PENSION NOTES

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Demographic trends make the PAYGO systems unviable[1]

Executive Summary

European societies are an example of aging processes, in which an ever more numerous population over the age of 65 can be observed (almost 20% of the total population). Life expectancy at birth (an average of 78 for men and 83 for women) and life expectancy at 65 (86 and 83 for women and men, respectively), will increase steadily and people will live ever longer lives without disability (with the ability to work). Furthermore, many of the people who will live to an average of 100 have already been born.

Population aging is due to an increase in longevity, the drop in birth rates caused by fertility rates below the replacement level (less than 2.1 children per woman), the ever-decreasing number of women of childbearing age, and late motherhood (over the age of 30).

The combination of low birth and fertility rates with high aging rates, translates into an ever-diminishing number of young people, and an ever-growing volume of senior citizens, entailing a significant imbalance between the active and dependent population.

In PAYGO pension systems, where contributors pay the pensions of those who are retiring, the imbalance will continue to increase and inhibit the sustainability of the system. To alleviate this effect, European countries have adopted some socio-demographic measures such as family support (aimed at increasing the birth rate), an increase in the official retirement age (more contributing workers and less pensioners), more women in the labor market (more contributing workers), or the arrival of immigrants (more contributing workers and a higher birth rate). These measures have also been accompanied by others that affect pension systems, such as parametric changes that curtail generosity in the calculation of pensions, and structural changes that introduce a more meaningful role of the individually funded systems in the pension systems.

8 Latin American countries are already below the generational replacement level of 2.1 children per woman; fertility has never been so low, and projections indicate that it will continue dropping to 1.77 children per woman by 2050. Furthermore, average life expectancy at birth for men and women will be 81 by 2050, intensifying population aging (the population aged 65 and over will be 19%, similar to the situation in the European Union today). Latin American demographic evolution will be similar to that of European, but faster. The consequences of this situation could be minimized if the population percentages of young people could be kept at reasonable levels (fertility rates of approximately 1.7 to1.8 children per woman, and immigration with a positive balance).

As far as pensions are concerned, this reality makes it impossible to consider returning to the PAYGO system, and also makes the introduction of an individually-funded component necessary.

[1] Article based entirely on the presentation of Rafael Puyol in the 15th FIAP International Seminar, held on October 30 and 31, in Mexico City, Mexico. Rafael Puyol has a degree and a PhD in Geography and History from the Complutense University of Madrid (1971) and he is a Director of the Observatory of Demographics of the I.E. Business School.

Introduction

In developed societies, and in countries that are in the final phases of their demographic transition (like most of Latin America), the future of pensions is a source for concern. This challenge has a demographic context defined by the sharp decline in the birth rate (the number of live births) and the intense aging process (percentage of the total population of the country of people aged 65 and more). This brief article seeks to review the population issues that have, and will have, greater influence on the future payment of pensions, especially in the PAYGO systems, with the case of the European Union (EU) serving as a reference and warning for many other countries.

I. The situation in Europe

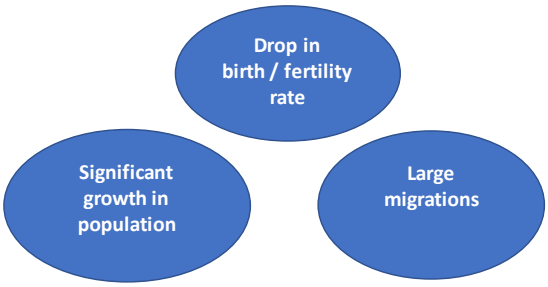
The 3 major demographic variables

The world is no longer the same in demographic terms. The population continues to grow, but not as before, and that must be seen in relation to the first great demographic variable, namely birth/fertility rates, which have declined all over the planet.

This drop in the birth/fertility rate, along with lengthening of human life spans (longevity), has resulted in a significant growth in population aging, the second major demographic variable that must be taken into account.

Thirdly, current large migrations, which constitute the third major demographic variable, are based on population differences.

