ESTUDIOS SOBRE LA ECONOMIA ESPAÑOLA

Economic implications of the demographic change in Spain: Call for research

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Population aging will be one of the most important social phenomena of the twenty-first century. It is important because eligibility for most major social transfer programs are strongly tied to age and so are affected by changes in age population structures, which is also true with the government revenues from which the programs are financed. It is important because changes in the aggregate age structure affect nearly all social institutions, from firms to families. How these institutions accommodate themselves to impending changes in population age structures will have a significant effect on the quality of life in the twenty-first century.

The purpose of this note is to promote research on the economic implications of the demographic changes in Spain. I first describe past demographic changes and a plausible future prospect. Then, I offer some preliminary thoughts on several important economic issues which are most relevant to current and future demographic situations in Spain.

Demographic Changes in Spain

One of the most remarkable demographic changes recorded in the modern Spanish history has been the dramatic decline of fertility during the last 20 years. As can be seen in Figure 1 the average number of children born to a woman has decreased from about 3 to near 1. Even in the case that the fertility rate recovers and stabilizes in coming years, the past decline will have a long-lasting impact not only in the population size and age structure but also in every aspect of economic and social life. An immediate result of the fertility decline has been a substantial reduction of the child population. For example, live

[1] FEDEA.

births registered in 1996 were only 54% of those in 1976. The decline is likely to continue during the next decades as the baby-bust generation enters its childbearing ages.

Another important demographic change that will occur during the next two decades is the changes in age structure within the working-age population as the baby boomers[2] become mature workers. Within the working-age population the proportion of young workers (20-39) will decrease sharply while that of mature workers (40-64) will accordingly increase (see Table 1 and Figure 2).

Finally, an increasing proportion of the elderly population is another important feature of the current demographic transition. However, during the following 30 years the elderly population in Spain will grow more slowly than in other developed countries due to the fact that the Spanish "baby-boom" generation are relatively younger than in other countries. Nevertheless, increasing life expectancy is contributing to the increase of the elderly population, especially the old elderly population. Between 1996-2016, the number of those aged over 80 will increase by 70% while those aged 60-79 will increase only by 10 %.

Along with this "demographic transition", we have also witnessed tremendous changes in school enrollment and female labor market participation during the last two decades. Majority of young generations have at least secondary schooling and the university enrollment rate is among the highest in the world. Considering that the education level was among the lowest even less than two decades ago, the progress in Spain has been more than spectacular. At the same time, the female labor force participation rate has increased from 30 to 49 percent among the working-age women. The increase has been much greater among the younger women apparently helped by their increasing educational level. For example, the participation rate among women aged 25-34 has increased from below 30 to almost 70 percent. As it is likely that currently young (and well educated) women continue to participate in the labor market even when they age, more households

[2] I define the Spanish baby boom generation as those born between 1963 and 1978. During this period the yearly number of births exceeded 620000 while the numbers were below 600000 in the preceding and succeeding years.

will have working female members in coming years. On the other hand, male participation rate has been decreasing slightly mainly due to early retirement. How will the total labor force change during the next 20 years? While the working-age (20-64) population will grow only by 5% between 1996 and 2016, the total labor force would grow by a much greater proportion mostly because market-oriented young women will replace home-oriented older women. In summary, future Spanish households will have more workers, fewer children, and more retired.

The rapid economic and socio-demographic changes during the last two decades can lead to imbalances and inefficiencies in the economic system. It is of great importance for both the private and public sector decision makers to understand well the implications of these changes for an efficient management of the private and public sector economies.

Some Preliminary Thoughts on the Implications

Some of the areas where recent demographic changes are most relevant are school system, labor market, housing market and social security system. The discussions that follow are based mostly on my casual observation and intuition. They are intended to be, at most, suggestive. They are over-simplified in order to emphasize each issue and often over-stretched in order to provoke further discussions.

