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Tesi di laurea

'On the relationship between economic performance and fertility rate. Theories and evidence'

'Relazione tra performance economica e tasso di fertilità. Teorie ed evidenza empirica'

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ABSTRACT - ‘Relazione tra performance economica e tasso di fertilità: teoria ed evidenze empiriche’.

Alla fine del diciottesimo secolo Malthus formulò il pensiero secondo il quale la natura regola la crescita della popolazione tramite un meccanismo. Gli studi successivi oscillano tra posizioni pessimistiche secondo le quali un eccessivo aumento demografico avrebbe indotto ad uno scenario di povertà e privazione, e tra idee che al contrario vedevano nell’aumento della popolazione una chiave necessaria per il progresso.

Tra la fine del diciannovesimo secolo e l’inizio del ventesimo nei paesi occidentali si porta a compimento la ‘transizione demografica’: le famiglie tendono a convertire eventuali surplus economici in una miglior qualità dei figli (educazione e quindi capitale umano) e non più in un maggior numero di nati. Si consta una correlazione inversa tra tasso di fertilità e livello di sviluppo dei paesi.

Restringendo l’analisi ai soli paesi OCSE, ossia alle realtà più progredite, le prospettive si rovesciano. I paesi più dinamici del nord-Europa fanno registrare tassi di fertilità di gran lunga superiori rispetto ai livelli propri degli stati dell’Europa mediterranea (Italia, Grecia e Spagna). Il nostro ragionamento prende in considerazione come la stabilità del posto di lavoro, la possibilità di conciliare carriera e famiglia tra cui gli impieghi part-time nonché altri aspetti di welfare come la generosità dei permessi parentali e un sistema di scuole per l’infanzia ben organizzato siano tutti fattori correlati positivamente alla fertilità.

Bassi livelli di natalità porteranno nel lungo termine a una società con una parte consistente di individui non più in età da lavoro e quindi economicamente dipendente. Ciò significherebbe vedere il proprio percorso di sviluppo seriamente compromesso nel momento in cui si innesta un circolo vizioso in virtù del quale gran parte delle finanze pubbliche vengono assorbite dal sistema previdenziale limitando le risorse destinabili al sostegno della maternità, all’istruzione, alla ricerca e allo sviluppo.

Diverse caratteristiche demografiche sono presentate dai paesi sviluppati ed in via di sviluppo; a tal proposito si discute se un’accorta gestione dei flussi migratori possa supplire al deficit di nascite.

CHAPTER 1

1.1 INTRODUCTION

Gross Domestic Product per capita can be considered a satisfactory measure of well-being of a nation, even though a multidimensional measure including, for example Human Development Index or the Gini Index, would be more eloquent. Including those indexes we could observe that countries abundant in raw materials (and in particular oil, the black gold) although top placed in the GDP per capita world ranking do not match a high life quality standard. Comparing an Arabian country as Qatar or Saudi Arabia and a northern European one as Sweden everyone could imagine the gap in life conditions of their inhabitants without looking at formal data but being shocked in finding similar GDP per capita levels; yet Sweden's per capita GDP is lower than that of Saudi Arabia and much lower than that of Qatar¹.

However, let's maintaining the GDP per capita into account as the best proxy and this choice is in lined with all the literatures existent.

Since a long time scholars have been interested in understanding if and how demography and GDP per capita are related each other. If the GDP per capita is a sufficient good proxy to assess the economic situation of a country we want to see how the population can bias the GDP (per capita): "Do low fertility rates increase per capita GDP? ". If there exists a clear correlation linking GDP per capita and fertility, is this an inverse one?

Economists, sociologists, and psychologists were at the same time touched by the interest in capturing the mechanisms ruling the mentioned inverse correlation, everyone with its own original framework.

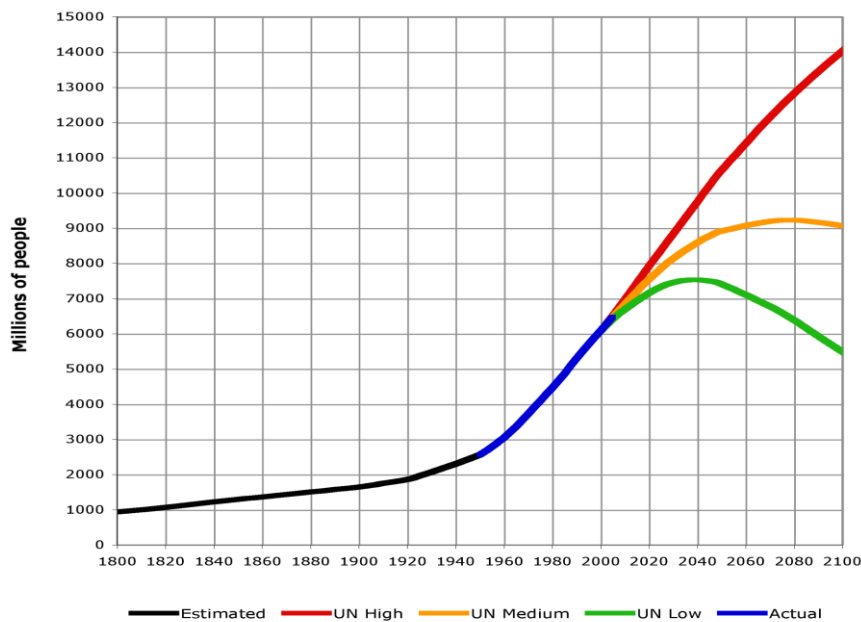
As economic development is the main interest of rulers, or at least it should be, governments and governors have a precise interest in capture it and having a deep understanding. History offers many examples which make us realizing how demographic policies were implemented often in dramatic scenarios in order to obtain a precise goal: the one child policy decided by the

¹ Data from <https://data.worldbank.org/indicator/> for the year 2017

Chinese authorities in 1979 was an answer to the wish to keep a break on the faster and faster rising eastern Asian population, maybe giving a better education to new generations however the one-child policy will have its proper space further.

1.2 1800 – 2100: THREE CENTURIES OF FUNDAMENTAL CHANGES

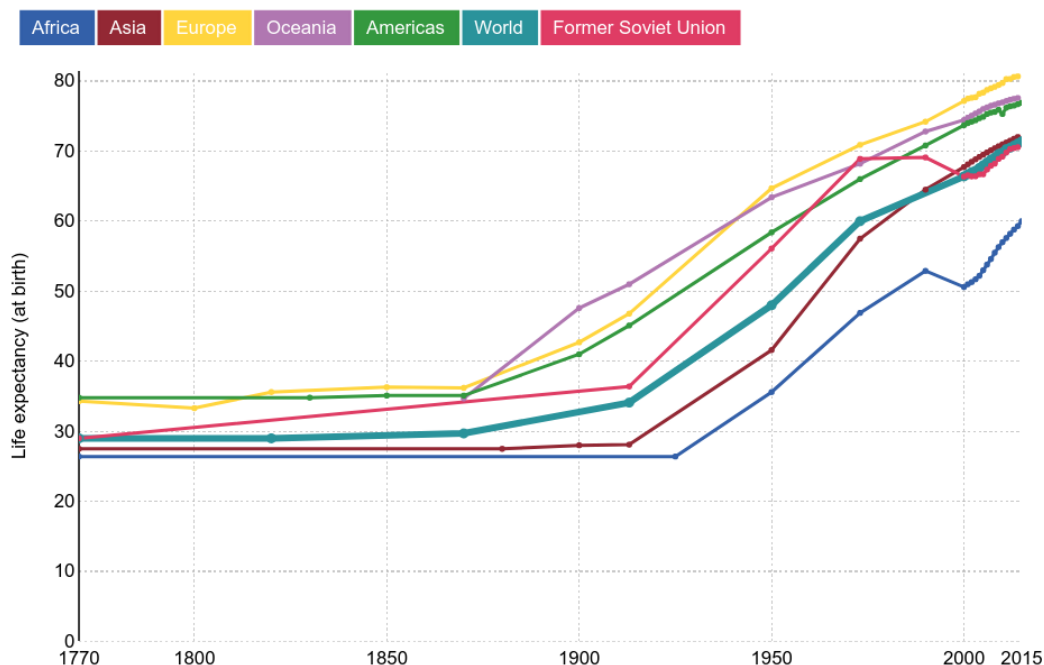
Total population, mortality, age expectancy, fertility, child survival and the ratio young to elderly considered under the light of fertility transition is an important discussion for my work.



World Bank, past and future population 1

This three-century long process had a strong effect on demography which was reshaped so the outfit scenario gives us something deeply transformed. Considering the year 1800 as a landmark, population has already increased more than 7 (or more precisely 7.5 yet) and the forecast is an increase of ten until 2100; the ratio of elder to children will have risen ten times; the length of life will have almost tripled, the ratio of adulthood time spent for childbearing and rearing children will decrease from 70 to 14% which is a consequences of lower fertility and of longer life. The ratio of elders to children will be at the centre of the third chapter with a special focus on future difficulties mainly in developed countries about retirements policies and others issues such as future societal costs.

Life expectancy globally and by world regions since 1770



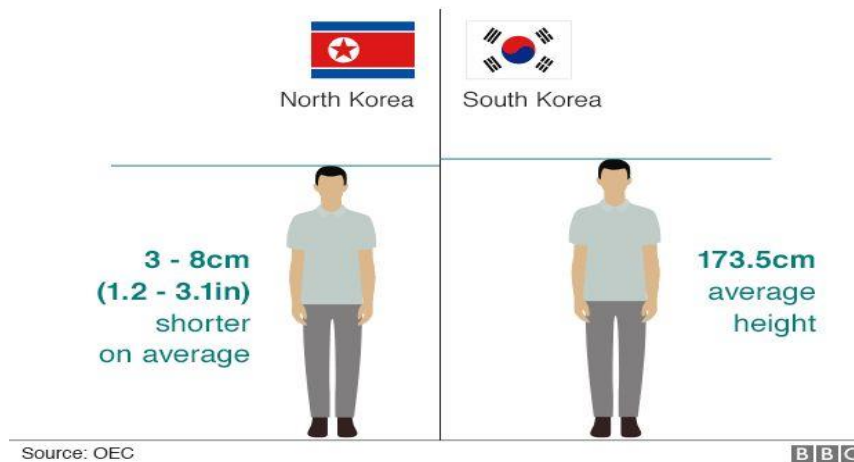
Source: Life expectancy – James Riley for data 1990 and earlier; WHO and World Bank for later data (by Max Roser) OurWorldInData.org/life-expectancy/ • CC BY-SA

Our world in data, life expectancy 1

The first point to be analysed consists in child mortality decline registered since the 17th century in western countries and in their offshoots, while the first results on mortality decline in least developed countries were not registered before the beginning of the 20th century: precisely a one century gap. At the beginning there was an improvement in health conditions after a reduction in infectious disease mainly spread by air and water. Policies of personal hygiene were introduced and there was a minor spread of disease mainly thanks to the leading role of vaccines and first discoveries in this way. Besides public health policies, nutrition played an important role. The possibility of better and safer storage systems and faster transportations allowed more food even from international markets with healthier and more abundant feeding than ever. It exists a positively linked correlation between height and life expectancy in industrial countries reflecting childhood health conditions, this is easily observable in Koreans people among who lives in the northern part and who lives in the democratic south.²

² Daniel Schwekendiek, Journal of Biosocial Sciences, 2009

North Koreans are shorter than South Koreans



More recently remarkable progress have been registered in defeating chronic and degenerative diseases, notably heart disease and cancer.³

According to Ronald Lee, the two Asian giants like China and India although their catch up towards western level of life expectancy began late, they had a really fast improvement.

The Indian example is remarkable with a substantial rose from 24 years in 1920 to 62 years in 2003, with a gain of .48 years per calendar year over 80 years.⁴

And what about future trends on life expectancy? The debate is shared between more optimistic and pessimistic views. Oeppen and Vaupel (2002) calculate an increase of 2.4 years per decade reaching 97.5 year by 2050 and 109 years by 2100. Generally, on the other side, more pessimistic forecast on life expectancy comes from government survey and from official government projects followed by many other researchers considering the reaching of 83 years by the 2080 considered sexes combined.

There are two big exceptions to positive trend in life increase. The first setback is given by AIDS/HIV which interested mainly sub-Saharan countries with a decrease of almost 9 years in life expectancy between 2000 and 2005; the second one is represented by URSS or Eastern

³ Riley, 2001

⁴ Ronald Lee, 2003

Europe situation and this slowdown in positive trend was registered during the transition towards market economies.