Figure No. 1

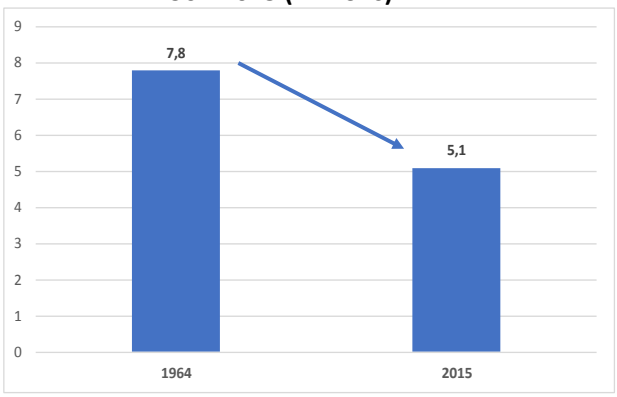


Source: Puyol (2017).

Drop in the birth and fertility rates

Since the early 1960s to the present day, the birth rate, measured as the number of live births, has fallen sharply in the EU. From the record figure of 7.8 million in 1964, it dropped to 5.1 million in 2015, a reduction of nearly 35% (Graph No. 1).

Graph No. 1
Number of live births. EU-28
1961-2015 (millions)



Source: Puyol (2017).

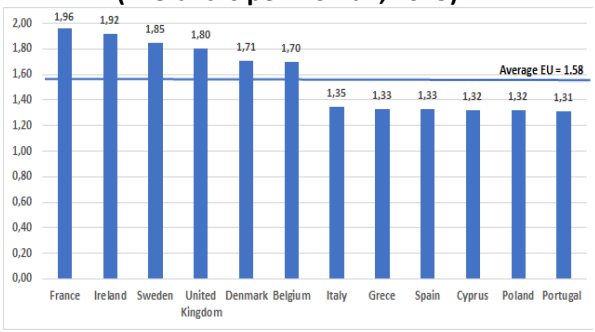
This drop in the birth rate can be explained by three factors:

1. **<u>Low fertility rates,</u>** below the replacement level of 2.1 children per woman[2]. For generations to be able to renew themselves, each woman of childbearing age (between 15 and 49) must have 2.1 children on average. No European country was capable

[2] "Birth rate" is used when referring to children, and "fertility" when referring to the mothers who give birth to those children.

of achieving this in 2015. The countries closest to this threshold were France (1.96 children per woman) and Ireland (1.92 children per woman). The EU average was 1.58, but there were 17 countries below this level. The worst ranked (approximately 1.3 children per woman) were Italy, Greece, Spain, Cyprus, Poland and Portugal (Graph No. 2).

Graph No. 2
Fertility rates in some EU countries (live births per woman, 2015)



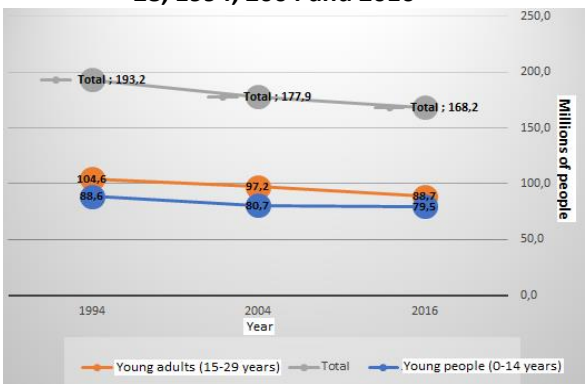
Source: Puyol (2017).

2. **A reduction in the number of women of childbearing age, due to previous periods of low birth rates.** Spain is a case in point: it has a fertility rate of 1.33, and lost 1 million women of childbearing age between 2009 and 2016.
3. **The advanced average childbearing age.** The childbearing age has increased in all countries over the last 3 decades. The European average is above 30.5 years of age, and in some countries, it is around 32 (Italy and Spain). This fact correlates with the increasingly high proportion of women attending universities and entering the labor market, and the fact that European societies have entered what is known as the "Second Demographic Transition," characterized by a drop in traditional marriage, an increase in the number of single people, the growth of common-law relationships (without any civil or religious links), the increase in the number of divorces, the greater number of children born out of wedlock, and the emergence of new family models (single-parent, same-sex couples)

A direct result of the low birth rate: reduction of the young population

The main consequence of such low birth rates will be a reduction in the young population. In the EU, young people (0-14) dropped from 88.6 million in 1994 to 79.5 million in 2016, and adolescents-adults from 104 to 88.6 million (see Graph No. 3). The combined loss of both groups is 25 million young people, and this trend will continue.

