise that the unequal distribution of labour migrants and the recent convergence of fertility levels across Italian regions risks to exacerbate the

economic inequality between the North and South. This study has policy implications for managing future migration flows.

**Figure 2:**  
Period total fertility rate in selected Italian regions, 1952-2008



**Note:** Campania and Sardinia are used as representative of southern Italy, while Liguria and Emilia Romagna represent the North.

**Source:** Authors' own elaboration on Istat data, <http://demo.istat.it/>.

### 3 Data and methods

Following Golini and Strozza (1998b), in our empirical investigation we estimate the impact of international migration on the size and age structure of the population between 2007 and 2051 using the residual method. Unlike Golini and Strozza (1998b), who consider a retrospective period across different countries, we focus exclusively on Italy, forecasting and comparing the potential impact of international migration on different regions' GDP.

We adopt the residual method since it enables one to estimate the contribution of migration by calculating the difference between the projected population and the counterfactual expected population independent of migration flows over the projected period. In detail, the closed population (from 2007 until 2051) was constructed by subtracting the foreign population and those who acquired Italian citizenship (by birth, marriage or naturalisation) from the total resident population over the whole period. The difference between the two scenarios represents an approximate measure of the demographic contribution of foreign immigrants and

their descendants. Nevertheless, this approach has some limitations. Among others, Le Bras (1991) stresses that the native population, reduced or increased by the absence/presence of migration, could adopt different demographic behaviours in reaction to the situation.

Data are taken from the Italian National Institute of Statistics (Istat 2008), deterministic projections performed by the cohort component model. The base-year is 2007 and the projection period is 2008-51. For the base year 2007, we distinguish foreign population as reported by Istat.

Istat makes the following assumptions in forecasting growth through 2051: (1) the growth of the total fertility rate is assumed to be constant but low reaching a value of 1.53 in 2051 (from 1.37 in 2007); (2) the mean age at childbearing is assumed to increase to 33.4 years in 2050 (from 31.0 in 2007); (3) life expectancy is assumed to substantially increase to 84.5 years for men and 89.5 for women (from 78.6 and 84.1, respectively, in 2007); and (4) annual net international migration of approximately 200,000 individuals is assumed;<sup>6</sup> net internal migration rate is assumed to remain constant over the entire period.

It is worth noting that specific assumptions have been made with regard to the foreign population in developing these projections:

1. It is expected that the fertility level between foreign and native-born women will become more balanced. During the period considered, the TFR is assumed to decrease from 2.35 in 2007 to 1.86 in 2050.

2. Longevity trends of foreign and Italian populations are also assumed to converge given the high proportion of young migrants and the disproportionate influence of the Italian healthcare system in shaping health attitudes and behaviours.<sup>7</sup>

3. Internal migration is assumed to remain constant among foreigners at three times the rate of Italian natives.

4. Istat projects that acquisition of Italian citizenship by marriage or naturalisation will increase linearly over the projection period; however, different rates are assumed according to gender (from 1.0% to 1.2% for men and from 1.2% to 1.4% for women). Regarding acquisitions by birth, Istat projections assume that a constant proportion (0.24) of the children of foreign mothers will acquire Italian citizenship over the projection period. This number represents the average proportion of children born to foreign-born women and Italian fathers for the period between 2002 and 2006.

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<sup>6</sup> Note that by considering the recent trend of international migration flows, the value assumed is quite low; it is based on a broad trust in global improvement of the socio-economic conditions of in/out-migration countries. In addition, it is worth noting that all previous studies tended to underestimate migration projections.

