

**FISCAL SUSTAINABILITY AND IMMIGRATION
IN THE MADRID REGION**

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Fiscal Sustainability and Immigration in the Madrid Region

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Abstract

The growing number of immigrants in the Madrid region raises several questions concerning the welfare of future native generations. The debates shift from increasing concern about the congestion of public services like education or healthcare, to how immigration helps to ease tension in relation to financing those services and other benefits to the region's general welfare. In order to evaluate the global effect, our analysis uses a generational accounting method which is applied to different productivity, interest rate and growth scenarios. The results show that the impact of immigrants is positive, with intergenerational distribution towards the currently most active taxpayers.

Keywords: Generational accounting, fiscal balance, international immigration

JEL Code: F22, E62, R10

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1.- Introduction

In the last few years, the Madrid region has gone from having hardly any immigrants to this group representing 13.3% of the total population in 2006, and 18% in 2008. This change has given rise to a lively debate about the effect of immigration on the region from both a social and economic perspective. With regards to the latter, the aspect of interest is how the fiscal costs and benefits of immigrants are distributed between the Spanish State and the region.

The Madrid region is a relevant case study for analysing the impact of immigration. It is small in size, as it only represents 1.6% of the total surface area of Spain, although it houses approximately 14% of the Spanish population, generating 18% of the national GDP and it has a high per capita income figure, 35% above the EU-27 average. For comparative purposes, the region's GDP is greater than that of neighbouring Portugal. From the immigration perspective, Spain has been one of the leading countries of destination in the world in the last ten years, and the Madrid region has absorbed the largest increase in its immigrant population. The effect of immigration on public services has been one of the major issues, as irrespective of its positive impact on Social Security financing, the perception of Spanish nationals regarding saturation of the healthcare and education systems, etc., has given rise to a heated debate.

The United States was the first country to estimate the fiscal effect of immigration. Huddle (1993) estimates a negative balance of 42,500 million dollars. In contrast, it was estimated by Fix and Passel (1994), as +25,000 millions. In spite of the significance of the previous studies, it was not until 1995 when Borjas (1995), scientifically evaluated the impact as somewhere between -16,000 and +6,000 million. Lee and Miller (1997), showed that the effect on the economy as a whole depends on the type of immigration. The younger and more qualified the new workers are, greater

will be their fiscal contribution to the economy; this was confirmed by Storesletten (2000).

The studies conducted for Europe show some differences. In the case of Sweden, Storesletten (2003), analyses the contribution of immigrants and their use of public assets throughout their lifetimes, estimating that the present value of an immigrant is - 20,500 dollars, with young immigrants presenting a positive fiscal balance. For the United Kingdom, Gott and Johnston (2002), and for the Organisation for Economic Co-operation and Development (OECD), Coppel et al (2001), obtain a slightly positive balance, although the result depends on the immigrant profile. Coleman and Rowthorn (2004), show the existence of a slightly positive fiscal effect in the short run, which becomes uncertain in the long-term.

For Spain, Aparicio and Tormo (2000), estimate, for 1998, a positive balance of around 0.21% of the Gross Domestic Product (GDP). These figures are similar to those estimated by Dolado (2002), 0.3% of the GDP, where, unlike workers competing in the same segment, individuals with qualifications other than those of the new arrivals benefit.

Selection becomes a key aspect of the integration and evolution of new immigrants (Dolado *et al*, 1997 or Coppel *et al*, 2001). The Oficina Económica del Presidenteⁱ (2006), estimates the fiscal contribution of immigration for 2005 as 0.5% of the GDP. Finally, Conde-Ruiz et al., (2008), obtain a higher figure, 1.25%, unequally distributed according to the number of new workers. They also show that the effect on per capita income has been zero (but negative in some regions, such as Madrid) and the impact on productivity has been negative.

One limitation of these studies is that the costs generated by immigrants decrease as they and following generations settle and become integrated in society

(Iturbe-Ormaetxe, 2002). Furthermore, many of the previous studies only consider the positive effect of social security contributions, but not the cost of the obligations generated in the form of pensions (Boldrin et al., 1999).

These effects are estimated using generational accounting methods, proposed by Auerbach et al. (1994), and revised for Spain by Bonin et al. (2001). On a State level, Collado et al. (2004), estimate that the effect of immigrants is positive and significant, as they and following generations help to relieve the burden of the distributive pension system, although the final effect may depend on the type of immigrant. On a regional level, the effects are also different, as the public administrations have other obligations, as shown for Andalusia by García et al. (2006).

For 2005, Vicens (2006), estimated a deficit for the Madrid region ranging from 0.8%-0.55% of the GDP. This fiscal balance, however, refers solely to that year, without considering the fiscal dynamic for the following period. This is contemplated in this paper, which represents an attempt to evaluate both present and future income and expenditure generated by immigrants in the Madrid region. We use a generational accounting model which simulated three alternative immigrant input alternatives, three variations in the economy's discount rate and another three possible evolutions of productivity. We have also simulated other scenarios which are not included here, as the main qualitative results are summarised in these scenarios.

We find that the results depend on how fiscal policy is articulated; in other words, on how the increased public services burden is distributed among present and future generations. We will see that the positive effects of immigration in relation to fiscal sustainability are much clearer on scenarios which do not involve deferred payment. Likewise, the benefits associated to immigration will also depend on the taxpayer's age and even sex.

Section 2 contains a brief description of the generational accounting method and our data projections and populational calculations. Sections 3 and 4 calculate, respectively, the fiscal revenues and expenditures generated by the immigrants living in the Madrid region in 2006. Subsequently, section 5 applies the generational accounting model and describes the principal results. The paper ends with some conclusions.

2.- The generational accounting model and data projections

A theoretical precedent of generational accounting is dynamic neoclassic general equilibrium models of overlapping generations. These models are appropriate for population economy issues, as they are able to integrate the life cycle hypothesis in rational intertemporal decision-making with interactions between generations, thus enabling us to study the impact of a changing demographic environment on the economy. Generational accounting sacrifices general equilibrium aspects to obtain greater applicability, focusing on the effects of demographic changes on the public budget.

Some attempts to contrast the two approaches are found in Börstinghaus and Hirte (2001); Fehr and Kotlikoff (1996); and Raffelhüschen and Risa (1997), who compare the effects which can be predicted from generational accounting models and overlapping generation models. The principal conclusion is that generational accounting does not provide a good measurement of the impact of a tax reform, although it is capable of providing good results when measuring the quality and sign of a reform's effects for different generations.

The importance of generational accounting models lies in the fact that they are capable of showing the net discounted value of the amounts to be paid by both present and future generations to the public administration throughout their lifetimes (Smith and

Edmonston, 1996). They basically consist of editing an “account” for each generation which accounts, in current value, for all the public revenues and expenditures they will generate. The difference is the current net benefit (or cost) from a fiscal perspective.

The sustainability of public finance is assumed, so all the government’s budgetary constraints must be met. In current terms, the sum of all income, at equilibrium, must be equal to the sum of all expenditure plus the amount of debt in the base year. In other words:

$$\sum_{s=t}^{\infty} \frac{Revenues_s}{(1+r)^{s-t}} \equiv \sum_{s=t}^{\infty} \frac{Expenditures_s}{(1+r)^{s-t}} + Debt_t \quad [1]$$

where r and s denote the interest rate and the year. We now distinguish between expenditure which can not be individually reassigned (*Consumer spending*) and transfers. The latter can be discounted by the taxes paid by each generation to obtain net revenue, expressing [1] as:

$$\sum_{s=t}^{\infty} \frac{Consumer\ spending_s}{(1+r)^{s-t}} + Debt_t \equiv \sum_{s=0}^N NetT_{\cdot,t,t-s} + \sum_{s=1}^{\infty} NetT_{\cdot,t,t+s} \quad [2]$$

The expenditure discounted in consumption, in any period s , plus the amount of public debt, will be equal to the net taxes paid or received by individuals from present generations ($t-s$, up to N , where N is the maximum years of an individual’s life) plus the net taxes of each future generation ($t+s$). These calculations must be made distinguishing each individual’s sex and origin. The next taxes for a generation k , will be the discounted sum of the projected mean payment to the public sector in year j by a representative individual from generation k multiplied by the number of residents in year j included in the cohort born in year k :

$$NetT_{\cdot,t,k} = \sum_{j=\max\{t,k\}}^{k+N} \frac{Inhabit_{\cdot,j,k} MeanPayment_{j,k}}{(1+r)^{j-t}} \quad [3]$$

The generational accounts of each age are thus obtained:

$$\text{Generational account}_{t,k} = \frac{\text{NetT}_{t,k}}{\text{Inhabit}_{t,k}} \quad [4]$$

When the sum of the revenues is equal to consumption spending plus debt, as in [2], this would be an equilibrium scenario. If the sum of spending is greater, this would be an “unsustainable” fiscal policy scenario. In this case, two possible alternatives are contemplated which will be described in detail in section 5.