Graph No. 3
Young and adolescent-adult population, EU-28, 1994, 2004 and 2016



Source: Puyol (2017).

The 5 major phenomena related to the growth of the elderly population

The drop in the birth rate and the reduction of the young population, is accompanied by a significant growth of the elderly population, and this translates into at least 5 phenomena:

1. **<u>Population aging</u>**. The percentage of the total population of a country aged 65 or more. explained by the drop in the birth rate and the increase in longevity (aging at the base and at the tip of the age pyramid, respectively). Aging occurs starting at 10%, although most developed countries are now at around 20% or more. 90% of the population in our societies reach the age of 65, only achieved by 32% of the population one century ago. The current aging average

in the EU is 19%, and it is expected to grow to 29% by 2080.

2. **Increased longevity**. Adolescents and the working age population will diminish in Europe, and the population over 80 years of age, especially, will increase (octogenarians and nonagenarians, centenarians and super centenarians, a new category for referring to people aged 110 and more). According to Eurostat, the percentage of the total population aged 80 or more in the EU between 2016 and 2018, will increase from 5.4% to 12.7%, while the adolescent and working-age population will drop from 81% to 71%.

3. **Growth of life expectancy at birth and the emergence of generations that will live to 100.** Life expectancy at birth is the number of years a person can expect to live if the mortality conditions at the time of his birth remain unchanged for the rest of his life. Its growth has been remarkable, and is currently 83.3 for women and 78 for men in the EU. The other phenomenon worth mentioning is that, according to experts, the majority of children born after the year 2000 in countries with high levels of life expectancy will live to celebrate their 100th birthday.

4. **Growth of life expectancy at age 65 (theoretical start of old age) and disability-free life expectancy.** Life expectancy at age 65 has also grown considerably: 100 years ago, life expectancy at 65 was only 10 years, whereas the current average in the EU is more than 21 years for women, and 18 years for men.

   Another phenomenon related to the above is the growth of disability-free, or healthy, life expectancy, which was estimated to be 63.3 for women, and 62.6 for men in the UE in 2015. The figures are good, but there is still scope for improvement, which will undoubtedly occur in the immediate future

The combination of low birthrates and fast aging makes the public PAYGO systems unviable

The low birth rate phenomenon, coupled with strong aging and greater longevity of the population, means that there will be fewer people entering the labor market, on the one hand, and more people collecting a pension for a longer period of time. This partly explains why the percentage of the population of 65 or more, compared to the population between 15 and 64 (old age dependency rate) will increase from nearly 30% in 2016 to about 50% in 2080, on average, in the EU.

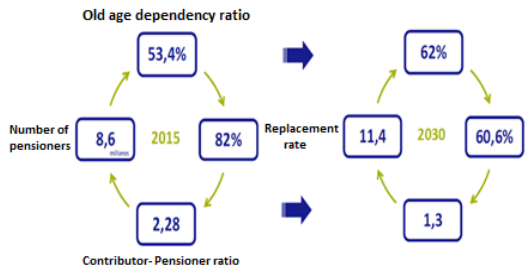
When the former PAYGO system was established in Germany by Bismarck in 1889, the retirement age was set at 70, while life expectancy at birth was about 35 for men and 38 for women. These ages did indeed enable financing pensions, mainly benefiting the higher classes of German society. As time went by, life expectancy at birth kept growing to more than 80 in advanced societies today, whereas the retirement age did not increase, but rather receded (the official retirement age is about 65, and the real retirement age is much lower). If a person previously worked throughout his life and did not collect a pension, or did so for very little time, today the average duration of working life, in the best of cases, is 30-35 years, with 45 or more years of retirement.

The analysis of these indicators leads to a clear conclusion: the current exclusively PAYGO public pension system will not suffice for paying future pensions and maintaining an adequate standard of living. Spain is an exemplary case.

Spain currently has a public, mandatory, contributory PAYGO system. According to the Circle of Entrepreneurs (see Figure No. 2), if there are no reforms in Spain, in just 15 years the old age dependency ratio will rise from 53%

to 62%, the replacement rate (the monthly pension amount divided by the average income over a specific period of time) will drop from 82% to slightly more than 60%, and there will be slightly more than 2.2 to 1.3 contributors per pensioner. Hence, it is recommended to adopt short and medium-term measures for modifying the PAYGO system and introducing a mandatory individually funded system.