Women have a higher life expectancy than man and this gap is bigger in most developed countries where the sex gap is about 7.4 years, this difference can be partly explained as women took up smoking at a later date than men even if, nowadays, this gap can be flattened. Observing population aged more than 80 and more than 100, there is a huge asymmetry between genders with many more women than men. Longer medium life of women combined with younger female age at marriage create also a higher number of widows.

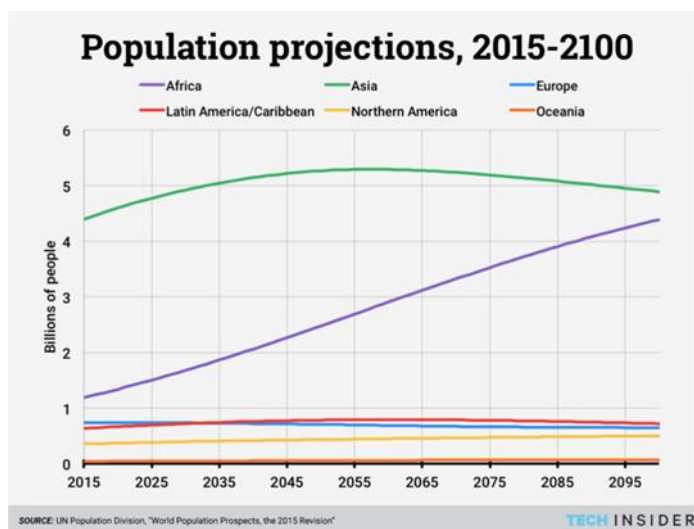
A large discussion on mortality declines give the possibility to introduce a mechanism seeming to affect fertility decision. Past times were characterize by low survival rate than nowadays so the hypothesis is that couples decided to have more children to provide the certainty to someone to reach adulthood, on the contrary in recent decades after better perspectives it became possible to plan a smaller family but investing a surely higher amount in everyone. This 'surplus' of 2000s was translated not only in healthcare but also in education and in human capital investments. Historically the two industrial revolutions were the consequences of almost continuous technological improvements and more and more jobs were created in non-agricultural fields: here it is the necessity of how the importance of physical capital was replaced by the human capital which caused a later entering in the workforce and a precise necessity in terms of private time and care invested looking after each children and their education.

Now there's the ground to distinguish between the three phases of fertility rate: in a first moment there was a direct proportionality between an upgrade in real income (or more generally a better living situation) and higher fertility, so the surplus could entirely be used for feeding new mouth which is just a quantitative and not intensive growth, then the intermedium phase in which the correlation became less strong until reaching a complete reversal after which economic progresses are associated with lower birth rates. The chapter two is focused on how some western countries in 2000s are affected by fertility rebound which is not properly an inverse relation.

It comes useful to classify countries into three different groups after their GDP per capita, systematically the wealthier countries have been the first undergoing the fertility transition and reaching so a low rate of children per women. Many eastern Asian countries were very fast in

undergoing the demographic transition, I will develop this case at the end of the chapter. Southern American countries belong to the second group while the poorest countries were protagonist only lastly to the catch up even if demographic transition is not concluded yet. Least developed countries are recording an increasing population as a result of the combined effect of decreasing mortality and improved living conditions than the past decades touching sometimes a demographic crisis.

Looking back, before 19th century the rate of population growth was slow at 0,5% rate per year. That means for many centuries in the human existence growth rate of population remain almost constant. From 1750 to 2000 increase was so remarkable for developed countries, least developed countries – according to many forecasts – will have many years of high rate increase before settling to a moderate rate.



UNITED NATIONS, forecast on population 1

I am interested now in making a comparison using as references points the years 1950, 2000 at the turn of the century and 2050, this will help us in stating as the change can interest nations and our planet too.

In 1950, just few years after the conclusion of the world war, world population amounted at 2,5 billion people. Less than one billion was living in developed countries, one billion and a half was living in the less developed countries and just 200 million in the poorest class of countries.

In 2000, while advanced countries population were basically constant, less developed countries were almost tripled representing the biggest class. Low class increased, almost tripled.

The forecast for 2050 is surprising. The first class remains at 2000 level, basically the change was minimal and is nearby what was in 1950. The second class is made by 6 billion people which is four fold than 1950. The size of the least developed countries is really astonishing and although there are different opinion with someone forecasting a low scenario and someone else a high scenario, the latter talked about a 4 billion people class in least developed countries. If this will be confirmed we would see a world population almost doubled in fifty years, enlarging the field to a one century survey we have a 3 or a 4 and 4.5-fold increase. Forecast according to which in 2050 world population will be between 7 and 11 billion raised the interest of ecologists and their question about the real capacity of earth in supporting and feeding all those people. Difficulties in estimating the non-homogeneous human impact of men on earth include the different behaviour adopted by societies and the different pollution impact in several parts of the planet. The range of the environmental change is so great that human impact created a new geological era as a consequence of climatic change. The ecologist Erle Ellis created a map in which the world instead of being 'traditionally' divided between biomes (savannah, rainforest, woodlands, tundra, etc.) is divided in function of how incisively men reshaped that part. All these facts are a consequences of natural resources exploitation and pollution.

Debated solutions to such an unsustainable picture includes a savvy use of modern technologies, eco-friendly policies and manner and – according to some – even a slower population growth. The digression about human impact on environment was necessary to say how a demographic change can influence even biosphere.

1.3 DEMOGRAPHY TREATED IN AN ECONOMIC FRAMEWORK

Robert Malthus published the first edition of "*An Essay on the Principle of Population*" in 1798. At that time and in the nineteenth century his work became very influential although he undervalued how the future development of technology could affect economic growth.

The scenario at the heart of the Malthusian theory is one in which there is an economic condition of subsistence level according to which the real wage is enough for allowing the survival of all the members of a family; after a real wage increase household can decide if using the surplus for better living conditions or increasing the number of the family (grosser wants). Since here

we can see a trade-off, or the choice by the household, between the number of births and pursuing higher living standards.

Unluckily the forecast for an ever increasing population were not so happy: at a certain time, resources for biological subsistence (the carrying capacity) would have not been enough for granting the survival of the entire population. The positive check consisting in famine, starvation, disease and war would have reduced population to the level previous to the “surplus”. Between Malthusian assumption, fertility follows a geometrical path while natural resources follow an arithmetical one causing at a certain time an unbridgeable gap between resources and foods for satisfying the needs of population and what really existent.

Opposed to the positive check, the preventive check is about celibacy (like the preventive check or marriage at a later date) and abstinence with the precise wish to avoid insurmountable struggle problems and while the first is considered a natural fact the latter is a rational human choice.

In those years Malthus, followed by J.S. Mill and then by Marshall used to consider a fall in fertility a necessary condition in order to obtain an economic upward of society. They discuss about the wish to reach higher standards of living even by lower classes as a driver to limit births or as it was said “the same moral restraint of middle classes adopted even by lower ones”.

Sociologists and psychologists used to study demography and fertility in their framework but below I will focus on how the economic one lends itself in given explanations. There is a clever parallelism in which couples can be compared to an ideal consumer aimed at maximizing its own well-being. Of course it could sound strange drawing a comparison between children and an ordinary good or a basket of commodities although it can give us a straightforward model but according to Gary Becker (1960) economic variables provide better results than others.

The knowledge of relatively safety contraceptives techniques were available since 1860s but because of religious and moral restraint for a long time they spread slowly (Becker, 1960). For our analysis let’s hypothesize that the number of children is equal to the wish of the parents even if they cannot be bought and so ‘production’ has to be completely autonomous.

Offspring can be thought as providing a psychological utility to parents that more than offset their eventual net expenses, indifference curves with a particular shape can represent it including some taste as religion, race, age and the like. More precisely indifference curves include even

not fully economical aspects. Households can spend different amounts on children or between different children if this increase their utility and with a different outcome but, of course, that higher quality doesn't mean morally better. Concretely, a good example consists in a child on whom parents can spend more for private nursery school or private college.

At rising income, or let's say with better economic perspectives, is important showing how this affects quality and quantity and the answer is that quality is much more elastic than quantity. Certainly there is the influence of the long time needed for an extra birth however it remains the positive correlation linking family and quality (expenses on children).

Malthus theorized a positive correlation between increase in income and a large increase in family size as a consequence of decline in child mortality, certainly there is the influence of the 18th century living conditions when better perspectives could really be translated in lower mortality rates and more resources really meant one more instrument to act for subsistence and against poverty and for this reason there was the Malthusian idea of 'preventive check'. Nowadays with the current subsistence level an increase in income can't affect mortality rate even if it is particularly large.

In the last framework we should add something more concerning net cost of children. Keeping in mind as such consideration is strongly idealized but it's useful to a better understanding of the subject. A net cost of a son "equals the present value of expected outlays plus the imputed value of the parents' services, minus the present value of the expected money return plus the imputed value of the child's services"⁵.

If costs related to growing up a child are positive and overcome the future earning it means that there is a correlated psychic income to integrating the total utility for the consumer otherwise would be a common consumer good. The higher the gap, the higher the psychic income replacement should be.

⁵ "Gary Becker, 1960"

1.3.1 A FRAMEWORK WITH DIFFERENT COSTS IN INFANCY

A different scenario could be captured in a rural zone where young children in the past used to help adults in agricultural jobs since infancy, that's why 'rural children' net costs were lower and fertility rate visible higher. Unluckily child labour subtracted times and energy to education and it's surely limiting for the future; governments since long forced a minimum age under which was illegal employing children or compulsory schooling laws.

Something interesting in this way can be kept from what happened in the slave market until 1860s in northern America. Of course a similar parallelism it's enough nowadays to make shivering everyone but was a widespread business at that times. Raising children of Afro-American families was much profitable considering that young guys were sent working early and could be sold realizing huge profits. Low investments in those children are enough to give idea how a future of physical work made necessary arms instead of human capital and knowledge. Of course slaves (mainly male slaves) were used in US southern cotton plantations and employed in really hard jobs with just repetitive tasks until they could have civil rights after Emancipation Act of 1862 by the president Abraham Lincoln.

The mastered framework under a hypothetical point of view can be summarized with a positive correlation in which income and fertility are positively related where quality is more elastic than quantity. The qualitative aspect can be fostered by social pressure towards wealthier families and a series of cultural beliefs, I already cited the use of attending private institutions but we can add many more examples often with the wish of reflecting the social status.

The theoretical model described in his paragraph is not consistent with many row data according to which it emerges an inverse relation between the income level and fertility rate. To give credit and accept the framework here described we needed to obtain a direct correlation, although a moderate correlation, and showing the elasticity with the quantitative aspect. Such evidences which delete the hypothesis of moderate direct correlation replacing it with an inverse one are obtained from U.S. organization such as Census data of United States Bureau of the Census dated 1940 which constitutes a big body of data survey that support our last findings.

1.3.2 KNOWLEDGE OF CONTRACEPTION AND DESIRED NUMBER OF CHILDREN

Himes's work on history of contraception give us something interesting: the knowledge of contraception was available relatively early but spread in an asymmetric way. If upper classes were educated on contraception before than lower classes, we can expect a gap in fertility rate since the spread of contraception at a decreasing rate. This hypothesis is confirmed by evidences, so we know certainly that at first the inverse correlation in fertility with income could be explained by this differential in contraceptive knowledge.

There is a thine issue to be added after the previous aspect as many studies have focused their attention on a restricted sample inside of which there is homogeneity for the contraception awareness. In a similar survey there is a positive relation about the elasticity on the quantitative aspect: I want to cite three cases which validate our findings.

First of all, according to an interview to residents in the area of Detroit in 1954 was asked what was the ideal number of children to have for a couple with a similar economic situation and answers used to underline a positive correlation between growing income and the number suggested.

Secondly, two lands geographically far away each other like pre-war China and the city of Stockholm in the 1930s was calculated that inhabitants had a particularly widespread knowledge of contraception and the quantity elasticity was almost in line with increasing income.

Thirdly, something similar was observed considering a group of students coming from the same college and the same year and so it is easily presuming a homogeneous level of knowledge in contraceptives (and in education) and it is possible to capture a positive relation between the successfulness of a student and the number of children.

Another point to be cited comes after an historical fact. During world war second, many informative policies were set up by the US army in order to prevent the spread of venereal disease and illegitimacy and in the later years a decrease in fertility rate by lower classes was registered and that's evidence associate itself to what has been state before.

Probably, those policies fully centred their goal and after the war entered in the US society and demography in a permanent manner.

1.4 EMPIRICAL EVIDENCE ON QUANTITY-QUALITY TRADE OFF

Often the quantity-quality trade-off has been investigated in an empirical framework and a big body of data are nowadays available to us. Psychologists and sociologists have been the first movers in assessing how behaviour within families can affect individuals while in a second moment also economists begin to study to capture any interference of family size mainly on scholastic performance.