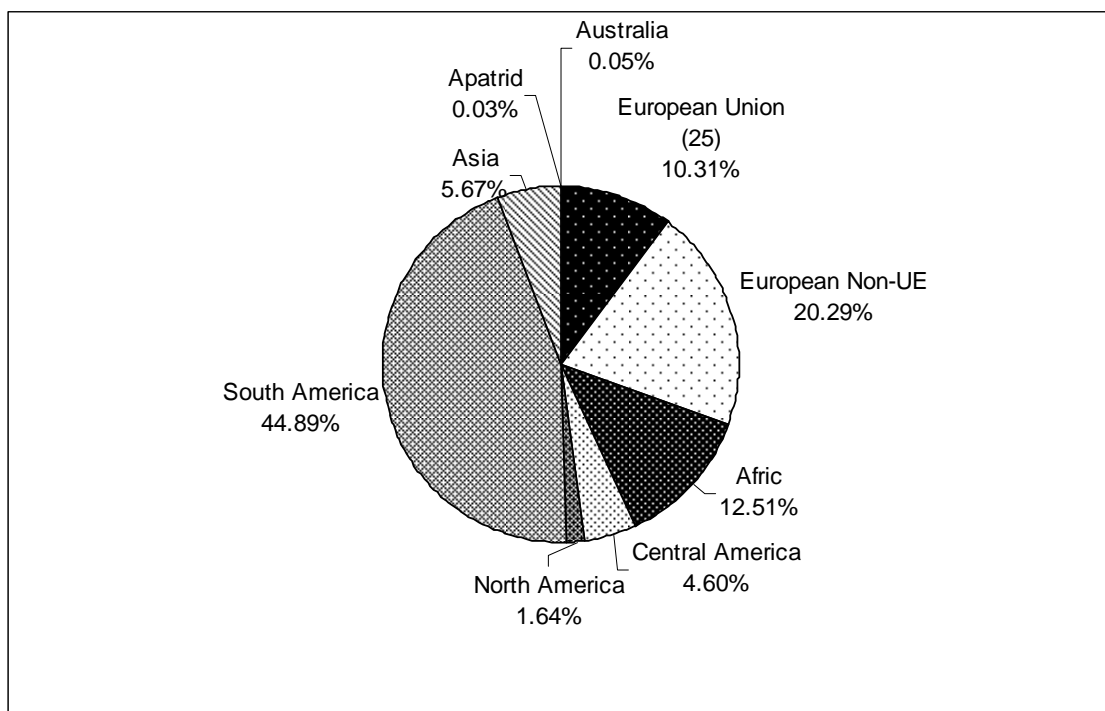
On the other hand, in order to calculate equation [2], we have to estimate prior income and expenditure and make some assumptions about their evolution. We assume that per capita spending will increase in the future at the same rate as productivity g , estimated at 1.25%. *Consumption spending* is thus obtained by multiplying this per capita spending by population projections. Likewise, in order to calculate mean net payments, we estimate those of the present generations in the base year (2006) and project by means of the productivity rate, correcting for population projections.

We have chosen 2006 as reference based on data availability. Unfortunately our series do not reflect the possible changes due to the global crisis that was patent in 2008. In Spain, due to the idiosyncrasy of the economy, the effects were delayed to the last quarter of 2008 and, especially to 2009. Our results do not include those changes and we will have to wait several years to have all the data.

Before approaching the impact of immigration on the economy, we will describe the volume, origin and characteristics of the foreign population in the Madrid region, in order to highlight the importance of studying immigration in this specific part of Spain. Madrid is the Spanish region with the relatively highest immigrant population and the highest migratory flows in Spain. Immigrants represented 13.3% of the region’s total population in 2006 and housed 24% of all the immigrants in Spain. Madrid is also the Spanish region which registered highest growth in migratory flows from 2001 to 2006, with an average annual growth rate of 45%, at a time when Spain was one of the leading

recipients of immigration, not only in Europe but on a worldwide scale. Figure 1 shows the origin of the immigrants living in the Madrid region by nationality. Practically half are from Central and South America, representing a significant difference relative to the immigrants in other EU countries. This is important, as a common language and culture help the integration process, so it is more plausible, within a few generations, to expect similar behaviour among natives and immigrants with regards, for instance, to fertility rates.

FIGURE 1.- Origins of immigration in the Madrid region



Source: INE

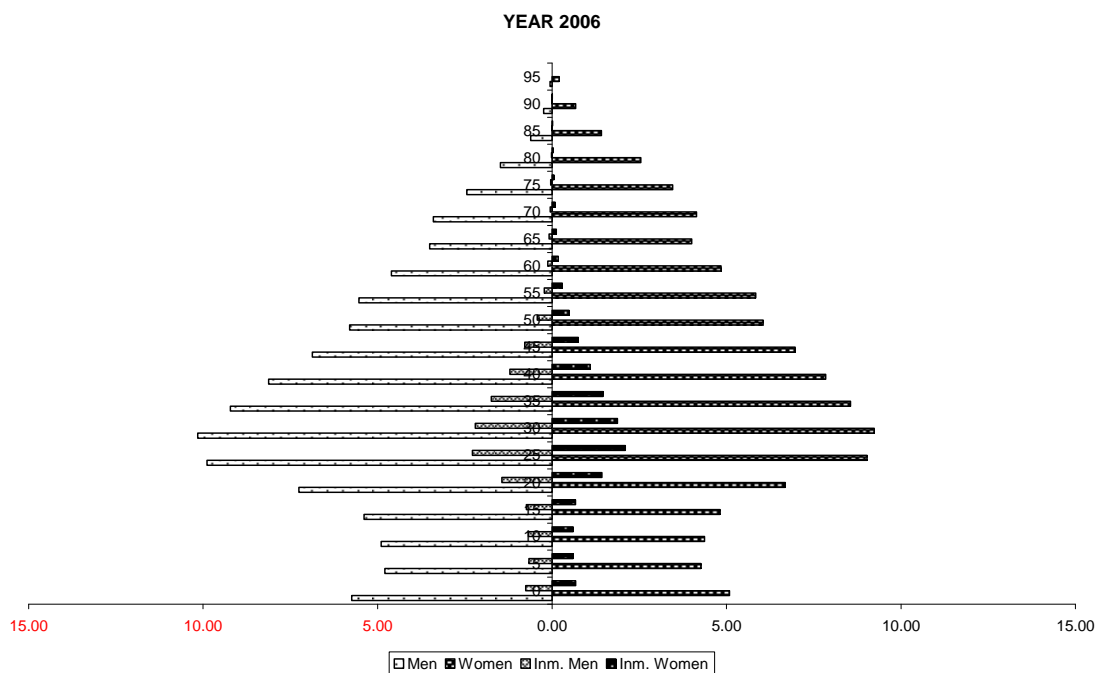
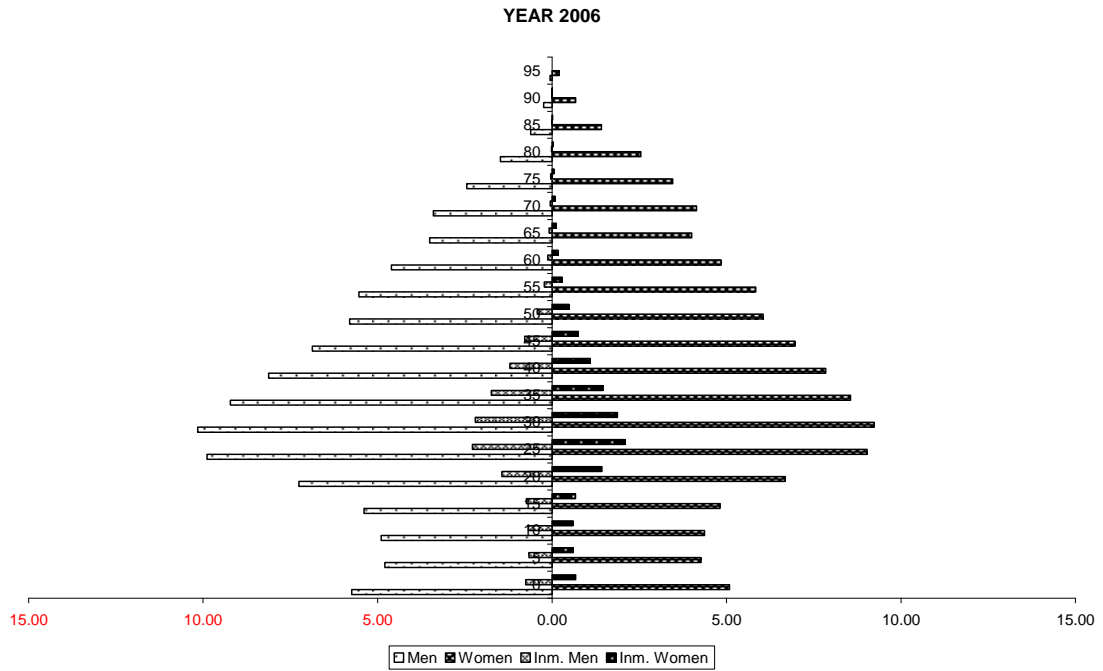
Another sociodemographic characteristic of immigration in the Madrid region is its equality in terms of sex, with male and female immigration on practically the same level. With regards to age, most of the immigrant population is in the 14-64 age group. Specifically in 2006, around 70% was in that group. Most immigrants, therefore, are of a potentially active age, so they can be classified as “net contributors” to the system, at