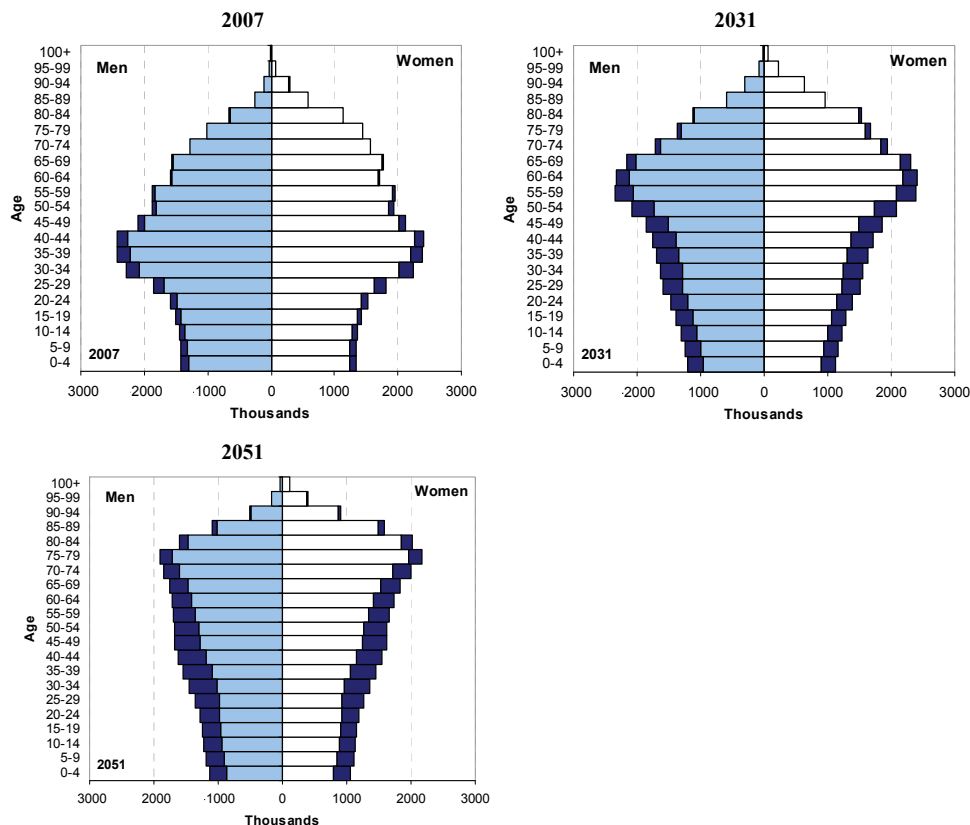
<sup>7</sup> Nevertheless, recent studies (e.g. Istat 2008c) have confirmed that the foreign population tends to adopt less preventative health measures than natives (e.g. in the prevention of breast cancer and hypertension)

## 4 Empirical results

### 4.1 Aggregate effects

Figure 3 shows population pyramids for 2007, 2031 and 2051 to highlight the aggregate impact of migration on population size and age structure. It shows that the contribution of migrations to population size tends to grow over time. Growth is particularly concentrated in the working-aged population, as demonstrated by a partial delay in the ageing process.

**Figure 3:**  
**Comparison of Italy's population and age structure with and without migration over the projection period. Years 2007, 2031, 2051 (absolute values, positive net migration in dark)**



Source: Authors' own elaboration on Istat demographic projections (2008a).



Table 1 describes some age structure indicators for 2007, 2031 and 2051 in more detail.

**Table 1:**  
**Population age structure indicators with and without migration over the projection period in Italy, 2007, 2031, and 2051**

	% by age groups				Absolute values (in millions)				AR	DR
	0-14	15-64	65+	Total	0-14	15-64	65+	Total		
Population	14.1	66.0	19.9	100.0	8.3	39.0	11.8	59.1	141.7	51.6
2007 Closed population	13.8	65.3	20.9	100.0	7.7	36.7	11.7	56.2	151.5	53.0
<i>difference</i>	<i>0.3</i>	<i>0.6</i>	<i>-0.9</i>	<i>0.0</i>	<i>0.6</i>	<i>2.3</i>	<i>0.1</i>	<i>2.9</i>	<i>-9.8</i>	<i>-1.5</i>
Projected pop.	12.8	60.2	27.0	100.0	7.9	37.4	16.8	62.2	210.2	66.2
2031 Closed population	11.3	57.8	30.9	100.0	5.8	29.9	16.0	51.7	273.2	73.0
<i>difference</i>	<i>1.5</i>	<i>2.4</i>	<i>-3.9</i>	<i>0.0</i>	<i>2.1</i>	<i>7.5</i>	<i>0.8</i>	<i>10.5</i>	<i>-63.0</i>	<i>-6.8</i>
Projected pop.	12.9	54.2	33.0	100.0	7.9	33.4	20.3	61.6	256.3	84.7
2051 Closed population	11.5	49.6	38.9	100.0	5.3	22.8	17.9	46.0	339.3	101.7
<i>difference</i>	<i>1.4</i>	<i>4.6</i>	<i>-6.0</i>	<i>0.0</i>	<i>2.6</i>	<i>10.6</i>	<i>2.4</i>	<i>15.6</i>	<i>-83.0</i>	<i>-17.1</i>

Note: AR = Aged Ratio  $100 \cdot [P65+/P0-14]$ ; DR = Overall Dependency Ratio  $100 \cdot [(P0-14+P65+) / P15-64]$ .