Others studies during 60s and 70s were aimed at explaining that children were not an inferior good despite an observable inverse correlation between income and family size at country level and a regular match between higher and lower developed countries with fertility level. It's true that with higher incomes times became more valuable while childcare is time expensive.

This paragraph is focused on how models in which children quality can be affected by family features such as the size, the birth order and child spacing can be thought. Children quality is considered in terms of school performance, achievements and differences in growth in years and if theoretical models give good match with empirical evidences. Teachers skills and school features can be included.

Similar studies concerning family behaviour and economic issues were about the intergenerational transmission of wealth.

Family members are maximizing agents following a child quality function with both time and budget constraint considering opportunities and preferences. Parents' decisions can evolve or better in every moment utility is maximized depending on the current number of children and their age as a first distinction can be done between children in pre-school age and in school-age, in the latter case a child spends less time at home than preschool siblings.

Time spent after all children together in group activities with spill over effects or other moments in which everyone is included can be named 'public time' (analogously to a public good) opposed to 'private time' which is child specific as helping a child in homework and so stealing time to others children. Although in a family life moments spent together are desirable and surely happy, it is easy to state that private time is the most formative, it's an intense training for a primary education student. Unluckily in a working-life balance condition it's a finite resource.

Parents can decide to spend the same amount of private time with every child regardless of their needs in a more equal time distribution (non-discriminatory time allocation) which turns out to be difficult in a large family where private time is increasingly substituted with public time, or it can be decided to devote a different amount of private time in order to help children in satisfying prior achievements (achievement maximization) aimed at allowing everyone reaching acceptable results. A third way suggests a balance between two opposing forces which are spending more time with the most performing child (efficiency effect) and investing time in order to help the least able (wealth effect). The most probable scenario is the second one (achievement maximization) according to which the smarter child will have less private time spent after him/her. Other differences in private time allocation can be suggested by the birth position according to which the last born generally receive more attentions than elder siblings.

The outlined framework has been implemented and tested empirically⁶ and it is so satisfying to control how results can confirm a large part of cited intuitions even if it's particularly difficult to distinguish between how much private and public time children sampled received. The Gary Income Maintenance Experiment, a survey extended on a four-year period, considered some features such as family characteristics, parental work behaviour and family income across 1971 and 1975 with mainly low income families, most of them Afro Americans. Data are extracted from tests on reading comprehension and vocabulary usually administered in the US school system. Until here I took in exam how family behaviour can interact with children performance which per se is not enough, so it's desirable to introduce a second term, school, referred to the school system and more generally how environment and teachers could affect it. The third and last term includes all the exogenous aspects necessary to draw a more and more precise empirical model, for this purpose innate abilities and motivation should be included.

Achievement can be assessed at a fixed time (t) or how it evolves dynamically in a yearlong period such as at the beginning and at the end of a class. Other points which have to be considered can include the presence or absence of a father or the permanent income of a family and parental level of education.

The results taken from the article of Hanushek, (1992) corroborates the hypothesis of the existence of trade-off between quantity and quality of children, in a family a child achievement growth falls of 2% when a second child is added and with an increasing number of sons the rate

⁶ Hanushek E., (1992). "The trade-off between child quantity and quality", The Journal of Political Economy.

of decline continues flattened (a 0,5 % decrease for each more child). There is no evidence that the birth order can influence achievements growth while, talking of something related to the home environment, a child with brighter brothers/sisters can have good benefits from it. The importance of a good home environment is suggested even by the PERM: per se an increase in income has really modest effect on achievements, on the contrary a better time quality or more generally change in home environment can take many improvements. “It appears that the naïve policy option of simply adding money may have little effect unless there is a concomitant change in parental behaviour and educational interactions.” (Eric A. Hanushek, 1992).

Other meaningful correlation from the Gary Income Maintenance Experiment are about mother work behaviour: evidences show how a working mother has no apparent negative effects on children achievements which is a good point to talk about the importance of female rate of employment. In the last decades there were many change in the composition of a family such as the presence of only one parent or divorces which means a reshape in the usual family structure. Results surprisingly say that neither the absence of the father in the family life neither the year after a divorce have a negative impact on both short-run and long-run achievements, similarly to an eventual change of school: all these elements tell us about how children in the age of primary education can be resilient to changes. Since decades after world war were characterized by an increase in divorce rates and a decrease in a two-parent family, the fact that such reshaping could not affect negatively children school performance are certainly encouraging, is like to say that children have equal achievements opportunities although coming from a different parental related context.

So far it emerges the key role of private time which is child specific and it is positively correlated to growth achievements. In a family with more children private time that can be devolved is shared between ‘competing’ siblings: after this premise I conclude the paragraph searching for if and how birth order has a role in this direction. In a family with more children with a non-working mother, children in school age cannot compete for non-school time during day, the matter of strife is about non-school periods presumably afternoon and evenings. So in a large family better achievements are for earlier born that can count on more attention for homework during their first year of school.

1.5 THE EAST ASIAN MIRACLE

I wish to consider now the case study of some Asian countries. This Asian case was investigated by different authors. In many articles it emerges how demography was related (or better exploited) to the fast development of the countries analysed. D. E. Bloom and J. G. Williamson stated that governments of Asian tigers exploited in a foresighted manner demographical features which have been at the basis of the famous Asian miracle. However, the awesome growth path of East Asian economies was so fast between the end of the second world war and the 90s that – in every case – catch the attention of researchers. Here I will refer with East Asia to China, Hong Kong, Japan, South Korea, Singapore and Taiwan; with Southeast Asia to Indochina and with South Asia to an area delimited at east by Afghanistan and at west by Bangladesh.

In literature, “population pessimists” affirm that a growing population represents a damage because it dilutes capital accumulation and brakes technological progress while “population optimists” talks about scale economies allowed by population increase and population as a driver for technological upgrade.

There is a third position upheld by neutralists (consistent with the intention of this paragraph) according to which population by itself has not effects, more properly is how the ratio between active and dependent population can be managed inside of a more complex framework.

The turn came after war, during the forties, when east Asian countries left their previous hallmark isolation and since then many progress in hygiene and health became available to their people; world organization had an active role in implementing public health measure such as vaccines.

In parallel, food supply was improved thanks both to international trade and more efficient agricultural techniques. A digression in here is necessary to underline how the exchanges of techniques and ideas brought improvements previously impossible in such a fast way.

A noticeable decline in mortality and in childish mortality was registered since 50s, the fall was extremely rapid for east Asian countries which reached yet in 1970 the current level of crude death rate. Southeast and southern countries had a slower decreasing path reaching the leading group in late 1990s and 2000.

All Asian regions were protagonist of a decrease in birth rate (although east Asia was the leading group) regardless of economic development level, this decrease was considered particularly fast if compared with the western transition of 18th – 19th centuries. The most realistic interpretation includes different reasons linked together such as the spread of contraception, family demand and government intervention, this last being included in family planning programs typical of Asian societies. Other studies tell us about socioeconomic variables such as income and education. Data and considerations about mortality and fertility trends are necessary to introduce a third element which is the ratio between active population and dependent population. We can break up total population in youngers, workers and elders where the medium class is the working class while the younger consists of people not entered yet in the labour market and elders who are those retired. The first and the last class are economically dependent while people belonging to the middle one are ‘active’ which means being employed and producing tax revenues.

The more the ratio working and non-working population is near to one, the better for the country even for state expenses. After a setback in mortality rate, at certain level of decrease in fertility, it’s reasonable to wait for an increase in the number of youngers that at the first time make the ratio lower but then, when this part of the population will reach adulthood, it will reverse the ratio and making the country wealthier. East Asian countries benefitted between 1975 and 2010 (after 2010 a decrease in the ratio will be registered) with a very active population. Immigration is a factor contributing positively to make more active population as the protagonist of migration are mostly young adults looking for a better job and life and so there is a sort of self-selection in flows.

In order to make a quantitative assessment, we can observe as in 35 years (between 1965 and 1990), the working age population growth of East Asia was at 2.39% per year, while the total population growth was at 1.58% while dependent population was at only 0.25%. According to this scenario population dynamic can explain one third of the ‘miracle’ or even the half of it if we consider the difference between growth of those years and growth of a steady state and Hong Kong, Malaysia, Republic of Korea, Singapore and Taiwan have exploited, as has been called, the demographic gift. According to Krugman the driving force for the Asian miracle was a bundle of capital accumulation and labour force growth and this view is particularly considerable, he it draws a framework in which high rates of working population are not enough

to set up development without a solid interaction with the capital factor or better capital accumulation helping higher intensities activities.

The demographic 'gift' despite at the beginning increases the non-working part of population afterwards it will give the positive effects with much people entering between employed. A farsighted country has to use the demographic-gift related benefits to support structural investments in its development considering that in the long term scenario there will be a large part of elder population which increase social cost.

CHAPTER 2: FERTILITY REBOUND IN OECD COUNTRIES

2.1 AN INTRODUCTION OF FERTILITY REBOUND

In order to see if fertility has followed an ever decreasing path after Malthusian transition it is necessary to remind some key points from chapter one.

In the western world, fertility trends during the 18th century could be summarized by a direct relation between income increase and fertility growth (first phase) if the subsistence level was satisfied although household could decide to use the surplus level in a quality condition improvement while in following decades the correlation became weaker and weaker (second phase) until a full reversal of it completing the Malthusian transition.

The last phase has to be contextualized – after the reshaping role of two industrial revolutions - in a radically changed world in which education of employed people really affected their job opportunity hence, concurrently the spread of contraceptives methods, the precise wish of parents in investing in an ever decreasing number of their off springs.

The inclusion of a country to one of the mentioned phases is a good means in predicting its degree of development which is consistent with other indexes; it is particularly easy to note how Sub Saharan countries are at the top of the fertility rate ranking opposed to OECD countries at the bottom while southern American countries are a good example of ‘middle term’.

According to the above preamble it would be reasonable to make a precise hypothesis: as the inverse relation can be useful to forecast the development level of a nation in a world scenario through restricting the sample to a more homogeneous one, we should expect that the same result is reproduced although with (I speculate) more similar magnitudes.

Surprisingly, in the OECD sample - focusing for a moment on Europe only - northern and Scandinavian countries (the wealthier group) kept the leadership in birth rate while

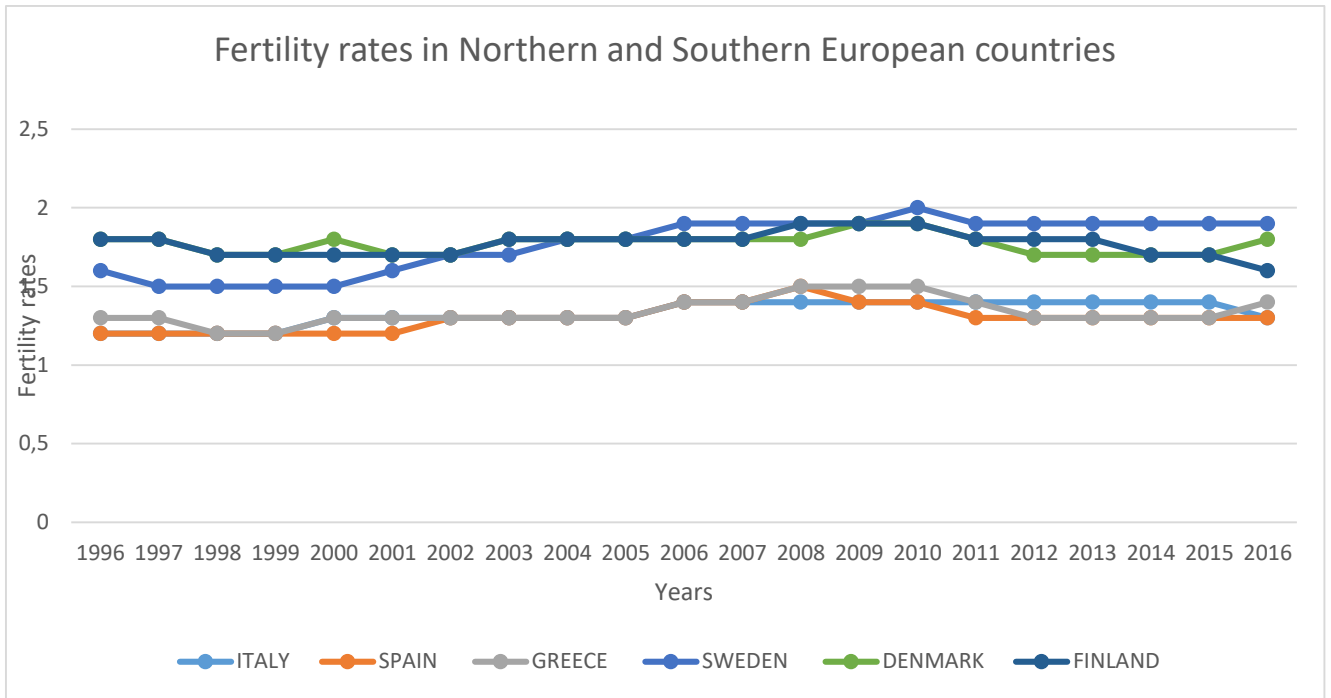
Mediterranean ones are the least fertile. The landmark to be kept in mind is a medium of 2.1 children per couple, also called replacement rate under which new-born people are not enough to fully substitute the previous generation supposing migrant flows can have some effect on society. In this case migrant couples coming from poorer countries notwithstanding their lower income situation they register much higher fertility rates basically because of traditional reasons, moreover migration self-select young and healthier people wishful to enter in the local labour market.