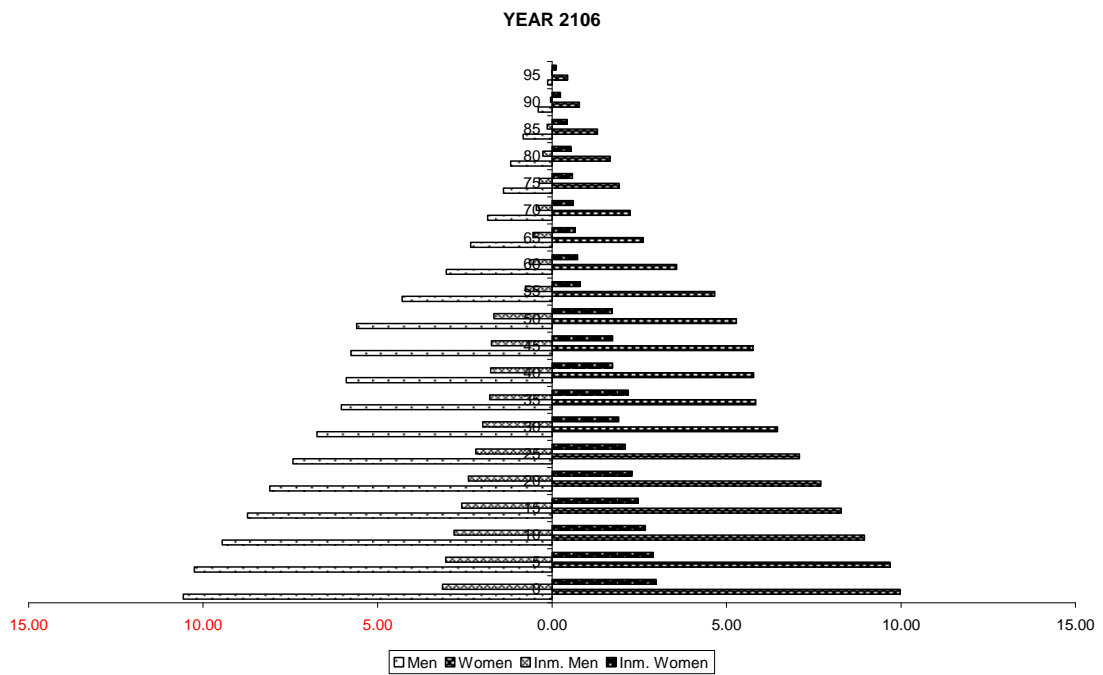
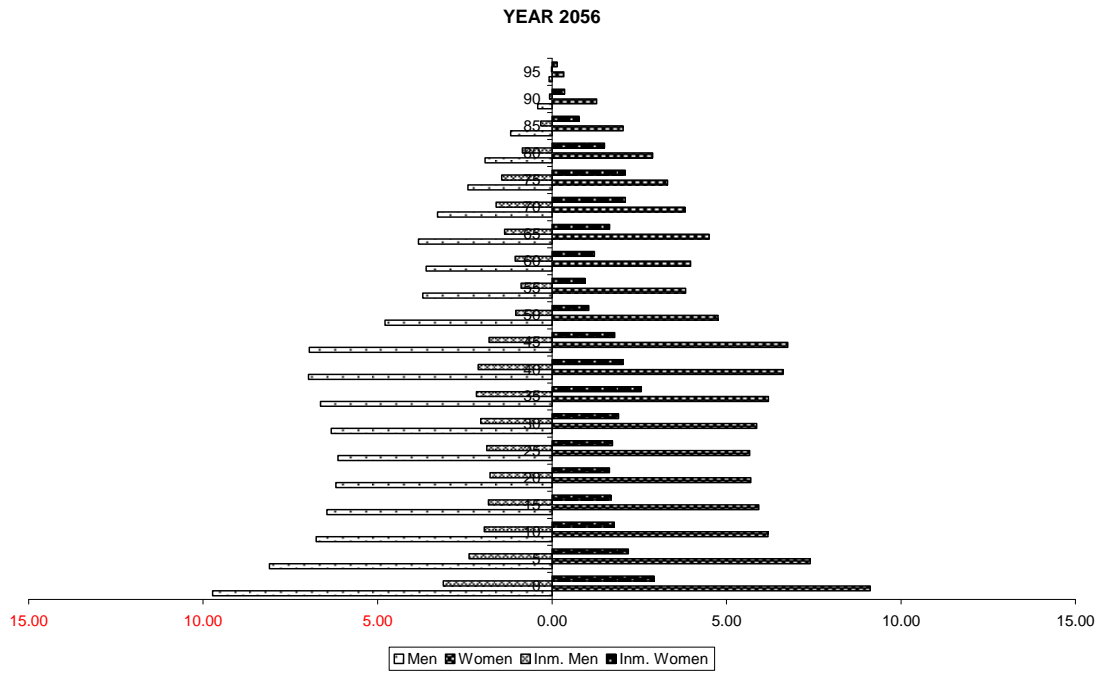
least in the short term. Finally, a large proportion of immigrant labour is occupied in the low qualified segment, largely construction, which registered spectacular growth not only in the Madrid region but all over Spain (in those years, Spain was the country in which the construction sector represented the highest percentage of the GDP among all EU-27 countries).

With this as our starting point, our analysis includes population projections from 2006 to 2106, based on life expectancy and fertility rate estimates. The basic method used to perform population projections is that used by Hollmann et al. (2000). For the native population's life expectancy and fertility rates we used National Statistics Institute (INE) data, and data from the US Census Bureau for the foreign population's fertility and mortality rates. The model is contemplated in annual periods by age, sex and origin group from Statistical National Institute (INE) data.

To calculate the children born into the foreign population living in Madrid, we consider the population of the respective sex, in the first age group of the base year in relation to the total, weighted by the number of women of childbearing age, from 15 to 44, the survival rate and both present and future fertility rates. In the subsequent period, we consider both the group's migratory balance and the foreign population born in the Madrid region. The fertility rate will vary among generations, considering that the first will present a rate different from that of the second and third, when they become the same. From the fourth generation, all individuals are classified as native. Finally, three scenarios are considered in relation to the net migratory balance. They are described in section 5.

FIGURE 2.- Evolution of the national and immigrant population as percentages of the entire population by sex in the Madrid region in 2006, 2056 and 2106 according to a mean inflow scenario





Source: the author

Figure 2 shows the evolution of the national and immigrant populations as a percentage of the total by sex. As Figure 2 shows, the immigrant population pyramid presents the most numerous cohorts in precisely the same strata as the native population, from age 20 to 40, although the mean age of the immigrant population is slightly lower, around 30, while that of the native population is about 36. The migratory process will help to mitigate the gradual ageing of the population.

One of the main consequences of the new populational structure, on a nationwide scale, is the Social Security superavit generated in the short term, evaluated at the end of 2007 as 1.34% of the GDP, when pensions represented 8.7%. Of the 18.7 million Social Security contributors, 10.1% are immigrants, so the contributor/pensioner ratio is around 2.5.

This situation, however, may change dramatically in the next few decades. For example, expectations for 2050 show that pension expenditure will be 20% of the GDP (Dolado and Vázquez, 2008). Thanks to the evaluation of generational accounting models, we can estimate the real net contribution of immigration.

3. Revenues

The data for fiscal revenues used in our calculations for the generational accounts comes, in the aggregate, from the Budget of the Regional Government, from the Social Security Treasury (see Table1). One of the characteristics of the quasi federal fiscal system in Spain that adds some difficulties to the estimation, is that some taxes are shared with the National Government such as Direct Income taxes (IRPF), Value Added Tax (IVA) while other special indirect taxes on housing (IAJD and ITP) are the exclusive competence of the region. On the other hand, other fiscal revenues, like Social Security contributions, are exclusively managed by the National Government.

Under these circumstances we have adopted the strategy shown in García et al., 2006. We have chosen three categories of taxes, direct taxes (mainly income and corporate), indirect taxes (value added, tobacco, housing, etc) and, finally, Social Security contributions. To estimate the contribution for each of the profiles by sex, age and nationality we have used the European Community Household Panel (ECHP), a survey based on a standardised questionnaire that involves annual interviewing of a representative panel of households and individuals in each country, covering a wide range of topics: income, health, education, housing, demographics and employment characteristic, etc. Although the Panel we use started in 1997 and ended in 2001, it is the closest approximation to the fiscal behaviour of families that it is available. The data is complemented with the Household Budget Survey (HBS), which allows obtaining the profiles of taxes paid by natives and immigrants on the base year from the specific microdata, adjusting by the total number on the sample and by the difference between the estimations and the budgetary numbers.

TABLE 1.- Aggregate Revenues in the Madrid Region, 2006
(millions of €)

Type of tax	Total	Immigrants	Percentage
Personal Income tax	4,562	49.8	1.09%
VAT	3,094	431.1	13.93%
Social Security contributions	15,056	842.5	5.60%
Tax on documented legal acts	1,438	2.3	0.16%
Property Transfer tax	1,895	122.4	6.46%
Total	26,045	1479.7	5.68%

Source: Madrid region budget for 2006, Social Security administration and the author

The consumption behaviour is derived from the HBS, which shows the spending in the different groups of goods, assuming equally spending for each family member

(immigrant and native) and applying the tax rate for each case. The results show that native families have a lower saving rate, while immigrants expending is concentrated on basic goods.