School System: An immediate impact of the recent fertility decline will be felt in school system. The school-age population for primary and secondary education has already experienced a dramatic decline. The share of population under 20 has decreased by more than 30 percent during the past 20 years. During the next 20 years the decline will be greatest among the university-age population as the baby-bust cohorts (those born since the late 1970s) complete secondary education and start to enter universities. For example, the number of 18 year-olds will decrease by 40 percent during the 10 years between 1996 and 2006, compared to a no change during the previous 10-year period. Considering the already high university enrollment rate in Spain, the number of university enrollments is likely to drop substantially in coming years. Considering the rigid (especially downward) public

sector responses, imbalances between the demand and the supply and consequent inefficiency in education system are likely to occur. A good understanding of the changing demographic situation and an adequate adjustment to it in the public sector will be the key to an efficient functioning of education system.

Labor Market: Changes in the number of labor-force entrants and the labor-force age structure are likely to affect profoundly the conditions and outcomes in the labor markets. An important part of the high unemployment rates (especially among the young workers) in Spain during the last two decades was due to a massive entrance of the baby-boom cohorts into the labor markets. The situation will be completely reversed during the next two decades as the baby-bust cohorts enter the labor market. The young (20 to 29 years olds) population will decrease by more than 40% between 1996 and 2016. Considering that the participation rates for both genders are already high among the young cohorts, it is very likely that there will be much fewer young job seekers in the future. The horrendous youth unemployment might be just an unpleasant memory.

On the other hand, as the baby-boom cohorts advance to their mature ages, the average age among workers will increase continuously. The Spanish labor force will show a very skewed top-heavy-bottom-light age structure in the future (see Figure 2). At the same time, the average education level of the working population will increase substantially as better-educated young generations replace low-educated old generations. As there are significant differences by age and education in productivity, wage and other labor market behavior (such as labor supply), this change alone can impose considerable impact on many aspects of the economy. So far, little is known about the substitutability between young and old workers and the effects of cohort size on employment and wages. Considering ongoing skill-biased technological changes and large differences in qualification and education levels between young and old workers we cannot expect a flexible substitution between workers of difference ages. In general, our understandings about the possible implications of these new phenomena are scarce. We are in need of more research on the consequences of changing workforce age structures in productivity, wage, promotion system, labor supply and even in inequality and economic growth.

Housing Market: One area closely related to the demographic situation as well as the economic and labor market situation is household formation and housing market. Currently and during the next 10 years, the baby-boom cohorts are in ages of forming household and buying their first house. Therefore, a substantial increase in housing demand is likely to occur during this period. Several factors along with the mentioned demographic factor support this prediction. First, past recession and high youth unemployment have prevented many young workers from forming household and from purchasing houses. As the economy recovers and as the interest rate and fiscal policy stay favorable, the demand for houses could rise more rapidly than the supply could respond, therefore pushing up the house price as in the second half of 1980s. This time the demographic factor and the interest rate are even more favorable than during the late-1980s housing market boom. Moreover, the beginning of the EMU could induce an inflow of black money into the housing market. What about 20 years after? The demographic situation is completely contrary as the smaller baby-bust cohorts enter the ages of household formation and house purchase. Although the outcomes in the housing market will also depend upon many other factors, the demographic factor alone could produce huge demand shifts.

Social Security System: The demographic transition will have important implications in the social security and health care system. In fact, this has been the focus of most recent studies across the developed countries. As mentioned before, for Spain, a real pressure on the social security system will begin in the mid-2020s as the leading cohorts of the baby-boom generation start to retire from the labor market. In the meantime, Spain will experience favorable worker-retiree ratios mainly because the increasing employment rate will offset the increasing retired population. Although it is difficult to predict future growth of employment, a plausible guess is that the number of workers as well as the number of active population will grow faster than the number of retired workers mainly through the increasing female employment rate and less importantly, an increasing formalization of the underground sector. Moreover, the participation and employment rates increase sharply with education for both sex. For example, for persons aged 25 to 64 years the participation (employment) rate is higher by 29 (28) percentage points for university educated persons

than for those with less than upper secondary schooling (87% vs. 58% in the participation rate and 74% vs. 46% in the employment rate). If this difference is maintained, increasing education level will increase the active and employed population. Another positive factor will come from the average wage-pension ratio. The average salary of Spanish workers is likely to increase substantially due to a continuous replacement of low-educated and low-skilled workers by better-educated and high-skilled workers. A tentative conjecture is that the Spanish social security system is likely to experience a favorable situation in the short and medium terms. This provides a good opportunity for the Spanish government to consider adequate reforms in the social security and health care systems to prepare for the rapid population aging in the long term.