Low birth rates today mean an elder-aged population tomorrow generating an increase in the dependent population class with higher public spending mainly in terms of welfare expenses for retired employees and health care as senior citizens are more vulnerable: an undesirable situation for society entailing concrete risks boosting a future pressure which will damage mainly the younger parts of citizenship. Issues related to an excessively large dependent part of the population with risks coming from it will be the core of chapter 3, so now the discussion goes back to fertility-rebound related analysis.

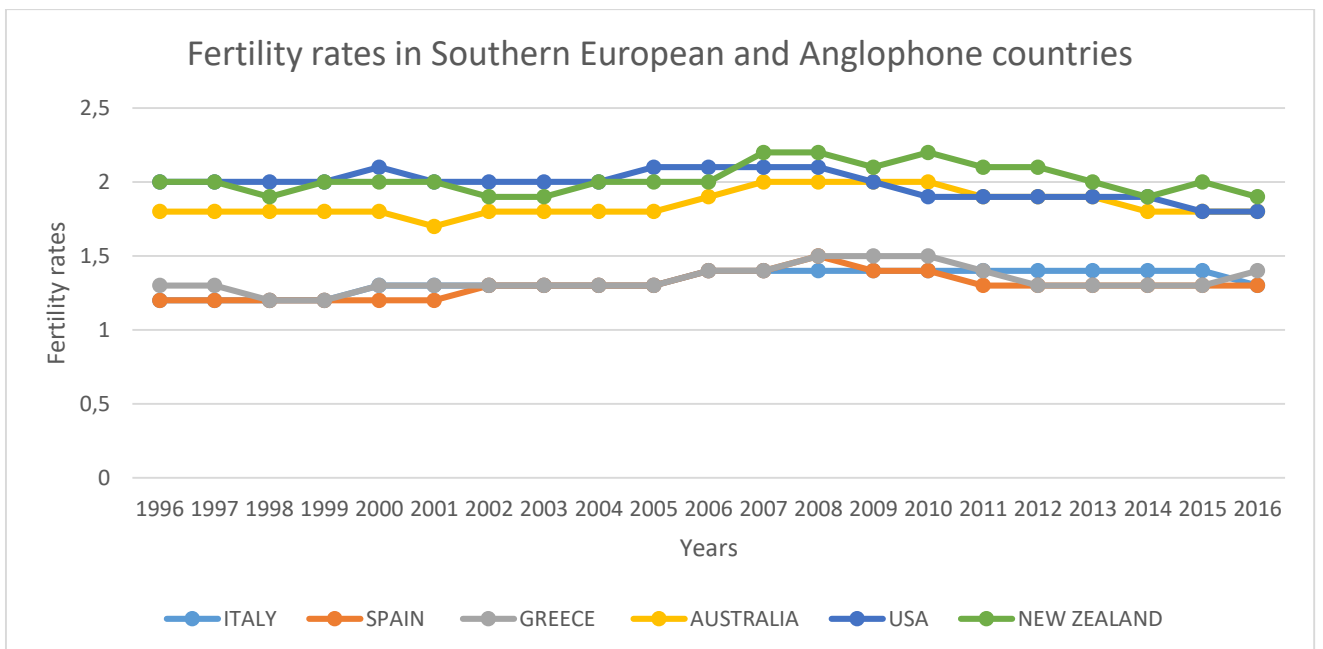
2.2 FEMALE EMPLOYMENT AND FERTILITY IN A LABOUR MARKET FRAMEWORK

We want now to identify the factors affecting societies in a certain manner and causing even huge differences in their fertility rates.

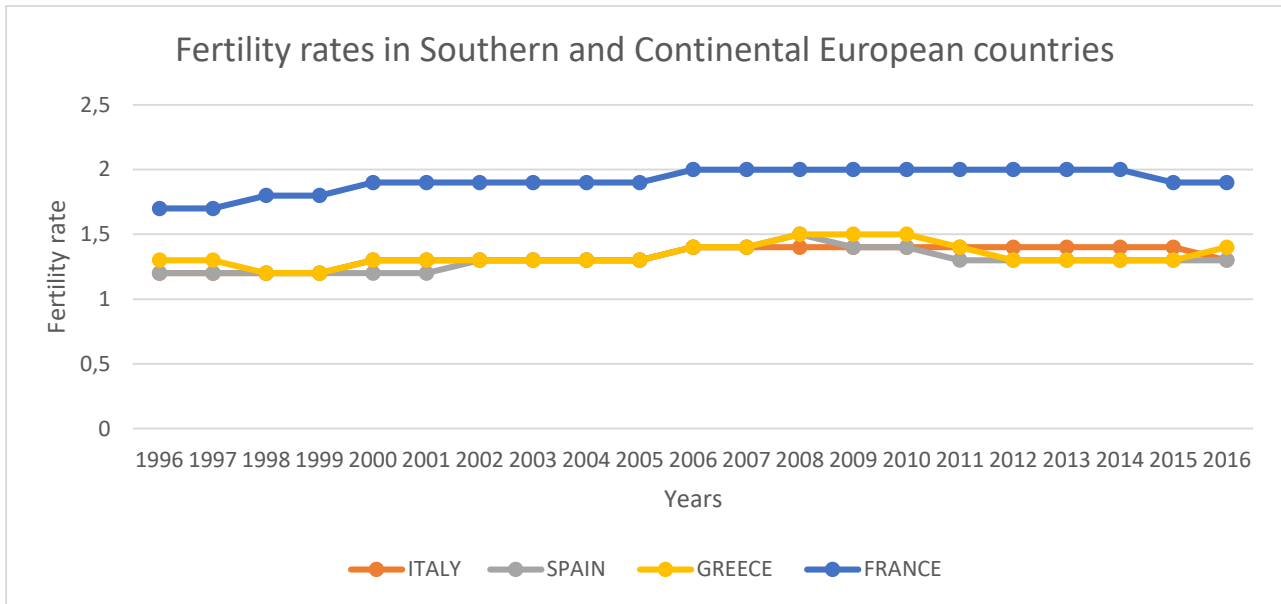
The first move consists in identifying the two opposite groups of fertility rate where the already mentioned Scandinavian countries in Europe together with United States and New Zealand share the highest position placing themselves nearby the replacement rate while on the other side Mediterranean countries such as Italy, Spain and Greece are the worst performing. A search in terms of labour market institutions and level of female employment is the best way in order to investigate possible correlations; surely a couple desiring a childbirth behaving rationally makes an assessment about how the new born affect their outgo and others conditions linked to the mother.



Data source: OECD.org. Full table at the bottom of the chapter.



Data source: OECD.org. Full table at the bottom of the chapter.



Data source: OECD.org. Full table at the bottom of the chapter.

According to A. Adserà (2003)⁷, women desiring motherhood assesses how a pregnancy can cause her an intertemporal loss of income due firstly to foregone earnings during the time spent immediately before and after the birth, secondly to lower wage growth after the foregone experience and thirdly a future potential unemployment risk. I report other parts of A. Adserà dynamic fertility model which is particularly insightful in capturing mothers' (and couples) reasoning behind their fertility choices.

Basically women can get utility from consumptions and through parenthood and utility given by this two terms combined can be added. The model is structured as a two-period model where the choice can be to have a child in the first period, delaying it in the second period or to give up motherhood. Each period is characterized by the risk of unemployment whose probability is the reversal of experience and past time spent on job or education level. If T represents total time spent working it has to be diminished by m , the time spent looking after children so a mother can participate by a total of $T-m$, an alpha term between 0 and 1 gives system inclination of allowing part time for working mothers (a really good instrument in combining work and

⁷ Alicia Adserà (2003), "Changing fertility rates in developed countries. The impact of labour market institutions", University of Illinois of Chicago.

family). The wage calculation is defined after the past wage with a depreciation term counterbalanced by an appreciation term given by new experience. The dynamic model is enriched by maternity benefits M_t and by child expenditures P_k and has to include even the husband job situation.

After exposing the mathematical formalization, it is possible to see if a woman prefers a pregnancy in the first period or waiting longer to have probably higher wage experience and a lower exposure to unemployment risk or to avoid maternity.

I wish to integrate here the mathematical model with some extra explanation with the hope of a better capturing of human and personal differences, the addition includes six terms that are deepened below: preferences, wage growth, benefits, public sector, guaranteed income and unemployment:

- *Preferences*: the choice of a motherhood in the first period means a higher utility since more time even if this can affect career, this is discussed at the next point;
- *Wage growth*: a break from job can lower the total wage depending on how women skills depreciate. For this reason, a woman can decide for a later interruption for childbirth in order to have a pregnancy only when her wage has been consolidated;
- *Benefits*: undoubtedly state support for maternity and also for unemployed workers constitute a precious help for families however it depends on if they are fixed subsidies or calculated after the previous income and job experiences, in the latter case the system incentives a delay in childbirth;
- *Public sector*: women employed in public offices have surely a more accommodating job towards parenthood that decreases the threat of give up childhood and, in a future perspective, more permanent work contracts meaning better stability.
- *Guaranteed income*: a country with a more liberal labour market legislation even concerning firing legislation such as USA exhibit easier and faster entry – exit rate in the labour pool opposed to a model excessively rigid in which return is complicated. This re-entry system affects positively low educated women's fertility rate.
- *Unemployment*: high unemployment level and more generally job instability affects negatively welfare levels for all the population and even if an unemployed woman faces

the lowest opportunity costs during unemployment, bad perspectives push couples to wait for a more stable situation delaying motherhood project.

After an exam of the above items, in the continuation of the chapter all the country policies about parenthood support will be assessed in base of their maternity benefits, full employment and of course part time job possibilities. The mindful position towards part time legislation and opportunities in the several country-policies that will be assessed in the chapter supports current opinion, according to which part time is a desirable ethical goal which allow families to adjust family needs and career in a life balance condition. Even if many countries do not grant adequate family policies empirical evidence shows a positive correlation between high employment rates and fertility rates but I will come back to this aspect later on.

A fruitful policy in planning parenthood support could consist in linking the level of benefits provided with past work experiences of both parents stimulating them in reaching a sound job position before having children. Such a solution will boost their perspective in a fast return to work in a framework of gender equality. But before turning to maternity policies, it is useful to give a closer look to Adserà's model and its empirical implementation.

2.2.1 SOME EMPIRICAL RESULTS FROM ADSERA' MODEL

In this paragraph I deal with the empirical side of the Adserà's dynamic model, and particularly I wish to see a quantitative feedback by elements such as the institutional structure and other kinds of benefit plans. The dependent variable used in the model consists in the TFR (total fertility rate) of OECD women considering births for 1000 women, data are extracted by the Council of Europe for the EU countries and by others national source for the remaining non-EU countries. The US Department of Health and Human Services Social Security Programs throughout the World, OECD Jobs Study (1991) and from I.L.O. (1985) are data source too.

As independent variables we consider three age groups in five-year span (20 – 24, 25 – 29 and 30 – 34 years old women), the unemployment rate distinguished by gender and by both gender and age interval, the percentage of urban population, of government employed (in a log

function), of agricultural workers and self-employed people. Other variables include weeks allowed as maternity leave, GDP per capita considered the 1991 US dollar purchase power parity and the percentage of part time workers in log function (unluckily it is impossible to state if the part time status was a right because of motherhood or involuntary).