Source: Authors' own computations on Istat demographic projections (2008a).

Table 1 shows the growing impact of migration on the working age population ratio during the projection period (from 0.6% in 2007 to 4.6% in 2051) and its effect on population size (from 2.9 million in 2007 to 15.6 million in 2051). Dependency ratios are expected to grow from -1.5 to -17.1 over the whole period while aged ratios are expected to increase from -9.8 to -83.0.

We use the GDP decomposition (1) to measure how much massive labour migration flows positively impact the age structure, population size and, ceteris paribus, the GDP. Holding the productivity trend and the unemployment rate constant, we compare two different scenarios. First, we measure the impact of the projection of the current trends on the changes in the GDP between 2007 and 2051 and then we consider a counterfactual situation of projected trends without migrations over the projection period. Table 2 shows the estimates of the demographic changes on the variation of GDP.

Current demographic trends suggest that we can expect a 4% increase in total population and an 18% drop in the working age population ratio. As a result, GDP will decrease by 15%. In the counterfactual scenario (0 migrants over the projection period), the population decreases by 22%, the working age population ratio declines by 24% and GDP falls by 41%. Comparing the two scenarios (Table 2, rows 1 and 2), the impact of migration on GDP is a decline of 26%-27% of which comes from an increase in total population (reversal of population decline) and 6% from an increase in the working age population ratio. As expected, migration flows largely contribute to Italian national income.

**Table 2:**  
**Estimates of the demographic changes on the variations of GDP in Italy (Ratio between 2051 and 2007)**

	GDP projected variation	Working age population ratio projected variation	Population projected variation
Population	0.85	0.82	1.04
Closed population (over the projection period)	0.59	0.76	0.78
<i>difference</i>	<i>0.26</i>	<i>0.06</i>	<i>0.27</i>

**Source:** Authors' own elaboration on Istat demographic projections (2008a), Istat (2008b) and ConIstat database.

In order to better understand these results and focus on structural dynamics, we perform the same analysis, this time taking into account the long-term effect of changes in the working age population ratio on the Italian per capita GDP. We rewrite identity (1) as:

$$\frac{GDP}{Pop} = \frac{GDP}{Employed} \times \frac{Employed}{L} \times \frac{L}{Pop} \quad (2)$$

In this case, the impact of migration is still positive, but, as expected, lower than in the previous case. In particular, migration decreases the fall of per capita GDP by 6%. This result is consistent with Prskawetz et al. (2007), who found that eliminating migration effects results in a relatively pronounced decrease in per capita income for industrialised countries with a positive net migration.