Figure No.2



Source: Circle of Entrepreneurs, based on INE and European Commission, 2016.

Measures taken by European countries to address the imbalance between the active and dependent population

These measures can be classified mainly into two types: sociodemographic, and those affecting the pension systems.

1. Socio-demographic measures:

1.1 Immigration It acts primarily in the short term and is an important phenomenon, since the current population growth in Europe due to immigration is 85%, and natural growth accounts for the remaining 15%. The most outstanding feature of this immigrant population is its youth (20 - 47), since it is an eminently active population. This condition, in turn, contributes significantly to the birth rate, and somewhat relieves aging.

Nonetheless, immigration cannot be the only solution for resolving the demographic and economic problems of the EU: its contribution to the native birth rate drops after the second and third generations, and immigrants also age. Furthermore, the sources of supply will also run out, except for Africa.

1.2 Increase the birth and fertility rates through effective family support policies, such as financial benefits for families with children, measures for reconciling work and family life, assistance in the payment of child care, and fiscal measures based on family size and future pension payments (in Spain there is a 5% supplement if the mother has two children, 10% if she has 3, and 15% if she has 4 or more).

1.3 Incentive for the incorporation of more women into the labor market. Although it is not a particularly influential factor, except in some societies, since at the ages at which it would be more effective (young adults) the activity rates of men and women are not very different.

1.4 Increasing the retirement age. This leads to more workers and less pensioners. Many European countries have adopted policies in this regard (23 of the current 28 countries, including the United Kingdom) due to the recommendations of the European Commission. The current average retirement age is about 65, which will rise to 67 in many countries in the coming decades (Spain in 2027). But some experts are already considering higher rises in future, to about 70 years of age.

2. Measures affecting the pension systems.

2.1 Parametrics. Consists in changing some of the criteria for calculating pensions, such as the aforementioned increase in the retirement age, contribution periods to be eligible for a full pension,

the basis for the calculation of pensions, or their reevaluation index. All countries have carried out reforms of this type and many have introduced automatic adjustment mechanisms for certain pension parameters (such as sustainability factor in Spain).

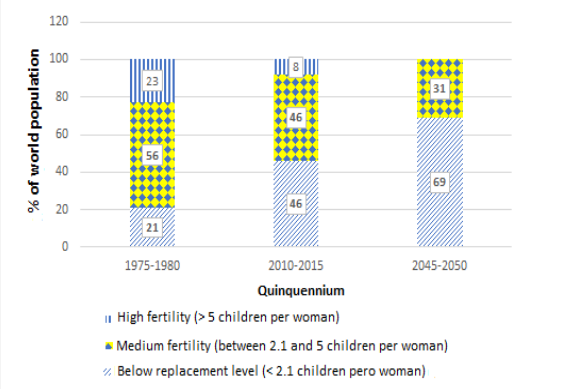
2.2 Structural Many EU countries have increased the role of individual funding in their pension systems.

II. The context in other continents

Fertility

In the 2010-2015 five-year period, 46% of the world's population lived in countries with fertility below the critical threshold of 2.1 children per woman, whereas this percentage is expected to increase to 69% of the world's population in the 2045-2050 five-year period (see Graph No. 4). This figure is truly significant and entails a reduction in the number of countries with intermediate and high fertility levels.

Graph No. 4



Source: Puyol (2017).

Latin America

In the case of Latin America, fertility has experienced a significant downward trend, and eight countries are already below the generational replacement rate, at below 2.1 children per woman (see Table No. 1). Eleven countries have an intermediate fertility rate of between 2.1 and 2.5 children per woman. These two groups account for 93% of the Latin American population. Only three countries have more than 2.5 children per woman, and represent only 6% of the total population. Latin American fertility has never been so low, and projections indicate that it will continue to decline.