2.2.2 THE IMPLEMENTED MODEL

I anticipate here the core findings from the empirical survey; further details will be dealt with later on. Basically in a twenty- year long period, from 1968 to 1998, the correlation between women employed and fertility rate turns from -0.75 to nearly 0.7 : a change of sign that capture the radical change from a negative value to its opposite. At the end of the chapter 1 the debate appeared closed asserting that development/high performing of a person is a direct consequence of the quality (childcare during infancy, education, time end efforts) spent on him/her; as well as quality in investment requests time and energy and households desiring high quality children have limited time and energies to be invested in succeeding in career and this burden traditionally has ever encumbered on mothers. In more advanced countries but with many differences between the OECD countries sampled, this is just ‘yesterday story’.

Evidence tells us how countries with both high rates of unemployment and a high share of working population self-employed exhibit very low fertility rates of women aged 25 - 34 particularly since 1980s on: Spain that in 1997 had a 30% of female unemployment is the most glaring example fitting the mentioned trends opposed to a group made up by Luxembourg, Iceland, Switzerland and Austria with a sixth of such unemployment.

Spanish data resemble an historical fact in the US story when, during Great Depression, in 1930s and the following pre-war years structural low employment depressed fertility rates and there was no recovery until post war times. A similar depressed trend fit Easterlin’s model forecasts according to which parents do not plan children unless they can recreate at least welfare conditions lived in their childhood: Easterlin offers a pro-cyclical schedule for parenthood.

Self-employment affects everywhere fertility in a negative way and countries with higher rates of self-employed workers (mainly Italy and Spain) are those exhibiting flattest OECD rates of fertility.

Basically most part of self-employed are little corner shop owners and if women their access to maternity benefits is strictly limited but, economically, they are fully exposed to market uncertainties and fluctuations. A second more wretched reason comes from countries in which a widespread practice consists in using workers formally self-employed but working inside of a company and bounded to their schedule hours and requests but with less rights and legal protections. In this way companies can avoid many non-wage costs such as social security contributions. Similar conditions represent a serious damage for women desiring motherhood with being in this case not entitled with parental leave and maternity benefits.

The last point can be summarized talking about how in Italy and Spain diffused female unemployment and self-employment depressed fertility since 1980s to late 1990s (considered years sampled), at the opposite we find US and Denmark: the first because of a minimal unemployment and in the latter moderate levels of unemployment but really restrained level of self-employment. In term of replacement rate, US and Denmark are little under replacement rates; Italy and Spain are far away from that surpassing of just some decimal of point the unity.

The survey on how independent variables of dynamic Adserà model meddle on total fertility rate prosecutes now focusing on the number of job offered by public administration. Theoretically if a large part of female workforce is in the public employment this means a safer work than a self-employed job or a job in a company, even considering the globalization threats and international shift of workforce mainly practiced by multinational groups. A less risky activity in the long period together with a job more easily reconcilable with maternity leave and re-entry.

2.2.3 MATERNITY AND PUBLIC EMPLOYMENT

After the second world war, a new awareness rose up: citizens in many western countries claimed to have more public services such as free and better healthcare and free education in

order to have not only a formal equality but even a more equal material distribution according to a more democratic idea. State had to take up an interventionist role as suggested by the 'New Deal' example by Roosevelt administration in the US. This framework tells us that effectively there was an increasing path in public employment which spread in many state, this wave was faster in countries more social-democratic oriented.

It is possible to identify two parts with a different outcome as from 1960 to 1975 there are no evidence about a positive influence taken by public employment on TFR, on the contrary in the last part surveyed from 1975 to 1997 the independent variable is positively correlated.

In the early 1970s all OECD members had a percentage of public employed between 7% and 15% of their total but properly in the following years, a huge distinction took shape: from one side countries with a social democratic leadership such as Scandinavian ones and France implemented progressive policies with a sizable increase in public employment particularly for women, from the other size Anglo-Saxon countries such as USA, Australia, New Zealand and United Kingdom in Europe pursued liberal policies and shaped a particularly flexible labour market avoiding a similar public job creation. The US president Ronald Regan and the UK prime minister Margaret Thatcher took up a primary role in this liberal affirmation.

Southern-European countries followed an autonomous trend with neither implementing a liberal labour market (legislation generally adopted with the aim to foster private job creation despite an impairment of workers rights) neither creating a public sector after the example of social democratic countries. It's said that in a U shaped structure Anglo-Saxon countries and those implemented public sector occupies the two extreme positions while the last group can be considered at the bottom of the shape.

As to cite some data, Greece and Ireland are the bottom position with a 12% in terms of government sector. Portugal, Spain and Italy have a 4% more points with a total of 16% and register a more 0,005 predicted TFR than the bottom group but they have a 0.2 lower in compared with Denmark, Norway and Sweden which have a serious rise of governments job, amounting at 32% in the late 1990s.

Maternity leaves are the next to be processed, the estimates explain that United States and Australia, particularly liberal mind countries, in the recorded period had not at all maternity

leave against the 28-week-long leave granted in Denmark and in Norway and a such huge difference give us a 0.1 point of difference in TFR.

According to Adserà, considering the 'Index of maternity benefits' which includes various policies for motherhood, the estimates tell that states with highest score at 40 points (Sweden and Finland) and a second best class with a 25 point of score (Denmark and Norway) perform respectively 0.32 and 0.15 higher values than those who are at 12 points (Greece, Spain and Belgium). It is more and more clear how state efforts are consistent with total fertility rate.

Part time can be a certainly useful instrument of work flexibility allowing women to prosecute their professional activity but having a part of the day to be devolved to family life. Unluckily it is a difficult issue to distinguish if part time has been obtained by a woman because of a childbirth or because the job she got does not provide a full time occupation. Involuntary part time can have a clear negative income effect while on the contrary part time as a flexible policy can help fostering motherhood.

Part time policies are shown to produce different effects according to the different age group: it is more probable that women aged 20 – 24 are discouraged in motherhood because the negative income effect is acting while elder age groups such as women aged 30 – 34 who are supposed to have reached a better situation appreciate part time opportunities maybe with the idea to recover later a full time job.

Employment protection legislation, an element that can be shaped according to a more or to a least liberal view, *ceteris paribus*, lowers TFR through a too much rigid labour market that – according to some views – can represent an obstacle for private venture.

The issue related to public employment has been discussed yet although is strictly linked with the next variable that are about public services for infancy such as free day-care centre. With the below premises it is easy to imagine that better childcare services are offered by all Nordic countries whose GDP expenses amounted at least at 1.5% - 2%, really huge if confronted by Japan and Spain, modestly at 0.2%. A country with a 3.5% GDP of their public expenses considering both public and private expenditures for childcare is said to obtain at least a 0.3 points estimate higher than a country with a tenth of it.

Religion can affect fertility as demonstrated by *World Values Survey*, it seems that sampled couples affirming that they attend religious ritual at least once a week have higher fertility rates than the media even if the last years surveyed talk about a first decrease in this trend.

As through history there were ever higher rates of female tertiary enrolment as suggested by many database and data collection nowadays women reached a steady 50% of share in tertiary education and high enrolment rates are generally associated to low fertility.

The last variable cited in the dynamic model consists in fixed term contracts which act in increasing the risk of unemployment and have a negative effect in terms of human capital accumulation as a limited period of time is a disincentive to invest in employed skills. Often aimed at creating new jobs and permanent jobs, many countries decided to grant really low cost of hiring, the problem was that new hired people remained with just temporary contracts which have not been translated into fixed-term employment. In particular, similar policies can damaging workers employed in low skill job as they can be easily substituted with the firm exploiting the fiscal incentives with no stable job creation.

2.3 A COMPARISON OF MATERNITY POLICIES

It has been shown that after fertility transition if restricting the sample to the most developed countries such as those of OECD there is a phenomenon called fertility rebound coming after an environment with social policies family oriented. In the previous paragraph we talked more precisely about maternity benefits then empirical evidences have been assessed in a more quantitative framework. It emerged clearly as northern European countries are those making stronger efforts for family support and allowing women to pursue their career goal despite one or more childbirth and, interestingly, Sweden, Norway, Finland and Denmark can claim to have the highest rates of female occupation and really low rates of female unemployment.

A deeper understanding of the matter goes through an analysis of how effectively social and family policies are structured in two different countries such as Sweden and in a southern European country such as Italy.

2.3.1 THE SWEDISH EXAMPLE

The Swedish social system can be considered a landmark and it comes from a long deep-rooted tradition.

Since 1940s in the Swedish parliament, the Riksdag, began to prevail a tendency according to which a well-structured social oriented system was necessary for shaping a more equal society starting from the care for families. The first idea was to limiting the gap between parents with and without children considering the higher charge of big families without a functioning reallocation system.

The price of a similar welfare system consists in higher taxes to be paid, historically tax burden have never been lower than 40% of personal income and others kind of taxes such as the one on commodities and services added value, generally at 23%. Certainly both direct and indirect taxes are a heavy burden for Swedish people but constitutes a necessary price for maintaining a functioning system that will be describe in details later.

2.3.2 THE SWEDISH VISION

A key point of the 'Swedish vision' consists in the shared parental responsibility in raising and rearing children. The best way to support families consists in helping parents to be economically active and effectively Sweden has high rates of both parent working, however many strategies are thought specifically for supporting mono-parental families. Therefore, the idea of allowing both parents to work and developing career and spending time with family. The public childcare program consists of many economic supports such as children and housing allowances for lower incomes and other important instruments such as free pre-natal care and free check-ups in health child clinics. However, there are some measure available for everyone without regarding the income level: free meals in schools are a policy stimulating families in make their child attending pre-schools. Parental insurance includes three kinds of possibilities such as cash benefits, maternity benefits and insurance benefits after birth or for adoption.

Parental leave benefits are granted for a total of 450 days after birth but they can be shared between parents except for a 30-day long period reserved for each (mother and father month). Parental leave is paid at 80% of the full wage calculated after the medium wage received in the last 360 days for twelve months then decreasing at a flat rate for the three last months. It is enough having been on job for at least 6 months before birth. The interesting thing is that the 450 days can be used instead as a single slot they can be used until the child is 8 years old distributing them, both in a continuing or in a discontinuing way. The 450 days can be spread even in a part time way at $\frac{1}{2}$, $\frac{1}{3}$ or at $\frac{1}{4}$ of the time however they are mostly used in along the first year of the child. It is original the flexibility between parents and along the time line. To the 450 days are added from 11 to 60 days paid at 80% of income before the birth of the child. The introduction of the month for fathers occurred in 1995 with the precise wish of an increasing responsibility by husbands and more while since 1978 the parental leave could be shared, many events to acquainting male parent in their role in supporting children and the importance about the presence of both in the growth of the child.

Until a child is 12 years old, parents can share a total of 120 days of permit from work paid at 80% of income if a child is sick to take care of him/her. Generally a medium of 7 days per year are used. In the moment of the birth, there are 10 days extra of paid parental leave for fathers, the 'daddy days' thought to receive the new child in the family and staying with elder siblings.

2.3.3 INSTITUTION FOR INFANCY SINCE 19TH CENTURY

As to give some historical references about child care, the first step was the foundation of the first crèche in 1854 even if for almost a century just a really limited number of children could be accepted until reaching just 4000 units in 1935. In the first century of activity, day care centres were run (and financed) mainly by private foundations with the aim to give to single employed-mothers a different opportunity than placing their children in 'foster homes' where generally children were put to live with a new family during the week and together with orphans children.

In 1949 the National Child Care Commission presented a detailed reportage on the ongoing system about the functioning of the system but unluckily at that time the main reasoning was oriented to support single mothers (and precisely offering them free child care to allow them

working in days hours) more than a precise wish in providing care towards children and more generally in the first six decades of 20th century the goal was mainly to adapt inclusive instruments to defeat poverty.

‘Infant school’ differently from the crèche concept was aimed at satisfying pedagogical needs linked to the growth of a child and the formation of his/her personality. The spread of first pedagogical researches suggested that children are not ‘little adults’ and their growth has to follow a certain path mainly thought the game and keeping in touch with peers. Pedagogical goals were joined to childcare centres in the form of the Kindergartens firstly seen in 1890s. At that time was a sort of experiment which went over just keeping children while parents are at job.

Thanks to government financial support, between 1930s and 1940s more and more free Kindergartens were opened to children of lower classes considering that in those years a changing environment towards an ever more urban and industrialized society was increasing social gaps between classes while childcare and education were rightly considered social equalizer. The attendance of the Kindergarten was considered a way to teach disadvantaged children “the importance of saving, contentment and good taste”.

In the following decades, a general renovation of school system for infancy combined parenthood support and pedagogical goals with a special attention for disadvantaged groups such as refugees, immigrants or children with disabilities.

2.3.4 KINDS OF FAMILY SUPPORT

At the opening of this chapter, the argument was about different fertility rates in OECD countries saying that higher fertility rates are a feature of countries in which there is a strong tradition of an efficient and well-structured welfare state. In this light, fertility decisions of households are easier if government provides free childcare and free health access advantaging lower income families and, as was pointed out, a series of rights for parental leave.