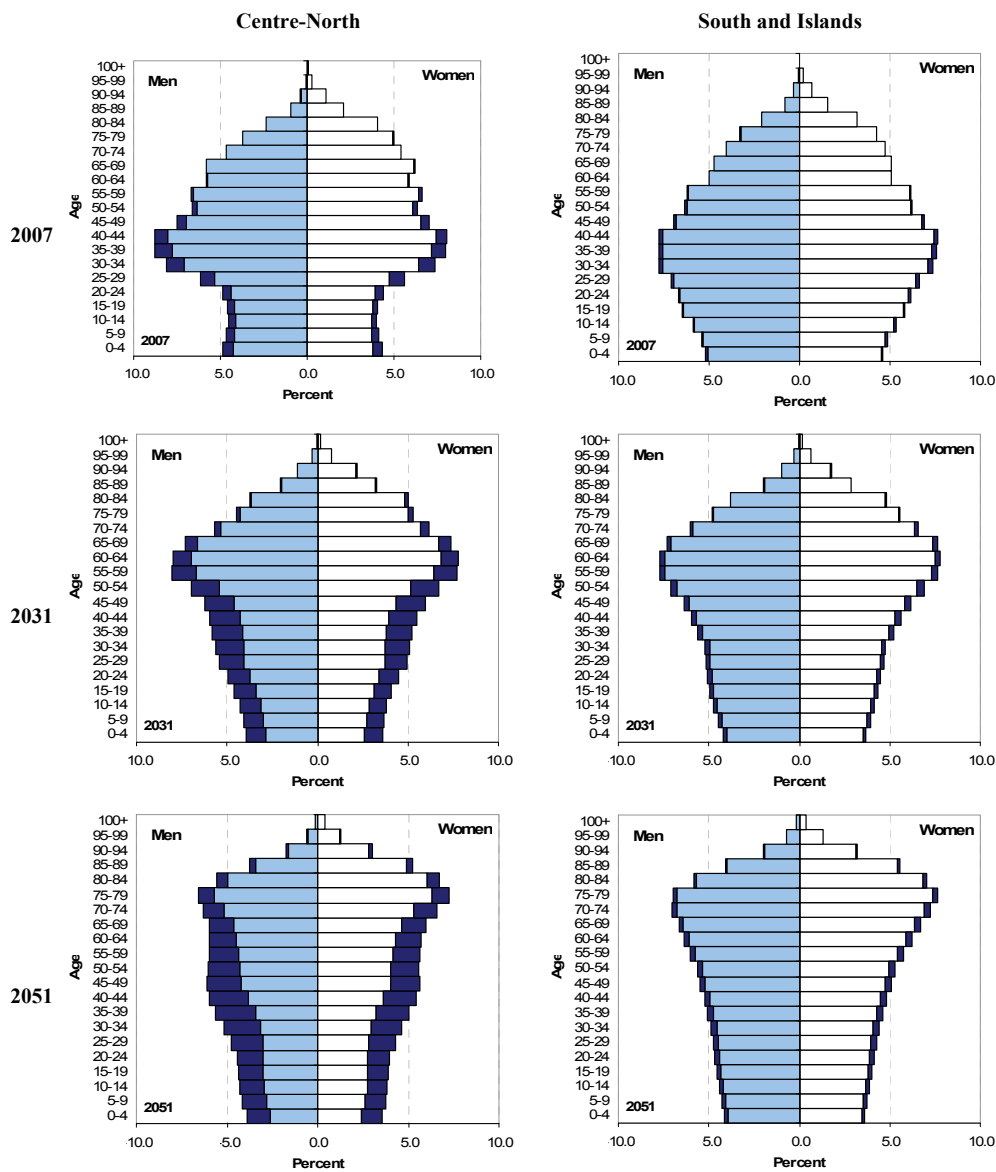
## 4.2 Disaggregate effects

The above analysis was performed on regional data to test our second research hypothesis: The positive contribution of international migrations is undesirable at the regional level in that it increases the economic gap between the North and the South.

Figure 4 compares population pyramids with and without migration across time in the northern and southern regions. By looking at the 2007 pyramids, some differences emerge: in the North the prolonged low-fertility trend is evident from a smaller base at younger ages, while the past levels of higher fertility experienced by the southern regions have led to a more balanced age structure. In 2031 the historically higher fertility of the South disappears and a process of ageing is evident in both South and North. As expected when fertility dynamics converge, population pyramids assume similar shapes. However, when we include immigrants' contribution to the working age population ratio, the compositions of population pyramids are taken on very different shapes. Similar considerations are supported by the age structure in 2051, where the impact of

immigrants delays (or partially delays) population ageing in the North, but remains nearly insignificant in the South.

**Figure 4:**  
**Comparison of actual and projected population age structure with and without migration in the Centre-North and South and Islands regions of Italy in 2007, 2031, and 2051. Values reported in percentages (positive net migration in dark)**



Source: Authors' own elaboration on Istat demographic projections (2008a).

These patterns are confirmed by analysing the dynamics of some age-structure indicators by geographical area, reported in Table 3.

**Table 3:**  
**Age structure indicators with and without migration, actual and projected, for northern and southern Italy in 2007, 2031, and 2051**