TABLE 2.- Taxes paid by immigrants in Madrid Region by area of activity

	2006	Withheld	Rebates	Tax revenue
Agriculture		1,565,796	1,330,927	234,869
Industry		9,603,115	8,162,647	1,440,467
Construction		104,393,339	88,734,339	15,659,001
Services		127,806,115	108,635,198	19,170,917
Self-employed		52,429,225	44,564,842	7,864,384
Domestic		33,858,254	28,779,516	5,078,738
Others		2,017,828	1,715,154	302,674
Total		331,673,673	281,922,622	49,751,051

Source: CNA- 93, Social Security, Annual Salary Structure Survey, Active Population Survey, European Community Household Panel (ECHP) and the author

For fixed income taxes and Social Security contributions we establish the profiles of the individuals by using ECHP Panel, which gives a detailed account of the net revenues of the family members age 16 and above. To obtain the gross data we use the tables from both the revenue service and the social security treasury. To adjust immigrants to nationals working households, and following García et al. (2006); and Collado et al. (2004), we apply a 75% reduction on the income of immigrant households with respect to those of native similar situation. To obtain the aggregate numbers we adjust those data by the occupation rate for each sector obtained from the Economically Active Population Survey (EAPS), which allows estimating the figures for active and non active natives and immigrants.

TABLE 3.- Taxes paid by immigrants in the Madrid region by expenditure item

2006	Consumption structure	Annual individual expenditure	Total individual expenditure	VAT
Food and non-alcoholic beverages	24.5%	1,117	851,407,631	51,084,458
Alcoholic beverages, tobacco and narcotics	4.0%	182	139,005,328	22,240,852
Articles of clothing and footwear	5.1%	233	177,780,361	28,444,858
Housing, water, electricity and other fuels	31.8%	1449	1,105,092,354	176,814,777
Furnishing, household equipment and housing expenses	2.5%	114	86,878,330	13,900,533
Health	1.2%	55	41,701,598	6,672,256
Transport	8.5%	387	295,386,321	47,261,811
Communications	5.8%	264	201,557,725	32,249,236
Leisure and culture	3.1%	141	107,729,129	4,309,165
Education	0.4%	18	13,900,533	-
Hotels, cafés and restaurants	7.8%	357	272,306,361	19,061,445
Other goods and services	5.2%	238	181,519,182	29,043,069
Total	100.0%	4556	3,474,264,853	431,082,460

Source: Continuous Household Budget Survey, European Community Household Panel (ECHP), Ministry of

Agriculture, Vicens (2006) and the author

The main results of these estimations can be seen on Table 1, 2 and 3, which show the relevance of indirect taxes over direct taxes, especially for Madrid. Another interesting issue is the weight of Social Security contributions with respect to Income taxes. This effect is due to fact that most of immigrants salaries are below the minimum requirements, being exempt of payment, while Social Security is paid by all employees. Another interesting issue is the high rate of employment on females, but the strong concentration on household services, that have low Social Security contributions and are usually below the cited taxing limit.

4.- Expenditures

The aggregate expenditure figures are taken from the Madrid region's 2006 budget which is shown in the first column of Table 4. There are two exceptions, Healthcare and Education expenditures, which are, not only the two major items — representing nearly 63% of the region's total spending — but also present strongly age-dependent profiles. These two items are therefore of key importance for our objective, and they are each considered in a specific section, in which we explain how we have allocated expenditure by age profile.

TABLE 4.- Aggregate Expenditure of the Madrid region (millions of €)

2006	2006 Budget	Direct immig. expend.	% of total	Immig. expend.	% of/ total	Nationals expend.	% of total	AGGREGATE EXPENDITURE
Health and consumer affairs	6,067.9			545.6	7.83	6,420.9	92.17	6,966.5
Education	4,334.2			401.3	10.26	3,508.7	89.74	3,910.0
Family and social affairs	965.1	13.2	1.4	13.2	1.37	951.9	98.63	965.1
Immigration	70.8	33.8	47.7	33.8	47.68	37.0	52.32	70.8
Justice and Interior	515.6	26.9	5.2	26.9	5.22	488.7	94.78	515.6
Culture and Sport	288.0	1.6	0.5	1.6	0.54	286.4	99.46	288.0
Transp. and infrastructures	1,549.6			206.46	13.32	1,343.1	86.68	1549.5
Economy Technology and Innovation.	277.5			36.97	13.32	240.5	86.68	277.5
Employment and women	593.7	31.6	5.3	31.6	5.33	562.1	94.67	593.7
Environment	738.7	14.6	2.0	14.6	1.98	724.1	98.02	738.7
Presidency	229.1			30.52	13.32	198.6	86.68	229.1
Public finance	294.5			39.24	13.32	255.3	86.68	294.5
Public debt	492.6			65.63	13.32	426.9	86.68	492.6
Others	159.0			21.18	13.32	137.8	86.68	159.0
TOTAL	16,576.1			1,468.5	8.61	15,581.9	91.39	17,050.4

Source: 2006 Madrid Region Budget, Vicens(2006) and the author

The last column of Table 4 shows the aggregate expenditure figures we have used for our generational accounts model. As you can see, all the figures are the same as in the budget except Healthcare and Education.

Table 4 also shows aggregate expenditure, distinguishing between immigrants and Spanish nationals. In Healthcare and Education, the criteria used will be described in detail later. For the other items, we have used estimates of direct spending on the immigrant population whenever they were available and, when not, for the immigrant population we estimated expenditure in proportion to their percentage of the total population in 2006 (13.32%). In these items, in order to allocate aggregate expenditure to age profiles, we applied a proportional criterion, using the age pyramids for immigrants and Spanish nationals.

We can see that the total expenditure assigned to the immigrant population in 2006 was 1,468.5 million euros, 8.61% of the total. This is lower than the percentage represented by immigrants in the total population, largely due to the fact that their healthcare expenditure is less than that of the national population due to their lower age profile.

4.1.-Allocation of healthcare spending by age profile

In order to allocate healthcare spending by age group among the immigrant and native populations, we used the calculations found in Vicens, 2006, with some adjustments. This study estimates per capita healthcare spending in 2005 according to age in three major healthcare items: specialised care, primary care and public health. We assume that there are no significant differences between the healthcare spending of

a Spanish national and immigrant of the same age. Vicens, 2006, refers to different empirical studies to justify this assumption; also see Regidor, 2008.

TABLE 5.- Healthcare exp. by age p.c. (€)

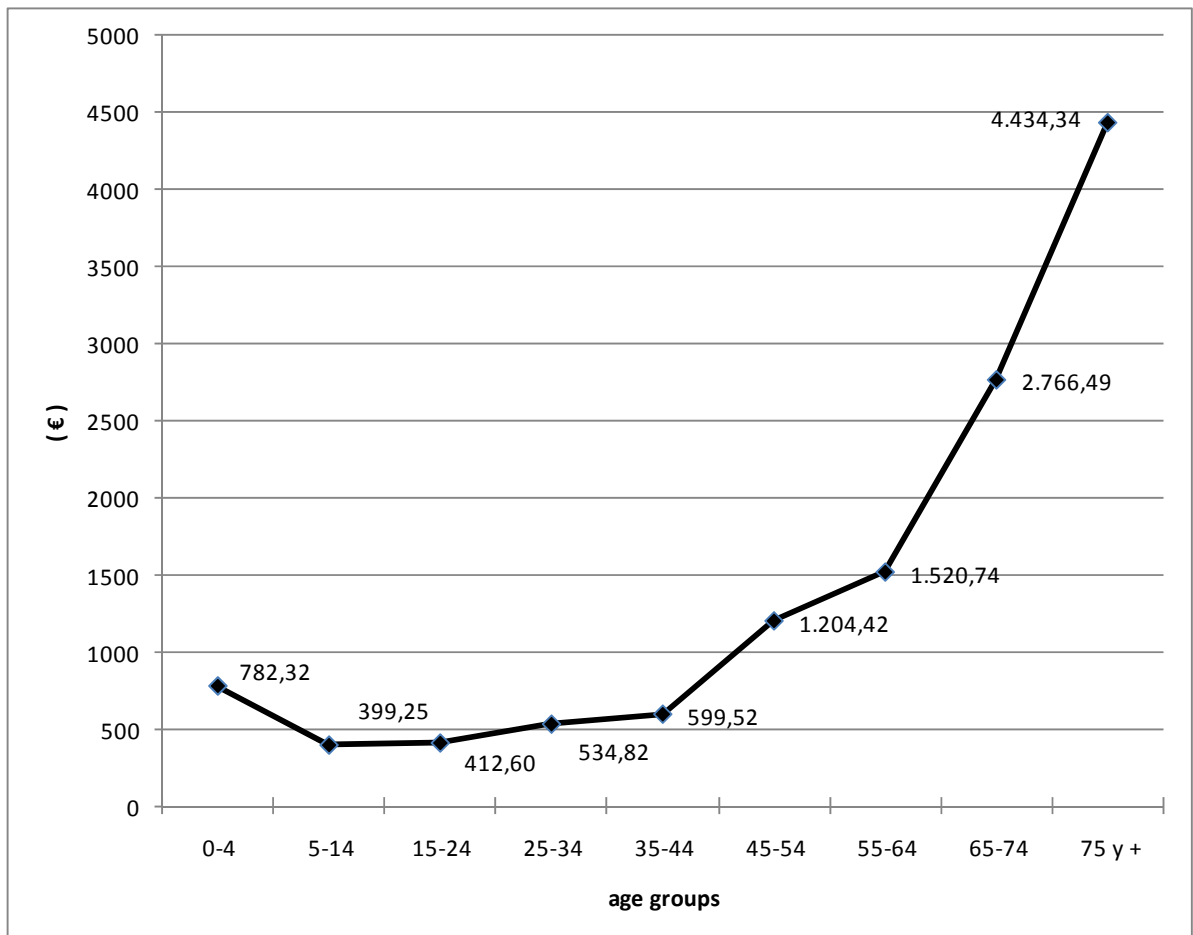
age	2005			2006				Total p.c.
	Speci alist	Primary care	Public health	Special ist	Primary care	Pub. heal.	Rest	
0-4	42	507	89	43.1	520.7	91.4	127.1	782.3
5-14	15	245	5	15.4	251.6	5.1	127.1	399.3
15-24	67	206	5	68.8	211.6	5.1	127.1	412.6
25-34	193	198	6	198.2	203.3	6.2	127.1	534.8
35-44	218	234	8	223.9	240.3	8.2	127.1	599.5
45-54	723	316	10	742.5	324.5	10.3	127.1	1,204.4
55-64	895	439	23	919.2	450.9	23.6	127.1	1,520.7
65-74	1851	659	60	1,901.0	676.8	61.6	127.1	2,766.5
75 y +	3370	759	65	3,461.0	779.5	66.8	127.1	4,434.3
total	644.6	339.7	20.9	662.0	348.9	21.5	127.1	1,159.5
	weighted means							