Health Care: During the several decades starting from the mid-2020s, the elderly dependency rate will increase rapidly. A reasonable projection suggests that the elderly dependency ratio (population over 65 divided by population aged 15-64) will rise from 31% in 2021 to 55% in 2046 while the rise is modest, from 25% to 31% between 2001 and 2021. In a shorter term, during the next 20 years, one noticeable change among the elderly population will be the increasing proportion of the old elderly population. Those over 80 years old will increase by 70% (compared to a mere 10% increase for those aged 60-79) between 1996 and 2016. It is well known that the average health care costs increase disproportionately by age. Therefore, one important impact of an increasing old elderly population will be felt in the expenditures related to health care.

Some recommended readings are:

Lee, Ronald D., W. Brian Arthur and Gerry Rodgers (eds.) 1988. *Economics of Changing Age Distributions in Developed Countries*. Clarendon Press.

Wise, David A. (ed.) 1989. *The Economics of Aging*. University of Chicago Press.

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Wise, David A. ed. 1996. *Advances in the Economics of Aging*. University of Chicago Press.

Disney, Richard 1996. *Can We Afford to Grow Older?* The MIT Press.

Bosworth, Barry and Gary Burtless (eds.) 1998. *Aging Societies: The Global Dimension*. Brookings Institution Press.

Table 1: Age Distribution of the Spanish Population in 1976, 1996 and 2016

Age	1976	1996	2016
0-9	6517322	3920228	(3071463)
10-19	6244048	5574351	(3604596)
20-29	5355287	6575281	3890948
30-39	4495601	5957938	5491206
40-49	4823911	4885338	6430443
50-59	3838656	4089389	5704850
60-69	3018782	4123847	4411770
70-79	1906521	2759374	3174979
80+	654401	1310916	2246832
Total	36854529	39196662	38027087

Note: Numbers in parenthesis are based on the assumption that the age-specific fertility rates stay constant at the level in 1996.

Figure 1: Fertility rate in Spain

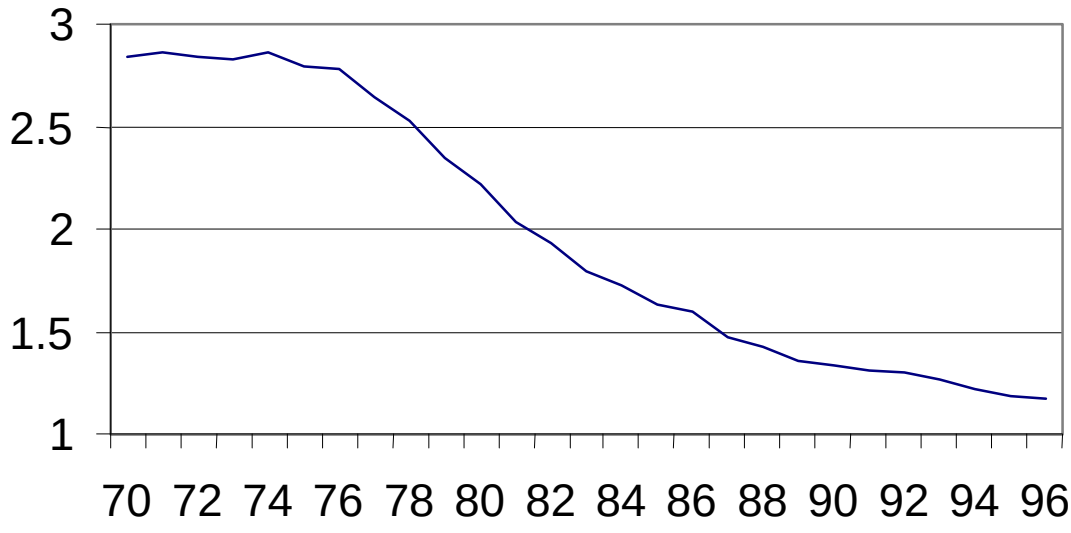

Figure 2: Age Distribution in 1976, 1996 y 2016