		Proportions by age groups				Absolute values (in millions)				AR	DR
		0-14	15-64	65+	Total	0-14	15-64	65+	Total		
<b>Center-North</b>											
2007	Population	13.2	65.6	21.1	100.0	5.0	25.2	8.1	38.3	159.0	52.4
	Closed population (over the projection period)	12.8	64.7	22.6	100.0	4.6	23.1	8.1	35.8	177.3	54.5
	<i>difference</i>	<i>0.5</i>	<i>0.9</i>	<i>-1.4</i>	<i>0.0</i>	<i>0.4</i>	<i>2.1</i>	<i>0.0</i>	<i>2.5</i>	<i>-18.3</i>	<i>-2.1</i>
2031	Projected population	12.8	60.4	26.8	100.0	5.4	25.6	11.3	42.3	208.9	65.5
	Closed population (over the projection period)	10.6	57.1	32.3	100.0	3.5	18.8	10.6	32.9	305.0	75.2
	<i>difference</i>	<i>2.2</i>	<i>3.3</i>	<i>-5.5</i>	<i>0.0</i>	<i>1.9</i>	<i>6.8</i>	<i>0.7</i>	<i>9.4</i>	<i>-96.1</i>	<i>-9.7</i>
2051	Projected population	13.0	55.2	31.8	100.0	5.7	24.0	13.8	43.5	243.5	81.2
	Closed population (over the projection period)	11.0	49.0	39.8	99.8	3.2	14.3	11.6	29.2	358.5	103.9
	<i>difference</i>	<i>2.0</i>	<i>6.2</i>	<i>-8.0</i>	<i>0.2</i>	<i>2.5</i>	<i>9.7</i>	<i>2.2</i>	<i>14.3</i>	<i>-115.0</i>	<i>-22.7</i>
<b>South and Islands</b>											
2007	Population	15.6	66.8	17.6	100.0	3.2	13.8	3.7	20.8	113.0	49.8
	Closed population (over the projection period)	15.6	66.5	17.9	100.0	3.1	13.6	3.7	20.4	114.7	50.3
	<i>difference</i>	<i>0.0</i>	<i>0.3</i>	<i>-0.3</i>	<i>0.0</i>	<i>0.1</i>	<i>0.2</i>	<i>0.0</i>	<i>0.4</i>	<i>-1.7</i>	<i>-0.5</i>
2031	Projected population	12.9	59.6	27.5	100.0	2.6	11.8	5.5	19.9	212.9	67.9
	Closed population (over the projection period)	12.6	59.0	28.4	100.0	2.4	11.1	5.4	18.9	226.3	69.4
	<i>difference</i>	<i>0.3</i>	<i>0.6</i>	<i>-0.9</i>	<i>0.0</i>	<i>0.2</i>	<i>0.7</i>	<i>0.1</i>	<i>1.0</i>	<i>-13.4</i>	<i>-1.5</i>
2051	Projected population	12.4	51.7	35.9	100.0	2.2	9.3	6.5	18.1	288.8	93.6
	Closed population (over the projection period)	12.1	50.1	37.4	100.0	2.0	8.4	6.2	16.7	308.5	98.0
	<i>difference</i>	<i>0.3</i>	<i>1.6</i>	<i>-1.5</i>	<i>0.0</i>	<i>0.2</i>	<i>0.9</i>	<i>0.3</i>	<i>1.4</i>	<i>-19.7</i>	<i>-4.4</i>

**Note:** AR = Aged Ratio  $100 \cdot [P65+/P0-14]$ ; DR = Dependency Ratio  $100 \cdot [(P0-14+P65+) / P15-64]$ .

**Source:** Authors' own computations on Istat demographic projections (2008a).

The table underscores the high contribution of migrants in augmenting the working age population ratio in the North: from 0.9% in 2007 to 6.2% in 2051, compared to a much less pronounced change in southern regions where the ratio ranges from 0.3% in 2007 to 1.2% in 2051. A similar differential occurs with respect to total population, with total population in the North attributable to migration increasing from 2.5 million in 2007 to 14.3 million in 2051. In the South the impact of migration is minimal, with total effect of migration increasing from 0.4 in 2007 to 1.4 million in 2051. The different role played by migration flows among Italian regions significantly affects overall dependency and age ratios as well.

Using Equation (1), Table 4 shows the impact of migration on GDP changes in the North and South, assuming that productivity and unemployment rate remain constant.

**Table 4:**  
**Estimates of demographic changes on GDP variations (2007-2051), northern and southern Italy**

	GDP projected variation	Working age population ratio projected variation	Population projected variation
Center-North			
Population	0.95	0.84	1.13
Closed population (over the projection period)	0.57	0.75	0.76
<i>difference</i>	<i>0.38</i>	<i>0.09</i>	<i>0.37</i>
South and Islands			
Population	0.68	0.78	0.87
Closed population (over the projection period)	0.61	0.76	0.81
<i>difference</i>	<i>0.07</i>	<i>0.02</i>	<i>0.06</i>

**Source:** Own elaboration on Istat demographic projections (2008a), Istat (2008b) and ConIstat database.

In the North, the combined effect of a 16% decrease in the working age population ratio and a 13% increase in population causes a 5% fall in the GDP. In the closed population scenario, the working age population ratio decreases by 25%, the total population by 24% and the GDP by 43%. Thus, the overall impact of migrations in decreasing the GDP is 38%, due to a 37% reduction in the fall of the population and a 9% reduction in the fall of the working age population ratio.