Source: for 2005 Vicens (2006), rest the author

We have made two adjustments to the results obtained. The first is simply a CPI update to the year 2006. The other adjustment consists of adding a residual item which proportionally allocates the Department of Health spending not included in the previous items. The results of these adjustments are also shown in Table 5. Figure 3 shows total per capita healthcare spending by age group. We see that it is J-shaped, meaning that, except for the first part, healthcare spending tends to increase with age. Note large

differences according to age, as such spending can be multiplied by more than ten within an individual's lifetime (from less than 400€ in the 5-14 age group and more than 4,400€ for the over-75s).

FIGURE 3.- Healthcare expenditure per capita (€)



Source: the author

4.2 Allocation of education expenditure by age profile

Education is the other major item in the Madrid region budget which has also an age-related spending profile.

➤ With regards to **public spending on non-university education**, we again make use of the important study conducted by Vicens, 2006, which estimated expenditure by student for each non-university level. Due to the lack of statistical data,

these figures are estimated assuming that “on each educational level ... an immigrant pupil ... represents the same expenditure as a non-immigrant pupil” (Vicens, 2006, pp. 197). This is not the case, however, when calculating the cost of mean grants per pupil. Given the lower mean income of immigrant families, grant costs per immigrant pupil are considerably higher. When the two concepts are added together, we find that the mean cost per immigrant pupil is higher.

TABLE 6.- Per capita expenditure on education (€)

age	Non-university expenditure		University expenditure		Total expenditure	
	immigrants	nationals	immigrants	nationals	immigrants	nationals
0-4	978.2	1,082.5	0	0	978.2	1,082.5
5-14	3,142.7	2,847.3	0	0	3,142.7	2,847.3
15-24	671.3	1,307.2	196.5	1,451.8	867.8	2,759.0
25-34	28.3	32.2	25.4	251.4	53.6	283.6
35-44	0	0	4.7	32.3	4.7	32.3
45-54	0	0	3.7	14.0	3.7	14.0
55-64	0	0	0	0	0	0
65-74	0	0	0	0	0	0
75 y +	0	0	0	0	0	0

Source: the author

We now have to allocate educational spending by age group and between Spanish nationals and immigrants, using information about pupils registered at public and publicly-subsidised schools provided by the Regional Ministry of Education for each educational level in the 2005/2006 academic year. This information, however, is not broken down by age, so we have to make use of the pupil distribution by age statistics estimated by the (INE).

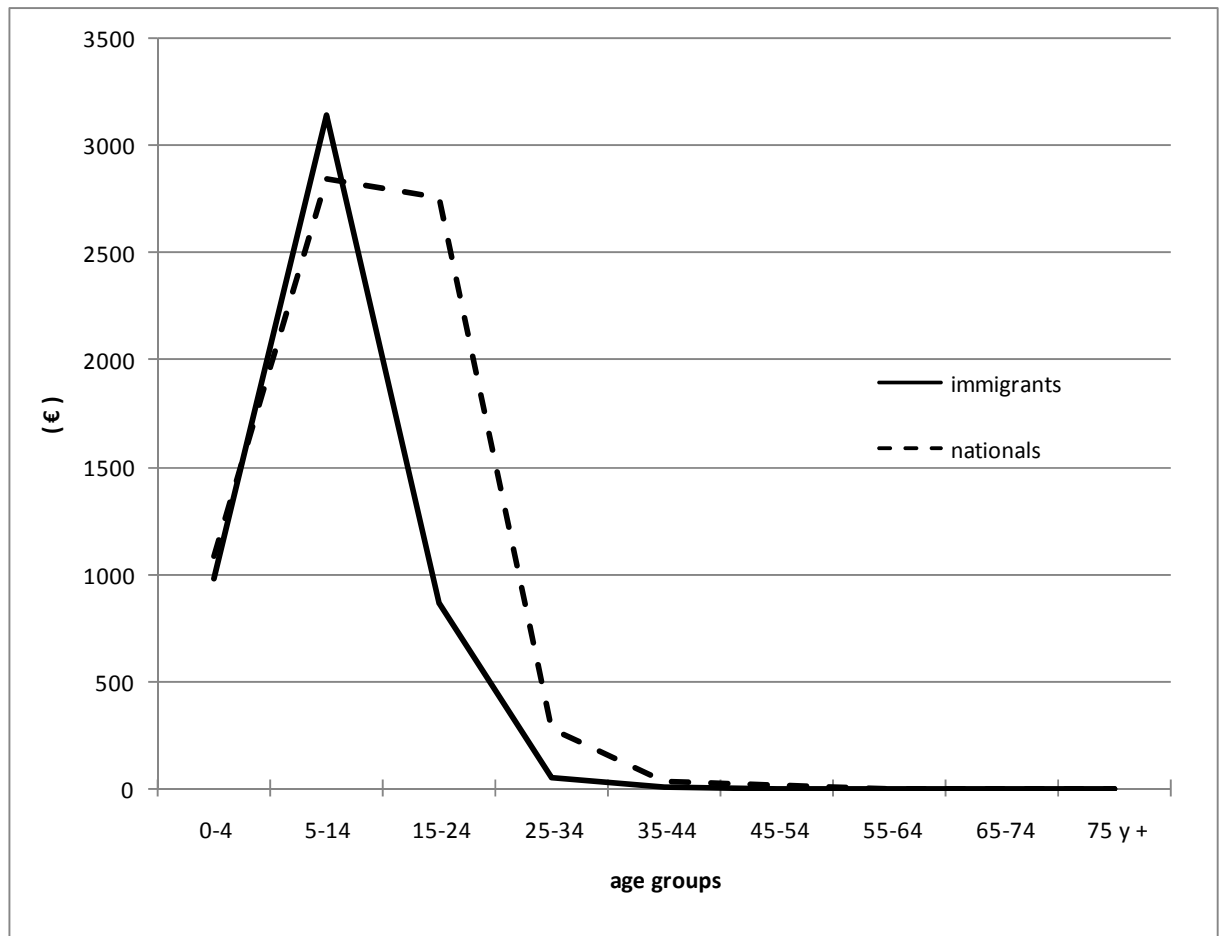
The result is shown on Table 6, where we can see that in all age groups except 5-14, mean per capita expenditure for immigrants is less than for nationals, as less of the former are registered for non-compulsory education. The opposite is true in the 5-14 age group (which includes most compulsory education). There are two possible explanations for this: a) spending per foreign pupil is greater because of the grant effect (due to a lower mean income), and b) a higher percentage of the native population attends private schools.

➤ In order to allocate **university-level public spending**, we have considered a homogeneous distribution among university students, irrespective of whether they are nationals or foreign. If we divide total university and research spending among the number of students registered at public university in 2005/2006, we obtain mean spending per student (5,673€). The INE student distribution by age statistics were used to distribute this figure by age group. However, as no distinction is made between national and foreign students, we assume that the total percentage of immigrant university students is the same for all ages.

With this information, we allocated public spending on university education by age group, which is also shown in Table 6. In this case, the significant differences in per capita spending in favour of the national population would be explained by the enormous differences in the percentage of each population attending university.

➤ Finally, when we add non-university and university expenditure together, we obtain the distribution of **total public spending on education** by age group. It can be found in the last column of Table 6 and on Figure 4. We see how the per capita spending on education generated by Spanish nationals is greater on all non-compulsory levels.

FIGURE 4.- Total per capita expenditure on education (€)



Source: the author

4.3.- Allocation of total expenditure by age profile

In items other than Education and Healthcare, we have distributed spending homogeneously among the entire population, without distinguishing age. If we add Education and Healthcare to the other items, we obtain **total per capita spending** by age group, as shown on Table 7 and Figure 5. We see how the public spending by age profile (except for the first part) is U-shaped, as the greatest spending on the young goes on Education, whereas the older population has more healthcare costs. The “middle-aged” population represents a minimal cost in these areas (education and healthcare).