The next part is devoted to analyse how the Swedish system actually provides support to families, I state yet that it is an example of excellence to be imitated. After a reform in 1995, the Swedish pre-school consists of three kind of institutions: the day care centre, the family day

care homes and the open pre-school. Every of each has its own original aspects in order to match a well-defined need. I analyse just pre-school, the system until children are 7 years old as it is the most crucial in the help towards families.

The *pre-school* that replace the former day care centre offers a full time care and education to children even to those with special needs. It covers mainly the typical office hour and are run by local municipalities that can ask a little fee but related to families income. When children are six year old, before to go to school can during the last year a kind of preparation for the beginning of school.

In 1998 almost 338 000 children aged from 1 to 5, basically the 61% of the total population used to attend pre-school which is a good result considering the possibility of two extra kinds of daily child care.

An alternative to the pre-school is the *Family day care homes* which is run by a family child minder who follows generally from 3 to 6 children not only during office hour (e.g. 8:00 am – 5:00 pm) but can be provided childcare even in ‘extra hour’ if parents have job necessity even in after dinner times or in week end.

Such form can allow a better match for parents working in a different hour even if this form has decreased since its invention, in the 1990s just 12% of children aged from 1 to 5 attended family day care homes.

The third kind, the *Open pre-school* is typical of Sweden system, it consists in a public place for childcare in which both children and parents can share their time together allowing children in spending time with playmates while parents can meet each other and exchanging experiences. Open pre-school basically involves an experience in which both families and institutions are strictly in touched and parents participate directly in the first social experience of their children. This solution is completely free and in some municipalities it was implemented with medical assistance allowing the attendance even for children with disabilities. They became ‘family resources centres’ with social workers spreading information about a health rising of children satisfying an informative aim.

The efforts in shaping a very efficient system of childcare with features of flexibility such as in the case of ‘family day care homes’ granting odd hours gave results producing a ten-fold increase in enrolled children from 71 000 to 720 000 in just two decades. Good policies about

parental leave causes the absence of children enrolled in day care centres in the first year of life as they can be looked after at home and in 1997 just 200 children younger than one in all Sweden were enrolled.

From an administrative point of view day care centres during 1970s were run by central government but a careful system need a more local approach indeed in a first time the running was given to municipalities and later more powers have been assigned to the school principal considering the focus of the policy on the trust link. A similar choice is nowadays distinguishing and helped in making the success of the system.

In the last 1990s 720 000 children attending pre-school meant a coverage at 73% of children aged from one to five years old. If restricting the field to children with both parents employed the coverage grows at more than 90%. It was calculate that until a maximum of three or four months from the request of enrolment municipalities can provide a place in day care taking in mind that parents have together 450 days of paid parental leave so conciliating parental working status and needs of children. The part not enrolled in a day care centre means that parents are still using the parental leave or using for a younger sibling (11%), or they adopt a private solutions (8%), the parents are currently unemployed (6%) or a parent is running the home (2%).

Municipalities and day care centres are equipped at granting special support for children who needs it and teachers are trained at satisfying different needs such as physical, physiological, social and other kinds of emotional factors. In the 1990 – 1995 Sweden welcomed 40 000 little refugees younger than 6 who were received in pre-schools. Sweden is since long a multicultural country, and both schools and pre-schools have been careful in order to provide language classes in order to help foreigners to integrate themselves in an easily way; also mother tongue classes are provided so they can keep a certain familiarity with their culture of origin.

If a functioning welfare system is a requirement in order to have high fertility rates as near as possible to the replacement rate, institutions making this policies possible are strongly participated by parents. There is a precise social project in which parents are involved and there are days in which they go to pre-school in order to clean, to cook and to repair toys, moreover picnics, field trips and ‘work – days’ are often planned. All this activities reinforce the cooperation and strengthen personnel – parent relationships.

I conclude the Swedish example introducing two more policies not discussed yet. Next to parental leave which can be smeared until a children is 8 years old, even if the 450 days of permit have been finished working parents can asks for a part time schedule at work for the first part of life of their child. Every couples with a child attending pre-school can have a kind of flexibility from working schedule allowing them to talk with personnel in the first 15 minutes of the day of school or during the conclusive 15 minutes.

In the Sweden society and more precisely in working environments parenthood is seen as a general necessity which deserve all the necessary support indeed during past decades a positive climate has been created towards employed with little children. Maybe is the last one to have to be cited as the most important aspect.

2.4 THE ITALIAN EXAMPLE

The first law to protect working mothers in Italy was approved in 1902 (l. 242/1902) and it granted a 30 days of unpaid parental leave after the birth of the child. In 1910, government introduced a mandatory insurance according to which a little part was deducted from monthly wage and kept for motherhood (l. 250/1910). After the world war, in 1950 a full reform laws on parenthood in an innovative manner for those times (l. 860/1950). In 1971 a law redefined most part of regulation that last until 2000 (l. 1204/1971) and in the meanwhile trough some decrees maternity protection was better regulated and extended to those classes of worker previously excluded.

On 28th March 2000 came into force the law number 53 (l. 53/2000), symbolically voted by the parliament on the 8th of March, which strengthened protection for both employed mothers and fathers affirming parity of rights between mothers and fathers.

One year after, in 2001 law number 151 introduced the 'Testo Unico' ruling on the whole subject. It is aimed at integrating and fulfilling for employed women, self-employed women and free lance workers and for everyone else working as 'parasubordinate' and for unemployed. Also fathers are pressed for taking care of their children allowing them proper advantages and not just coming from the lack of mother caring.

The most important principles of Testo Unico consists in allowing an effective alternation of parents and a contemporary presence near the child by both parents boosting the presence of employed dads.

In 2012 law number 92 (l. 92/2012) introduced the compulsory parental leave for fathers although in a particularly reductive manner with just a one day permit. (I will see deeply in a second moment).

Since 2001 many other laws and Communitarian laws set in in ruling the subject. Particularly trough 'Legge finanziaria' are introduced some advantages which is not granted not the full coverage and continuity in the next years because they are linked to funds allocated, this for some benefits such as *Bonus Bebè*, *Bonus Premio alla Nascita*, *Bonus Asili Nido*, *Voucher Baby Sitter*.

Italian law is particularly careful in prohibiting the fire of employed women from the beginning of the pregnancy until the child is one year old. Inhibition is valid even if employer has not been informed yet of the pregnancy. The father can not to be fired if he substitutes the mother in the mandatory parental leave.

A law of 2015 (d. ministeriale 151/2015) in order to prevent the practice of white firing (*dimissioni in bianco*), asked that firing procedure is done through a telematics procedure.

In case of volunteer resignation (it is needed the validation by the local office of the Minister for Job assessing the validity of the procedure) from job by the mother in the first year of life of the child allows to enter in the program of financial allowing 'NASPI' for unemployed people.

2.4.1 MANDATORY PARENTAL LEAVE

For employed women the duration of parental leave (which is mandatory) is a totally of five months: two months before childbirth and three months after. It can be asked to shifted of one month later, so the permit of leave became one month before the birth and four month after (flexible parental leave) only with medical certificate talking about a perfect health status of the mother and of the future child.

The parental leave is accorded since the beginning of the pregnancy if there are serious risks for the pregnancy or if the mother is employed in a harmful or dangerous activity, in this case the parental leave is extended since the child is seven months old. In twin births the mandatory parental leave is not multiplied.

Maternity allowances are calculated at the 80% of the income, paid by INPS often many firms grant an extra 20% (reaching so the full income) of the monthly income if the collective agreement includes it.

The mandatory parental leave is included in granting the right of vacation and extra benefits such as the 13th monthly wage and others measure such as those for retirement.

2.4.2 MANDATORY FATHER LEAVE

In the period of mandatory parental leave after the birth, the employed father can replace the mother because of looking after the child if she is seriously ill, in case of death, exclusive custody or abandonment. This last kind of right has lately be given to fathers self-employed workers and free-lance workers (d.lgs 80/2015).

Since 2012 ‘Testo Unico’ grants the right for the father to a one-day of mandatory parental leave expiring until the child is five months old. (l. 92/2012).

The mandatory parental leave for the father has been doubled in 2015 and now amounting at 2 days off and maintained by law (precisely by legge di bilancio) in 2016 and in 2017.

In 2018 the mandatory father leave has been raised at 4 days (with the possibility to lift them at 5 days of leave if agreed by the mother but in replacement of her five months).

The government sentenced that this last 4-day for parent leave is not actually working for public employed waiting for more specific rules for them.

We can state that despite the wish of promoting a culture of sharing of family duties by both parents was at the basis of every law since 2012 (from l. 92/2012 of Monti government) the final legislation puts Italy back to many others European countries that since times are well aware about fathers leave giving longer periods.

2.4.3 TIME PERMISSION

Mothers can have a 1 hour per day time permission if their working day is shorter than 6 hours, if it is longer the permit is a 2-hour leave until the child is one year old for breastfeeding. The father can replace the mother in time permission in case of exclusive custody of the child or in other cases such as when the mother is employed, self-employed, if she is a 'para-subordinated' worker or in case of illness or death of the mother.

It is not clear and not fully explained by the law the possibility of the father of using the permission when the mother is unemployed. The breaks are fully paid at 100% of monthly income. In case of twin birth, time permissions are doubled but not multiplied in case of more than two twins.

2.4.4 OPTIONAL PARENTAL LEAVE

Some laws have defined the 'optional' parental leave for both parents (l. 53/2000 and Testo Unico d.lgs 151/2001). The father can have his own right for parental leave aimed at encouraging and supporting him in active childcare. The optional parental leave is for those regularly employed at the childbirth and can be used until the child is 12 years old.

Every parent can have a maximum parental leave of 6 months each (continuous or splitted) however not longer than 10 months if considering the two leaves jointly. If parents take a 10 months of leave just the first 6 are paid to the mother, the 4 more for the father remains are unpaid. If the six-month leave is taken when the child is younger than six the parent receives the 30% of the monthly wage. If the optional parental leave is taken when the child is between 6 and 8 years old, the month allowance is at the 30% just if the parent receives a year-income lower than 6 311,00 euros (updated at 2017). Unluckily if the leave is taken when the child is older (from 8 to 12) there are no allowances at all. Just for those working in the public sector is available a one month paid at 100% of the wage until the child is 3 years old. The worker can ask instead of the optional leave the conversion of the job in a part time job at 50% of the full time for the same amount of time.

2.4.5 LEAVE FOR AN ILL CHILD

Working parents public or private employed can have an unlimited leave until the child is 3 years old alternatively between mother and father. In the private sector such leaves are unpaid while in the public sector is granted a one-month leave (paid at 100%) per year for illness of a child.

For parents with a child older than 3 and younger than 8 can have five days per year of unpaid leave for each child alternatively, just one parent can take it.

For adoptive parents (in both cases of international and national adoption) and custodial parents are recognized the same rights than biological parents: for an adopted children the entry in the family can be assimilated to the birth with related rights.

2.4.6 PARENTS WITH CHILDREN WITH DISABILITIES

The 1992 is the year of the introduction of the law ruling on policies for families with disabled people (l. 104/1992) with a series of facilities usable on job place for parents. Some kinds of facilities are about the extension of the parental leave, daily and monthly permits (3 days off per month) or a two-year leave. It can be asked the transformation of the full time employment to the part time form, the possibility of refusing the nightly hours.

2.4.7 OTHER POLICIES

If the mother works just occasionally has the right of a money benefit ('Assegno di maternità dello stato') paid directly from I.N.P.S. for a total of 2086,24 Euros (400 Euros for 5 months). The necessary requirement is at least 3 months of work done between 9 and 18 months previously the birth. This support is granted to Italian and communitarian citizenships or for non-communitarian with the long-period permit of stay, living in Italy at the moment of the birth.

If the mother doesn't work the family can have a financial benefit from the municipality which is a 338,89 Euros for five months in the case in which the yearly income of a 3-member family has not to be higher than 16.954,95 Euros. It is granted to Italian and Communitarian citizenship and to extra-UE citizenship entitled of a permit of stay.

2.4.8 BONUS

Every year through 'legge finanziaria' the government can financing the support to families that have a new-born: a series of bonus can be implemented. Financial aids (bonus) can be given to Italian and Communitarian families and to extra-UE people entitled with permit of stay living in Italy. This policies sometimes are related to the yearly income sometimes they are not.