As expected, the impact of migration is relatively low in the South. Migrations contribute to a differential of only 7% between the two scenarios. In the basic scenario, which includes migration, the fall in the working age population ratio (22%) and the decline of the total population (13%) contribute to a decrease of 32% in GDP. In the counterfactual scenario, projected without migration, the decline of the working age population ratio (24%) and population size (19%) cause a fall of 39% in GDP. The 7% increase in GDP caused by migration is due to a 2% net change in WAPR and the 6% change in the total population). Clearly, the impact of international migration is more pronounced in the North than in the Southern area.

We also estimate the impact of migration on per capita GDP, using identity (2) above. Our findings confirm that the role played by large-scale migration differs according to region. Indeed, in the North migration reduces the negative impact on per capita GDP by 9% while the impact is negligible (1%) in the South.

In summary, by isolating the economic impact of the working age population ratio on the GDP, our analysis shows that migration may be considered a resource

in the North where migrants tend to assume stronger importance over time. Conversely, the impact of migration is significantly limited in the South. Therefore, the economic issues and policies linked to population ageing ought to account for differential impact in the North and South.

All of our projections are based on the assumption of a relatively low annual net migration rate compared to that which has been observed in the recent years. Thus the potential contribution of migrants to economic activity is underestimated, and will likely be larger amidst migratory policies which induce labour migration flows. Moreover, we can always expect that fewer people will enter the labour market and that migrants also age, so the discussion about quotas thus cannot be made once and forgotten but must take into account the dynamics of the population structure. In the medium to long-term, increasing flows are needed to avoid future holes in the population pyramid, especially if there is not a strong change in the population dynamics.

The positive effects of migration flows may be an opportunity to improve the standard of living, though only in northern regions leading to an increase in the structural gap between the North and South. In this respect, our findings provide a new, unexpected role for migration in the current policy debate surrounding the issue of federalism.

## **5 Concluding remarks**

This paper investigates the impact of immigration flows on population structure, specifically the working age population ratio. We also isolate the working age population ratio from other GDP determinants, emphasising the role of international migrations, in supporting economic growth. Immigration flows have an immediate effect on national income by increasing the labour force and supporting the participation rate.

Along a simple demographic-economic chain, immigration supports population size and the working age population ratio (and by extension the GDP). Migrations become necessary to avoid “gaps” in the population pyramid and declines in the active population. Moreover, since we can expect that ever fewer people will enter the labour market and that permanent migrants will also age, labour migrant flows have to be maintained or must gradually increase to balance the effects of migrants’ own demographic trends, thus avoiding future deficits in the working ages and substituting aged migrants. The scenario presented above stresses that growing immigration flows should eventually be encouraged when looking at current fertility trends as well as other variables, such as productivity and unemployment.

Although immigration is a potential resource for the future economic welfare, we find that it may have some relevant shortcomings that policy-makers must face. Certain conditions should be met to transform unchecked migration into an

effective resource. Accordingly, integration policies not only have a social value, but an economic value as integrated migrants will have the same (perhaps greater) productivity as natives and will support economic growth. Bad integration policies can, instead, have counter-productive effects.

By disaggregating the demographic trends at macro regional levels, we also stress a further potential problem: due to the higher concentration of migrants in the North and the fall of the fertility advantage in the South, migration benefits will be unevenly distributed, increasing the problem of North-South GDP differentials. This may result in demographic conditions which create a poverty trap within the southern regions. Nevertheless, North-South differentials may be overestimated since the GDP regional estimates do not account for the underground economy which also likely affects the two regions differently.

In conclusion, migration must be taken into account in the debate over national income dynamics and GDP differentials between North and South. Without relevant changes in childbearing behaviours, both economic issues and migratory policies have to be intertwined at the national and regional level in order to guarantee that migration persists in being an economic resource and not a problem to solve.

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