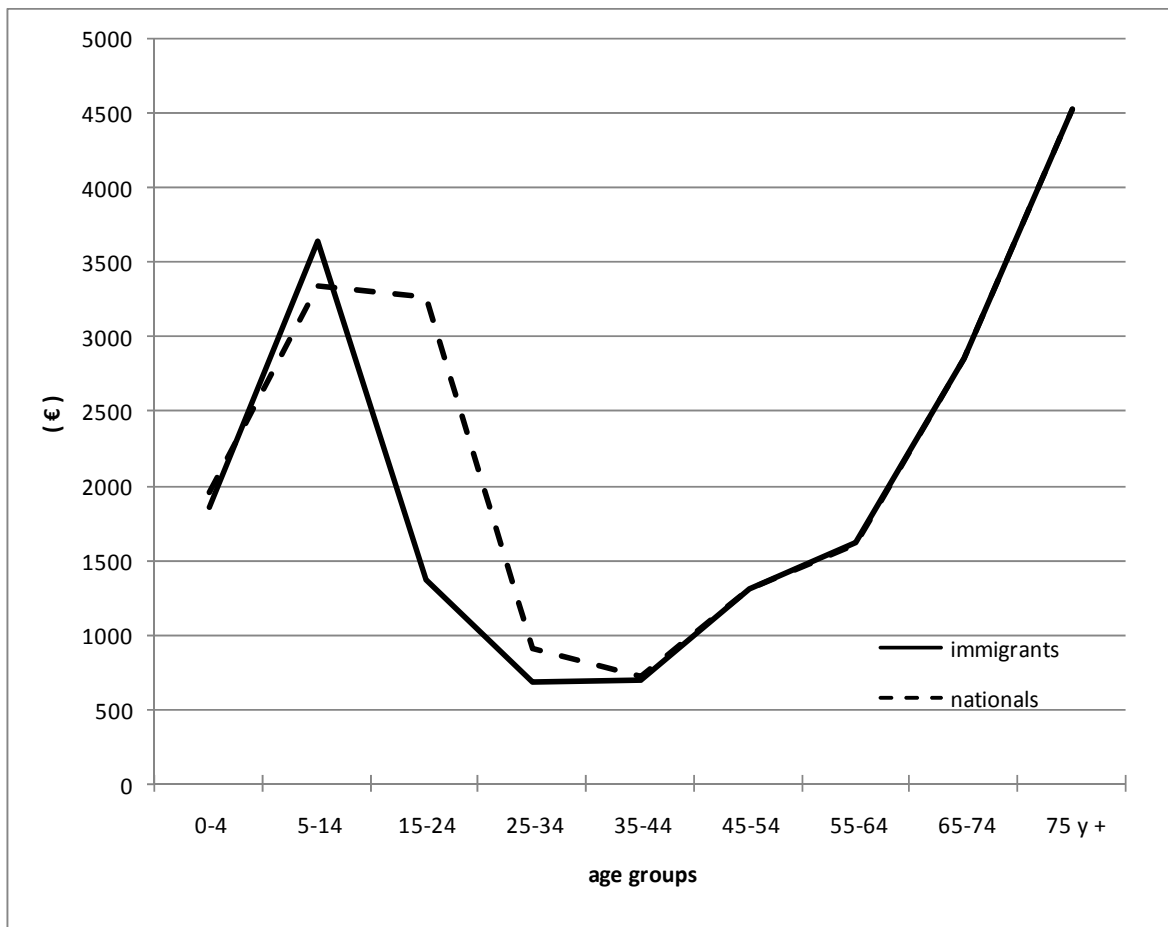
TABLE 7.- Total p.c. expenditure (€)

	Immig. nationals	
0-4	1,847.4	1,951.6
5-14	3,628.8	3,333.4
15-24	1,367.3	3,258.4
25-34	675.3	905.2
35-44	691.1	718.6
45-54	1,295.0	1,305.3
55-64	1,607.6	1,607.6
65-74	2,853.3	2,853.3
75 y +	4,521.2	4,521.2

Source: the author.

On the other hand, according to the Bank of Spain, the Madrid regions current debt totalled 10,060 million euros in December, 2006.

FIGURE 5.- Total per capita expenditure (€)



Source: the author

5.- Results

Our analysis considers three scenariosⁱⁱ regarding the migratory balance in the Madrid region: **a) *Mean immigrant inflow scenario***: it would be the best approximation to the migratory flows experienced to date in the region and establishes a gradual decrease in the migratory balance, which in 2005-2010 will be only 70% of the 2005 figure. Annual arrivals would register a mean of close to 98,000 people; in 2010-2015 the figure will be 60% that of the previous five years, and zero for the other periods; **b) *No immigration scenario***: borders are closed after 2006; **c) *Low immigrant inflow scenario***: it would represent a somewhat faster reduction in the net migratory balance than the mean inflow scenario, due to economic or social phenomena, and the net migratory balance in 2005-2010 would be 40% that of 2005 (in figures, there would be close to 60,000 new immigrants), falling to 20% in the next five years, and then to zero.

We analysed two fiscal policy alternatives for each scenario. With the first, the burden of possible fiscal disequilibrium falls completely on future generations, previously described as an “irresponsible” fiscal policy”; the second alternative assumes that adjustments are made for all generations (“responsible” fiscal policy). We also assumed (although we subsequently performed a sensitivity analysis) that mean productivity growth is around 1.25% and that the interest rate is 5%. By including the productivity rate in our population projections together with income estimations, we obtain the generational accounts for the generations living in the base year. Once the present value of public consumption, debt and the accounts for the living generations has been estimated, we obtain the accounts for future generations as a residual.

The above data is included in the calculation of the profiles related to payments and revenues by age and sex, obtaining the mean per capita spending and income for each group in the base year. By multiplying mean spending by the number of individuals in the group's population, we would, in theory, obtain the total amount of taxes or transfers received by the group. Future profiles are established with per capita income and spending projections, considering that they expand at the same rate as productivity, as we assume that salaries and productivity grow at the same rate in the long-run in the presence of competitive markets. Finally, all individual profiles are normalised relative to the profile of a representative, 40-year old male.

Tables 8, 9 and 10 summarise the different generational accounting results for all three scenarios. The first two columns show the first fiscal policy alternative, when adjustment is transferred to future generations, and the last two consider that payment is made by all generations. Positive values show that the generation in question, at current values, will pay more than it receives in its lifetime, with negative values showing the opposite.

Table 8 shows the results for the **mean inflow scenario**. The accounts shown on the table correspond to a typical life cycle model. They grow in childhood (they are less negative or more positive) and youth and peak at around the age of 25. They then start to decrease, with the lowest values found among older generations, due to greater healthcare costs. Specifically, there would only be positive values among men aged from 25-35. This is because this population group has minimal educational and healthcare costs, whereas their tax contributions are considerable. For other generations and women, the present net value of payments is negative. The significant differences between male and female accounts are largely due to the latter's relatively low

participation in the labour market. They are net demanders of transfers in all generations, and their values are always higher (in absolute terms) than those of men.

TABLE 8.- Generational accounts, a) mean inflow scenario (g=1.25%, r=5%)

Base year=2006 Age	All burden on future generations		Immediate change	
	Men	Women	Men	Women
0	-46219.06	-60326.13	-8554.6	-21928.46
5	-40105.45	-55878.73	893.98	-14732.21
10	-26968.02	-47607.38	19191.64	-315.7
15	-12130.09	-37909.85	41142.2	16156.23
20	-1105.99	-30524.56	53927.7	24326.92
25	8046.75	-19592.99	55180.03	26549
30	4523.16	-20874.36	45435.69	19559.01
35	1317.01	-25203.14	40574.31	14394.37
40	-4544.56	-29237.86	30031.57	5941.39
45	-11319.93	-35727.2	20604.99	-2482.71
50	-20541.1	-42923.38	8534.89	-11889.97
55	-26785.68	-46672.76	-3514.12	-19901.35
60	-34264.19	-50093.33	-15453.07	-26553.14
65	-52038.65	-73397.13	-30114.98	-43511.18
70	-36273.81	-55456.83	-22504.88	-34959.7
75	-33701.23	-56100.42	-21908.02	-37096.9
80	-29667.31	-55089.83	-19851.41	-37673.3
85	-30643.99	-53993.25	-21377.9	-37561.72
90	-27867.26	-42679.38	-16431.09	-27163.83
95	-23526.63	-34385.77	-6393.83	-16700.77
Generation born in 2007	30280.98	16836.02	-7953.53	-20886.61
% change in net taxes	49.19		17.35	

Source: the author

The figure under the “Generation born in 2007” heading represents the present value of the average net fiscal burden supported by an individual born in that year throughout his lifetime, assuming that the following generations pay that amount

adjusted for productivity. We can thus compare the net taxes of an individual from the generation born in 2006 and another born a year later. On Table 8, the taxes paid by a man born in 2007 would be 30,280 € in net terms, while one born a year earlier would receive 46,219 €. There is therefore disequilibrium between present and future generations, showing that the disequilibrium in public accounts is transferred to the future. The case for women is similar, as they also go from being net recipients of public funds to being net contributors.

The last row on the table represents the percentage difference in the shift from taxes to transfers between the generation of zero age in the base year and the future generation. In this case, the accounts (increase in taxes and reduction of transfers) for someone born in 2007 are 49.19% greater than for someone born in 2006. At this point, it is interesting to note the differences caused by the application of the two fiscal policies. With the “irresponsible” policy, a man born in 2007 would have to bear a fiscal burden more than 75,000 € greater in his lifetime than one born in 2006. With a “responsible” fiscal policy, however, the additional tax burden would only be 600 € in his lifetime, relative to man born a year earlier.