Table No. 1.
Fertility status in Latin American countries (2017)

A) Below 2.1 children per woman	
Countries	Population
Brazil	207.9
Colombia	49.3
Chile	18.4
Cuba	11.3
Costa Rica	4.9
Uruguay	3.5
Puerto Rico	3.4
Jamaica	2.9
	301.6 (46.9%)

B) Between 2.1 and 2.5 children per woman	
Mexico	129.2
Argentina	44.3
Peru	31.8
Venezuela	31.4
Ecuador	16.8
Dom. Republic	10.7
Honduras	8.9
Paraguay	6.8
El Salvador	6.4
Nicaragua	6.2
Panama	4.1
	296.6 (46.12%)

C) Between 2.6 and 3.0 children per woman	
Guatemala	16.9
Bolivia	11.1
Haiti	10.6
	38.6 (6%)

Source: Puyol (2017).
Data refer to countries with more than 1 million inhabitants.

Aging

Life expectancy at birth will increase on all continents in the near future. The average growth over the next 35 years will be 6-7 years, reaching 11 years in Africa.

Lower fertility, coupled with the growth of life expectancy, will in turn give rise to the growth of the elderly population. There were more than 600 million people aged 65 or more worldwide in 2015, and on a planetary scale, one could not say that the population as a whole is old (8.2%). But within 35 years, in around 2050, there will be 1,560 million people over the age of 65, and the percentage (16%) already clearly defines the planetary population as aged. The general situation is repeated on every continent, with the exception of Africa, where

young people still make up a considerable proportion of the population.

This trend gives rise to a significant reduction in the ratio of people between 20 to 64 for each individual of 65 or more. Active to retired population ratios are currently 7.4 for Asia, 3.3 for Europe, and 7.3 for Latin America. In 2050, on the other hand, 7 countries in Asia, 24 in Europe and 5 in Latin America will have values below 2, i.e., only two potentially active individuals for every retired individual.

The situation in Latin America is better than in the rest of the continents, due to high past birth rates, which ensure a higher percentage of young population. Only 5 countries have a population over 65 exceeding 10%, and inversion of the demographic trend has not occurred in any of them, i.e. a greater percentage of the elderly (over 65) compared to young people (under 15).

Nonetheless, the combination of an intense drop in the birth rate and a general increase in life expectancy in Latin America, portend a strong aging process in the immediate future. In demographic terms, and with the exception of some countries (basically Guatemala, Bolivia, and Haiti), Latin America is undergoing the final phase of the demographic transition, characterized by low birth and mortality rates, and moderate population growth. In the 2025-2030 five-year period, the fertility rate of all Latin America and Caribbean countries will be 1.89, and 1.77 in the 2045-2050 five-year period. Only the three countries mentioned previously will have rates above 2.1 children per woman on both dates. On the other hand, average life expectancy for both sexes will reach 78 between 2025 and 2030, and 81.3 between 2045 and 2050 (only 1.5 years below the European average). The intensification of aging is clear from these figures: by 2030 the population of 65 and over will be 12%, and 19.4% by 2050, which is the situation in the European Union today.

Thereafter, the demographic evolution of Latin America will be similar to what has occurred in Europe, but with a big difference: the shorter period of time in which low levels of fertility, high life expectancy and considerable levels of aging will occur.

III. Final considerations

The increase in life expectancy and longevity is an unstoppable phenomenon and we should consider it a positive development, whose economic and social consequences will have a lower impact if countries manage to maintain reasonable percentages of young people, for which they must have fertility rates that are not too different from the generational replacement rate. Values around 1.7 to 1.8, with a slightly positive or balanced level of immigration could keep the population in a certain state of balance. Fertility rates below 1.5 children per woman must be avoided at all costs (Puerto Rico is already in this situation, with a rate of 1.3, and Brazil, Costa Rica and Cuba are approaching it).

The introduction of certain family support measures must be addressed if the fertility rate drops below 2.1 children per woman. Swift introduction of such measures will prevent significant drops, and the steep rise of subsequent costs.

As far as pensions are concerned, there is one clear idea. The strong imbalance between the active and dependent population currently existing in European societies, makes the public PAYGO system unviable. Keeping it, or returning to it, as some intend, makes no sense whatsoever. The evolution experienced by the vast majority of European countries is a good example for the rest of the world, which must find formulas compatible with any of the individually funded systems. Failure to do so will contribute to an increasingly difficult situation, defined by a downward trend of the replacement rate and a high level of frustration of workers.

The European example illustrates what should be avoided, and its lessons will be especially useful for other continents.

References

Presentation by Rafael Puyol in the 2017 FIAP Seminar "Present and Future of Demographic Trends".

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