- *Bonus premio alla nascita*, (l. 232/2016) is wholly provided as a single-solution of 800.00 Euros and can be obtained since the eighth month of pregnancy. There is no an upper bound of yearly income for it;
- *Bonus Bebè* (l. 232/2016) is provided as a monthly solution until the child is 3 years old. It amounts at 80,00 or 160,00 Euros depending on yearly income. There are uncertainties about its renewal for 2018;
- *Bonus asilo nido* (l. 232/2016) it provides the refund of the nursery school fee. The maximum to be provided are 1.000,00 euros per year independently of the family income. There are uncertainties about its renewal further than 2019;
- *Bonus baby-sitter* (l. 12/92 and following) it can be asked alternatively to the parental leave, it consists in a monthly slot of 600,00 euros per for six months.

Some more bonus can be planned by 'enti locali' in terms of financial aids for families or support for paying the nursery fee. In this cases are all linked to low-yearly income.

Municipalities can provide a 'check for family unit' if there are at least three children (under 18). With the fourth child can be grant an extra aid.

Italy has recorded since 2008 a decrease in fertility. According to I.S.T.A.T. in 2017 the number of birth is of 464 000 (458 000 according to other sources) which is the lowest rate ever and the 2% lower than the 2016 value.

Table 1: Fertility rates in OECD countries in the period 1996 – 2005¹. Source: OECD.org.

COUNTRY	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ITALY	1,2	1,2	1,2	1,2	1,3	1,3	1,3	1,3	1,3	1,3
SPAIN	1,2	1,2	1,2	1,2	1,2	1,2	1,3	1,3	1,3	1,3
GREECE	1,3	1,3	1,2	1,2	1,3	1,3	1,3	1,3	1,3	1,3
SWEDEN	1,6	1,5	1,5	1,5	1,5	1,6	1,7	1,7	1,8	1,8
DENMARK	1,8	1,8	1,7	1,7	1,8	1,7	1,7	1,8	1,8	1,8
FINLAND	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,8	1,8	1,8
FRANCE	1,7	1,7	1,8	1,8	1,9	1,9	1,9	1,9	1,9	1,9
AUSTRALIA	1,8	1,8	1,8	1,8	1,8	1,7	1,8	1,8	1,8	1,8
USA	2	2	2	2	2,1	2	2	2	2	2,1
N. ZELAND	2	2	1,9	2	2	2	1,9	1,9	2	2

Table 2: Fertility rates in OECD countries in the period 2006 - 2016². Source: OECD.org.

COUNTRY	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ITALY	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,3
SPAIN	1,4	1,4	1,5	1,4	1,4	1,3	1,3	1,3	1,3	1,3	1,3
GREECE	1,4	1,4	1,5	1,5	1,5	1,4	1,3	1,3	1,3	1,3	1,4
SWEDEN	1,9	1,9	1,9	1,9	2	1,9	1,9	1,9	1,9	1,9	1,9
DENMARK	1,8	1,8	1,8	1,9	1,9	1,8	1,7	1,7	1,7	1,7	1,8
FINLAND	1,8	1,8	1,9	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,6
FRANCE	2	2	2	2	2	2	2	2	2	1,9	1,9

¹ <https://data.oecd.org/pop/fertility-rates.htm>

² <https://data.oecd.org/pop/fertility-rates.htm>

AUS	1.9	2	2	2	2	1.9	1.9	1.9	1.8	1.8
USA	2.1	2.1	2.1	2	1.9	1.9	1.9	1.9	1.8	1.8
NZ	2	2.2	2.2	2.1	2.2	2.1	2.1	2	2	1.9

Table 3: Male and female unemployment in 1990, 1995 and in 2000 – 2008 in 12 OECD countries. ³

		1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Country	Sex											
Australia	Men	6,7	8,7	6,5	7	6,5	5,9	5,3	4,9	4,7	4	4
	Women	7,2	8,1	6,1	6,4	6,2	6	5,5	5,2	4,9	4,8	4,6
Denmark	Men	7,8	5,6	4,1	4,2	4,3	4,8	5,1	4,4	3,3	3,4	3,2
	Women	8,9	8,6	5,3	5,1	5	6,1	6	5,3	4,5	4,2	3,7
Finland	Men	3,5	15,4	9	8,5	8,9	9	8,6	8,1	7,3	6,4	5,9
	Women	2,6	15,1	10,6	9,7	9,1	8,9	9	8,7	8	7,3	6,7
France	Men	7	9,7	8,4	7,1	7,9	7,4	7,8	7,8	7,9	7,3	6,7
	Women	12	13,8	11,9	10,7	10,1	9	9,3	9,3	9,1	8,1	7,4
Greece	Men	4,2	6,2	7,5	7,2	6,8	6,2	6,6	6,2	5,7	5,2	5,1
	Women	11,7	13,8	17,2	16,3	15,7	15,1	16,3	15,4	13,8	12,9	11,5
Italy	Men	7,7	8,8	8,1	7,3	6,9	6,7	6,3	6,2	5,4	4,9	5,5
	Women	17,5	16,2	14,5	13	12,2	11,6	10,5	10	8,8	7,8	8,5
N. Zealand	Men	8,4	6,4	6,3	5,5	5,1	4,4	3,6	3,5	3,6	3,4	4,1
	Women	7,5	6,5	6	5,4	5,5	5,1	4,5	4,1	4,2	4	4,3
Norway	Men	5,6	5,1	3,7	3,5	4,1	4,8	4,8	4,8	3,5	2,6	2,8
	Women	4,8	4,6	3,2	3,4	3,7	3,9	3,8	4,4	3,4	2,5	2,4
Spain	Men	11,6	17,8	9,5	7,4	8,3	8,5	8,3	7,1	6,3	6,4	10,1
	Women	24,5	30,8	20,5	15,2	16,1	15,8	14,8	12	11,3	10,7	12,8
Sweden	Men	1,9	9,8	6,2	5,3	5,6	6,3	6,9	7,8	6,8	5,9	5,9
	Women	1,8	8,2	5,4	4,7	4,7	5,2	6,2	7,5	7,1	6,5	6,6
Switzerland	Men	..	2,9	2,3	1,7	2,8	3,8	3,9	3,9	3,4	2,9	2,8
	Women	..	3,9	3,1	3,5	3,1	4,5	4,8	5,1	4,7	4,5	4
US	Men	5,7	5,6	3,9	4,8	5,9	6,3	5,6	5,1	4,6	4,7	6,1
	Women	5,5	5,6	4,1	4,7	5,6	5,7	5,4	5,1	4,6	4,5	5,4

³ Data taken from: <https://stats.oecd.org/index.aspx?queryid=54742#>

Table 4: Male and female unemployment in 2009 – 2016 in 12 OECD countries.¹¹

		2009	2010	2011	2012	2013	2014	2015	2016
Country	Sex								
Australia	Men	5,7	5,1	4,9	5,1	5,7	6	6,1	5,7
	Women	5,4	5,4	5,3	5,3	5,6	6,2	6,1	5,8
Denmark	Men	6,6	8,4	7,7	7,5	6,7	6,4	5,9	5,8
	Women	5,3	6,5	7,5	7,5	7,3	6,8	6,4	6,6
Finland	Men	9	9	8,3	8,2	8,7	9,1	9,7	8,9
	Women	7,5	7,7	7,1	7	7,6	7,9	8,8	8,6
France	Men	8,7	8,7	8,5	9,4	10	10,2	10,5	10
	Women	8,8	9,1	9,1	9,4	9,8	9,6	9,5	9,5
Greece	Men	7	10	15,1	21,5	24,5	23,6	21,7	19,9
	Women	13,3	16,3	21,5	28,2	31,3	30,2	28,9	28,1
Italy	Men	6,7	7,5	7,5	9,8	11,5	11,9	11,3	10,9
	Women	9,2	9,6	9,5	11,8	13,1	13,8	12,7	12,8
N. Zealand	Men	6,1	6,2	6,3	6,5	5,6	5	5,3	4,8
	Women	6,1	6,9	6,8	7,4	7	6,5	6,3	5,5
Norway	Men	3,6	4,1	3,4	3,6	3,7	3,7	4,6	5,4
	Women	2,6	3	3,1	2,8	3,3	3,3	4,1	4
Spain	Men	17,6	19,6	21	24,6	25,6	23,6	20,8	18,1
	Women	18,1	20,2	21,8	25	26,7	25,4	23,5	21,4
Sweden	Men	8,6	8,7	7,8	8,2	8,2	8,2	7,5	7,3
	Women	8	8,5	7,7	7,7	7,9	7,7	7,2	6,5
Switzerland	Men	3,8	4,5	4,1	4,3	4,6	4,7	4,7	4,8
	Women	4,5	5,2	4,8	4,7	4,9	5	4,9	5
US	Men	10,3	10,5	9,4	8,2	7,6	6,3	5,4	4,9
	Women	8,1	8,6	8,5	7,9	7,1	6,1	5,2	4,8

2.5 CONCLUDING REMARKS

The group of Scandinavian countries is renowned for how they made efforts in past decades in planning a sound welfare system for all age groups, a popular quote calls it ‘from the birth to the grave’. For mine analysis I took into consideration just policies for childcare and maternity support. The positive influence of the aforementioned advantages, benefits and allowances, for couples on their fertility choice is verifiable in data from the table 1 and from table 2. I focused just on Sweden as welfare systems are quite similar each other and all well-structured.

¹¹ Data taken from <https://stats.oecd.org>

The group of extra-EU Anglophones countries performs even better exhibiting rates from 1.9 to 2.1. Historically they have never had a deep-rooted 'social-democratic' tradition in their political scenario so the liberal oriented labour-market allows easy re-entry in work even after childbirth.

Certainly, a higher quality of life for inhabitants depends mainly on free care and public services more than easiness in re-entry for mothers so the northern-European conditions can be considered the most desirable.

Italy, Greece and Spain in the last years never had fertility rates higher than 1.3 – 1.4. Bad welfare policies are certainly the most known defendant. In exposing the Italian system we should consider how it is not well-structured and many policies are introduced just for a single year or a little further: it isn't enough so that households can consider them in their plan or the fear of a failed future renewal.

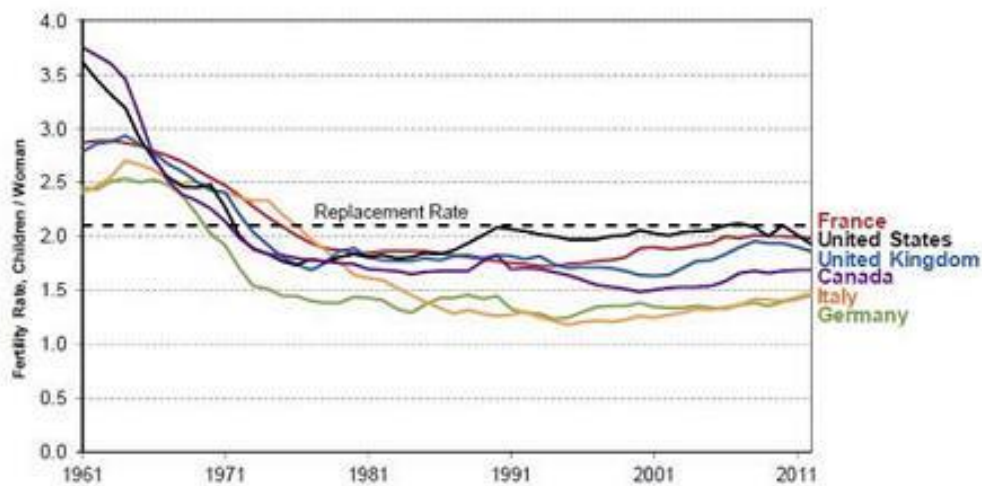
CHAPTER 3: THE AGE STRUCTURE

3.1 AGE STRUCTURE REPRESENTED BY AGE PYRAMID

Age structure consists in how individuals in a population are distributed according to their age. In more advanced countries, the human population age structure has been strongly reshaped after the fertility transition making it very different if compared with the situation in past centuries and decades with a growing older and older population.

The aging in western countries comes after both a decrease in fertility reaching now a range between 1.3 and 2.0 sons per couples (fig. 1) and a much longer life expectancy mainly due to many scientific discoveries allowing a bettering in health condition during all the stages of life and particularly for elder population.

Low Birthrates in the "Western World"



Source: World Bank, Centers for Disease Control and Prevention As of 12/31/12

Fig. 1. Low fertility rates in last decades.

Going back, past times recorded a high number of violent deaths because of war, conflicts or homicides preventing many individuals from reaching adulthood or becoming an old adult: the graph in figure 4 give us important information in this direction, even if for our analysis the most relevant part is related to the situation in the last century. Never in the human history there have been so many individuals surpassing the threshold of 70 or of 80 years of age as today.