It is interesting to find that not only are there more generations of men for whom the present value of payments would be positive (from 5 to 50), but there would also be some generations of women (from 15 to 40) who would have positive payments. In this scenario, we can see how the burden on future generations is substantially reduced. This reveals the important generational inequity that the current fiscal system is producing for future generations, as most of the fiscal budget deficit is being transferred to the future. Most of this deficit appears to be associated to the healthcare and educational systems, according to the cost structure used in the region’s budget. The demographic structure of the Madrid population, would lead to the smallest generations being net

payers. In order to correct this disequilibrium, the tax increase and reduction in transfers for the first of the future generations is calculated at 17.35%, a third of the previous.

TABLE 9.- Generational accounts, b) no immigration scenario (g=1.25%, r=5%)

Base year=2006 Age	All burden on future generations		Immediate change	
	Men	Women	Men	Women
0	-46632.22	-61319.13	-7647.26	-21851.47
5	-39842.07	-56106.09	1939.28	-14424.21
10	-25881.26	-45889.62	18958.84	-553.3
15	-11177.6	-34204.25	37100.56	13985.38
20	-480.56	-26503.9	48054.24	21845.68
25	9446.6	-16854.64	53103.6	26525.71
30	6371.56	-19290.48	46453.69	20844
35	3253.08	-24265.19	42906.76	15958.69
40	-3095.82	-29092.61	32505	7118.54
45	-10653.52	-36516.3	22659.66	-1924.13
50	-21037.37	-44776.54	9572.77	-12208.77
55	-28367.77	-49326.06	-3787.68	-21066.83
60	-36490.89	-53223.05	-16588.04	-28289.24
65	-55110.34	-77938.86	-31963.08	-46298.25
70	-38195.66	-58886.41	-23761.64	-37225
75	-35331.82	-59481.75	-23045.37	-39448.97
80	-30983.68	-58071.1	-20806.99	-39794.09
85	-31798.3	-56470.15	-22172.73	-39232.7
90	-28694.6	-44245.92	-16840.06	-28068.88
95	-23920.96	-35202.99	-6423.68	-17076.29
Generation born in 2007	33044.54	18290.95	-7163.36	-21063,47
% change in net taxes	48.21		16.8	

Source: the author

The results for the **no immigration scenario** are shown on Table 9. We can clearly see the effect of immigration and comparisons with other population scenarios. When we

assume that the entire burden is transferred to future generations (first two columns), we find that the same generations are net recipients and payers as with the mean inflow scenario. The generational accounts continue to result in a large deficit, transferring the burden to future generations. The payment to be made by the generation born in 2007, however, if there were no immigration, would be greater, 33,044 € for men and 18,290 € for women, in both cases higher than the figures of the previous immigration scenario, where they were 30,280 € and 16,836 € respectively. This means that the migratory phenomenon would represent a 9.1% reduction in net payments for men and 8.6% for women. Indeed, the present generations of net payers (men aged from 25 to 35) contribute more in the case of no immigration (9,446 €, 6,371 €, 3,253 €) and the transfers received by younger generations would be lower than with a mean inflow (8,046 €, 4,523 €, 1,317 €). This result is nearly always found for men, but is less homogeneous for women. This phenomenon could be associated to the lower activity rate of immigrant females relative to males, leading to an increase in social spending in relation to income. Then, we can say that immigration helps to reduce budgetary disequilibrium if payments from men are greater than those from women.

The results are somewhat different with the second fiscal policy alternative (last two columns of Table 9). The negative net balance of the generation born in 2007 is reduced for men and increased for women. The reason for the difference is that most of the burden falls on present generations. The immigrants of future generations will be recent arrivals, whereas the present generations include old and new members. The fiscal contribution of new immigrants is therefore more important for future generations. Their mean contribution is smaller with the second fiscal policy alternative, so the elimination of immigration has a less unfavourable impact on an immediate fiscal adjustment scenario, where each immigrant's net contribution is negative.

TABLE 10.- Generational accounts, d) low inflow scenario (g=1.25%, r=5%)

Base year=2006	All burden on future generations		Immediate change	
Age	Men	Women	Men	Women
0	-46414.76	-60828.27	-8076.43	-21874.3
5	-39879.69	-55858.36	1402.38	-14556.74
10	-26367.67	-46532.73	18853.24	-544.95
15	-11654.39	-35827.46	38689.04	14862.62
20	-796.85	-28396.04	50705.13	22987.06
25	8784.35	-18191.16	54127.75	26554.52
30	5464.23	-20077.56	45965.07	20200.9
35	2279.41	-24737.17	41735.57	15156.7
40	-3843.72	-29176.78	31237.68	6502.54
45	-11025.16	-36142.69	21580.37	-2238.96
50	-20832.86	-43871.04	8988.47	-12086.39
55	-27604.31	-48005.53	-3707.13	-20510.33
60	-35366.85	-51648.78	-16033.75	-27429.71
65	-53526.01	-75640.62	-31021.51	-44901.7
70	-37194.41	-57146.7	-23116.18	-36087.05
75	-34472.78	-57750.57	-22456.55	-38256.22
80	-30280.68	-56520.96	-20305.42	-38699.52
85	-31166.45	-55153.02	-21739.73	-38343.93
90	-28228.31	-43385.82	-16614.8	-27577.29
95	-23686.78	-34728.92	-6429.85	-16886.48
Generation born in 2007	31644.13	17548.22	-7530.49	-20944.86
% change in net taxes	48.6		17.1	

Source: the author

Finally, with the **low inflow scenario** (Table 10) and the first fiscal policy, there is a 4.5% greater burden for the males of future generations and 4.2% for the females,

while the second alternative leads to a 5.3% reduction for men and an insignificant reduction for women, all relative to the mean inflow scenario. This shows the same process as we found earlier with the case of no immigration.

Tables 8 to 10 show how immigration helps to reduce the tax burden of different generations if the deficit-reducing fiscal policy is transferred to the future. This is because most immigrants arrive at a working age, so they are net payers for some years, helping to reduce part of the current deficit, which is not transferred to the future. In the case of an immediate change in fiscal policy, however, we see that the positive effects of immigration are found precisely in the generations where the migratory phenomenon is larger, in the 0-10 age group for both men and women, and 25-30 to 50-55 for men and 25-30 to 45-50 for women. In all these cases, a larger population inflow means that tax payments are reduced in per capita terms, while the opposite is true for other generations, where the migratory phenomenon is less widespread.

Given the model's assumptions, it appears that immigration would help to reduce generational fiscal disequilibria, as it would diminish the net tax burden on middle-aged men and women, thus leading to intergenerational redistribution.

In any event, the impact not only depends on the evolution of global fiscal policy in the next few years, but the scope of scenarios considered is limited by different assumptions that we have necessarily had to make. They include assumptions regarding aspects as important as the continuity of healthcare and educational policies in the time period contemplated, the type and age profile of future immigrants, the evolution of interest rates (this is of vital importance given the significant differences between present and future income and expenditure), the evolution of the economy's productivity, etc.

These variables have been classified as exogenous, although they are only so up to a point, as they are significantly interrelated to migratory flows. For example, the arrival of immigrants will, in different ways, influence the evolution of productivity, and even the viability of some productive sectors. At the same time, however, the type of immigrants that could arrive will be influenced by the demand derived from the growth of the most dynamic sectors. In this respect, we should highlight the flexibility in labour matters derived from immigrants, as according to the 2007 Active Population Survey, immigrant mobility is 4 times greater than that of the national population, 11.8% versus 3.1%. Furthermore, this mobility is not only horizontal but also vertical, as at the same time 41.7% of the foreigners who had entered the economy on the lowest rung, had been promoted to better qualified positions shortly after joining the labour market. This factor is of key importance for the Spanish economy to become more competitive, as it is highly constrained by a rigid labour market, European Commission (2007).

Another example of these interrelations can be found in relation to healthcare of educational services, which will be better financed by the contributions of new immigrants if they are young and active. However, if these active immigrants are accompanied by children of school age or their dependent parents, social services could be overloaded and require a reform. In turn, the generosity of these services and their access conditions could represent an incentive for certain kinds of immigration.

These remarks aim to show the complexity of an analysis of the financial impact of immigration and the need to go beyond the contemplated scenarios. As a first step, we now perform a sensitivity analysis of the results of our scenarios, although it is limited to the interest rate and evolution of productivity variables.

In order to analyse the model's sensitivity, calculations were made for the different scenarios with different interest and productivity growth rates. The impact of interest rates on the percentage change in taxes and transfers is clear, as it increases as interest rates grow. This effect is much greater with a policy involving deferring payment to future generations. This would appear to be the cause of the deficit currently affecting the system. An immediate policy change would partially solve this problem, whereas fiscal policy deferrals would create a greater financial burden on future generations. With regards to the alternative productivity growth scenarios, the effect is of little significance. At this point, we should mention that migratory flows and different productivity scenarios are closely linked, as in long periods of recession inflows will be significantly reduced, as we are now seeing. Moreover, although it appears to be clear that the arrival of large numbers of immigrants reduces the economy's labour productivity rate in the short term by reducing its capital-labour ratio, in the long run this effect could be compensated by greater mobility and its effect on occupational flexibility or the movement of more qualified workers to other economic sectors. More highly qualified immigrants in qualified jobs could help to improve the fiscal system substantially, as suggested by Storesletten (2000) for the United States and Gott and Johnston (2002) for the United Kingdom.

Finally, Table 11 compares the burden supported by the newborns of two generations with the different scenarios. The analysis with 3% and 7% interest rates (which is not included) provides the same qualitative results.

With the first fiscal policy we see that, in most cases, the burden is reduced as new immigrants arrive. A male born in 2007 would see his tax burden increased by 5% when going from no immigration to a mean inflow scenario if the economic growth rate is 0.75% whereas, if the economy grows by 2%, he would benefit from an accumulated

8% tax burden reduction. With interest rates of 3% and 7% there would also be gains of around 8%. Immigration would therefore help to reduce the burden of future generations. In contrast, if fiscal policy is immediately adjusted, the positive impact of immigration depends to a great extent on sex, as it is much more beneficial for men. In this case, men register much more variable and important gains when interest rates are lower and there is a shift from a no immigration to a mean inflow scenario. With a mean economic growth rate of 1.25%, these gains are 15% for a 3% interest rate, 6.3% for a 5% rate and only 0.2% for a 7% rate. For women, the variability of the figures is much more moderate, with gains of around $\pm 2\%$.

As we mentioned earlier, the use of 2006 as our base year does not take the consequences of the current economic crisis into account, as its severest effects started to be felt in the last quarter of 2008. Pending the availability of regional figures, immigration in Spain slowed down considerably, with a reduction in both new immigrants with job contracts, 10,000 in 2009 versus 136,000 in 2008, and in illegal immigrants, estimated as 7,000 in 2009 versus 14,000 in 2008. For 2010, immigration numbers have been reduced to 80% those of the previous year, with priority given to highly qualified groups. This means that the scenario closer to the figures for this year will be that considering a low immigrant inflow.

However, one of the factors resulting from the crisis which the model does not consider is its effect on the labour market. To date, the crisis has led to the loss of 300,000 immigrant jobs, from a total of 3,500,000 million. Most of the jobs lost in the Spanish economy in 2009 were temporary contracts associated to the construction and service sectors. These sectors represent most immigrant labour and are also where their jobs are more temporary than their national counterparts, as they only recently joined the labour market.

TABLE 11.- Burden on newborns and future generations with different assumptions

		5%		5%		5%	
		Men	Women	Men	Women	Men	Women
Interest rate							
Productivity growth rate		1.25%		0.75%		2%	
Payments future generations							
a) Mean inflow	Generation born in 2006	-46219.06	-60326.13	-42816.3	-54683.95	-52803.31	-71523.79
	Generation born in 2007	30280.98	16836.02	29928.21	16653.2	35253.86	18502
b) No immigration	Generation born in 2006	-46632.22	-61319.13	-43235.84	-55609.97	-53209.23	-72645.62
	Generation born in 2007	33044.54	18290.95	28455.52	15599.32	38272.46	19942.3
d) Low inflow	Generation born in 2006	-46414.76	-60828.27	-43013.89	-55149.45	-52998.1	-72096.78
	Generation born in 2007	31644.13	17548.22	27182.92	14905.95	36745.92	19208.17
Immediate change							
a) Mean inflow	Generation born in 2006	-8554.6	-21928.46	-11365.82	-21929.47	-3258.79	-20565.98
	Generation born in 2007	-7953.53	-20886.61	-10687.61	-21671.2	-2807.91	-19554.49
b) No immigration	Generation born in 2006	-7647.26	-21851.47	-10629.72	-22701.03	-2061.79	-20432.72
	Generation born in 2007	-7163.36	-21063.47	-10096.78	-21907.26	-1674.88	-19657.89
d) Low inflow	Generation born in 2006	-8076.43	-21874.3	-10973.5	-22698.68	-2635.66	-20485.18
	Generation born in 2007	-7530.49	-20944.86	-10362.64	-21757.89	-2216.62	-19578.5

Source: the author

This situation became even worse with the late reduction in immigrant inflows, and unemployment among the group was 28% in the third quarter of 2009. By

nationality, those who most suffered the consequences of the crisis were from Morocco and Ecuador, with around 20% job losses and an unemployment rate of around 35%. Both these nationalities suffered from their exposure to the construction sector.

Naturally, the consequences of this evolution are significant for our models as, when immigrants are unemployed they become net transfer recipients and cease to contribute to income.

In any event, as the models estimate long-term forecasts in which there are boom periods following low growth periods, we could initially expect a crisis not to have too much impact on the results, providing its consequences are absorbed in short time frames. In the recent past, however, when the unemployment rate suddenly rose, the Spanish economy took a long time to recover previous levels, partly due to the rigidity of the Spanish labour market. Therefore, and in view of the magnitude of the current crisis, which is the most important of the three recessions occurring in the Spanish economy since 1960, without major reform the Spanish employment rate cannot be expected to return to pre-crisis levels any time soon. According to some estimates, it will take nearly ten years. It is therefore difficult to sustain the hypothesis that this crisis will not have significant effects on the model's results, even considering that the immigrant unemployment rate is nearly ten points higher than the rate for Spanish nationals. We will have to wait for updated figures to be available before we can re-evaluate the model, although following are some remarks about its current evolution.

We have highlighted that the evolution of the migratory flow can have significant consequences in terms of both economic policy in general and fiscal policy in particular. The most favourable scenario has high immigration figures and high rates of economic growth, with both immigrants and nationals easily finding employment. In this case, although social spending would increase, tax income would increase even

more both in the short term and in terms of present net value of future obligations and payments. With the current economic situation, however, we have a scenario where the net income from immigrants could be negative even in the short term.

We have mentioned the seriousness of the unemployment problem, which particularly affects the immigrant population. One of the problems that could arise, as most of this unemployment is unqualified, is the difficulty involved in reorienting immigrants for better insertion, which could generate long-term unemployment problems. This situation requires strengthening training programmes, which in turn represents the use of more public resources by unemployed immigrants. In any event, one specific problem affecting them is that they find it difficult to complete long courses, as they need to send money to their countries of origin or need to work in order to renew their residence permits. In spite of this, immigrants are aware of the need and, according to Madrid region figures, they represented 17% of all the students taking occupational training courses in the region in 2008.

In this context, there is also an increase in the number of immigrants who decide to return to their countries of origin, some of them using assisted return plans. According to Pajares (2009), attitudes to returning largely depend on the nationality of origin, although not significantly. Moroccans prefer their children to return, with the head of the family remaining in Spain, or to emigrate to other European countries such as Germany or Switzerland. The case of Latin Americans is different, because most of those who decide to return do so with Spanish nationality and they are returning only temporarily until the crisis has remitted. Many more Rumanians, however, are returning home, and most of them intend to stay there.

The effects of this exodus in Spain are controversial. On the one hand, in the short term it helps to relieve pressure on the labour market, reduce social spending or

even racial tension in society. It can, however, have other negative effects, such as the loss of human assets which have been trained and gained experience in the national economy, or reduced labour market flexibility derived from reducing geographical and functional mobility. In the medium and long term, the loss of this hand labour could reduce the fiscal system's sustainability and affect the economy's potential growth rate. The European Commission (2008) has established that highly qualified foreign hand labour will be needed in the future, together with other less qualified segments, in all European countries in order to obtain high growth rates. Indeed, the surveys conducted by Manpower (2008 a and b) among 885 Spanish executives sustain that, in the future, the economy will tend to need highly qualified personnel, although the demand for builders with no qualifications will continue to be important.

In any event, in view of the future need for highly qualified immigrants on a European scale, the loss of such returning workers could represent a two-way threat for the Madrid region's economy. On the one hand, it will have to compete with other regions for this work force and, on the other, most of the educational spending on the children of immigrants who are returning to their countries of origin with their parents will be lost.

In view of the above, the application of publicly funded policies providing incentives for the return of immigrants would have to be seriously considered.

6.- Conclusions

In the last few years there has been a heated debate about the impact of a growing immigrant population on Spanish society in general, and Madrid in particular. Using Generational Accounting, we have studied the possible impact of immigration on the tax burden of present and future generations with different alternative scenarios

which attempt to measure both inflow variations and possible changes in economic conditions.

The results show that the region's expenditures and revenues structure, in present values, is currently registering a significant deficit. The spending and revenues study also shows that, in present values, the fiscal balance of immigration tends to be neutral.

After evaluating the different scenarios, the model's predictions appear to be robust. The results obtained are maintained in qualitative terms both when the system's economic conditions are changed and when we apply different immigrant inflow assumptions.

Both a fiscal policy which does not defer adjustment to future generations and a fiscal policy which immediately adjusts to the migratory phenomenon would significantly help to mitigate the burden of the deficit. However, in the second case, if fiscal policy has to be adjusted immediately in order to meet the intertemporal budgetary constraint, the gain produced by immigration is largely concentrated in the contributing generations, middle-aged men and women, leading to a better intergenerational redistribution. This has important implications for future migratory policies. For example, if policies aimed at attracting young, highly qualified workers successfully change the profile of the average immigrant, they will have great potential for reducing the tax burden of future generations.

Finally, a lack of data has prevented us from including the effects of the crisis that in Spain in terms of unemployment began in the last quarter of 2008. Initially, the models estimate long-term situations, based on mean parameters throughout the economic cycle, so they would be consistent with short-term economic fluctuations. However, the magnitude of this crisis and its particular impact on the immigrant

population in Spain suggest an attractive field of research concerning whether the effects of the crisis will be absorbed in the short term, with a small long run impact, or whether they will have a significant, long lasting impact on the results obtained in our scenarios.

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ⁱ Spanish President’s Economic Office.

ⁱⁱ A high inflow scenario has also been calculated, although not included here, and the results are consistent with the trend shown by this study.

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