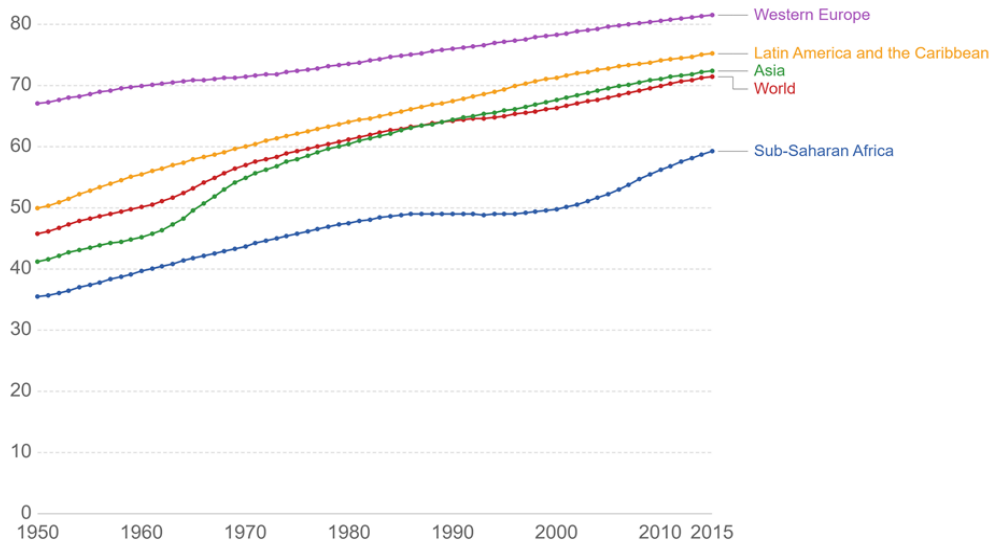
It is useful to use a pyramid with age considered through vertical strips of 5 years while the size of each class is horizontal, divided by gender, where a young society will be represented by a pyramid large at the bottom but decreasing while going upward and very narrow at the top. Nowadays many southern European countries, on the contrary, present a shape in which the pyramid is narrow at the basis and large while climbing.

The age structure has clear economic consequences in a country. It determines the ratio between the dependent part of the population (in which are included children, students, and those who are retired as they exited from work) and the working age population including all those employed able to maintain themselves independently and contributing through taxation to the state income. Even if a youthful society generally records high dependency rates (because of its youth burden) it represents, in the absence of impediments such as diffused unemployment or other kind of difficulties in entering in the labour market for new generation, a resource as in future young people will became the active part of the population. Uncertainties arise in case of low fertility as just few new born will not replace fully those retiring and a large part of inactive population in the future.

This last aspect mentioned represents a particularly pressing issue with which OECD countries have to face considering that an old-aged society needs many resources in order to support a burdensome pension system and costs related to healthcare for elders. The graphs below show improvements in life expectancy for world regions in past and more recent times and the positive correlation between GDP and life expectancy exhibiting elongation never recorded before. Improvements highlighted in the graphs below are certainly a symptom of well-being for mankind, unluckily the possibility of an old age burden can compromise the growth process in the long term: we shall analyse this fact.

Life expectancy

Shown is period life expectancy at birth. This corresponds to an estimate of the average number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life



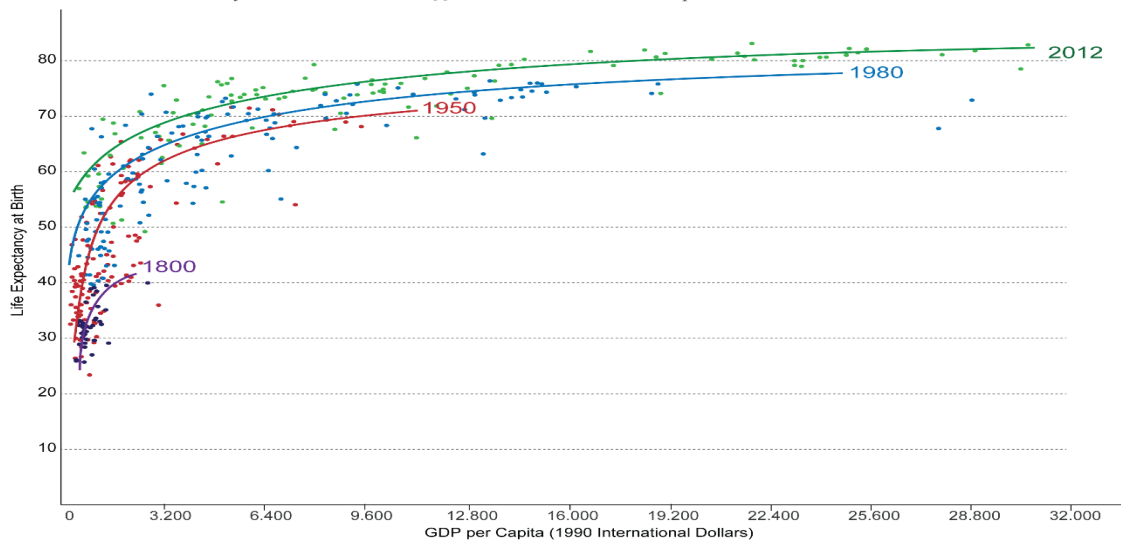
Source: Clio-Infra estimates until 1949; UN Population Division from 1950 to 2015
OurWorldInData.org/life-expectancy-how-is-it-calculated-and-how-should-it-be-interpreted/ • CC BY-SA

Fig. 2 Life expectancy at birth, 1950 – 2015¹²



Life Expectancy vs. GDP per Capita from 1800 to 2012 – by Max Roser

GDP per capita is measured in International Dollars. This is a currency that would buy a comparable amount of goods and services a U.S. dollar would buy in the United States in 1990. Therefore incomes are comparable across countries and across time.



Data sources: Data on life expectancy are from Gapminder.org; data on GDP per capita are from the 'New Maddison Project Database'. The interactive data visualisation is available at OurWorldInData.org. There you find the raw data and more visualisations on this topic.

Licensed under CC-BY-SA by the author Max Roser.

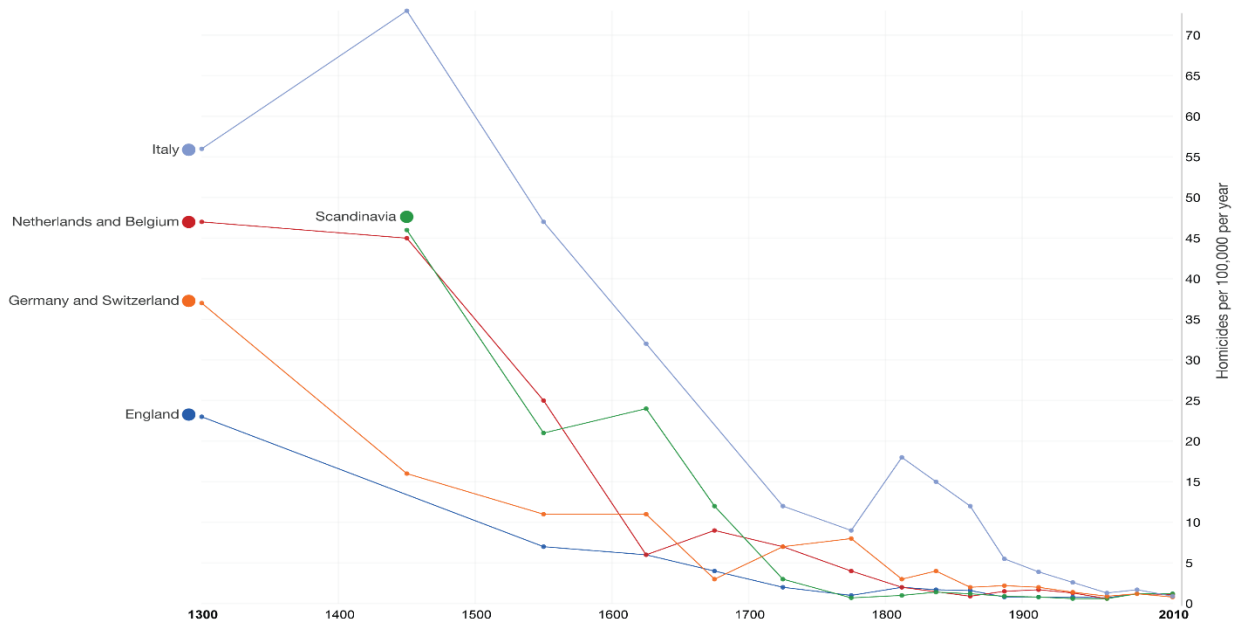
Fig. 3 Life Expectancy vs. GDP per Capita from 1800 - 2012¹³

¹² Source: www.ourworldindata.it

¹³ Source: www.ourworldindata.it, elaborated by Max Roser.

Homicide rates in Europe since 1300

The observations are plotted at the midpoint of period they refer to.

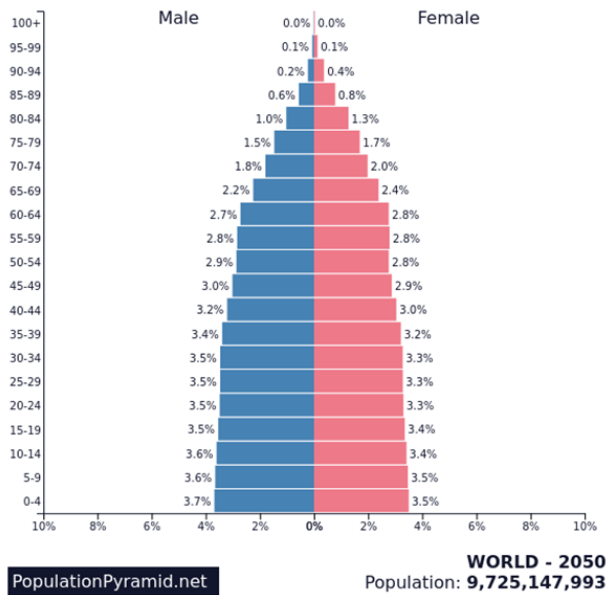


Data source: All but 2010 from Eisner (2003) – Long-Term Historical Trends in Violent Crime. In *Crime and Justice*, 30, 83–142. 2010 from UNODC Homicide statistic 2012. The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic. Licensed under CC-BY-SA by the author Max Roser.

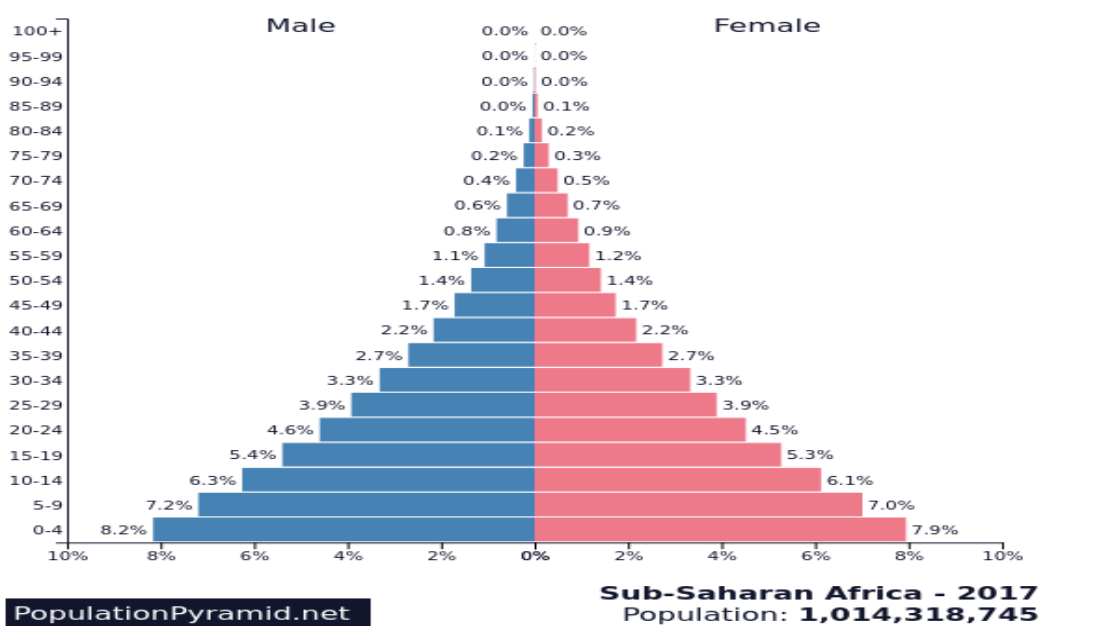
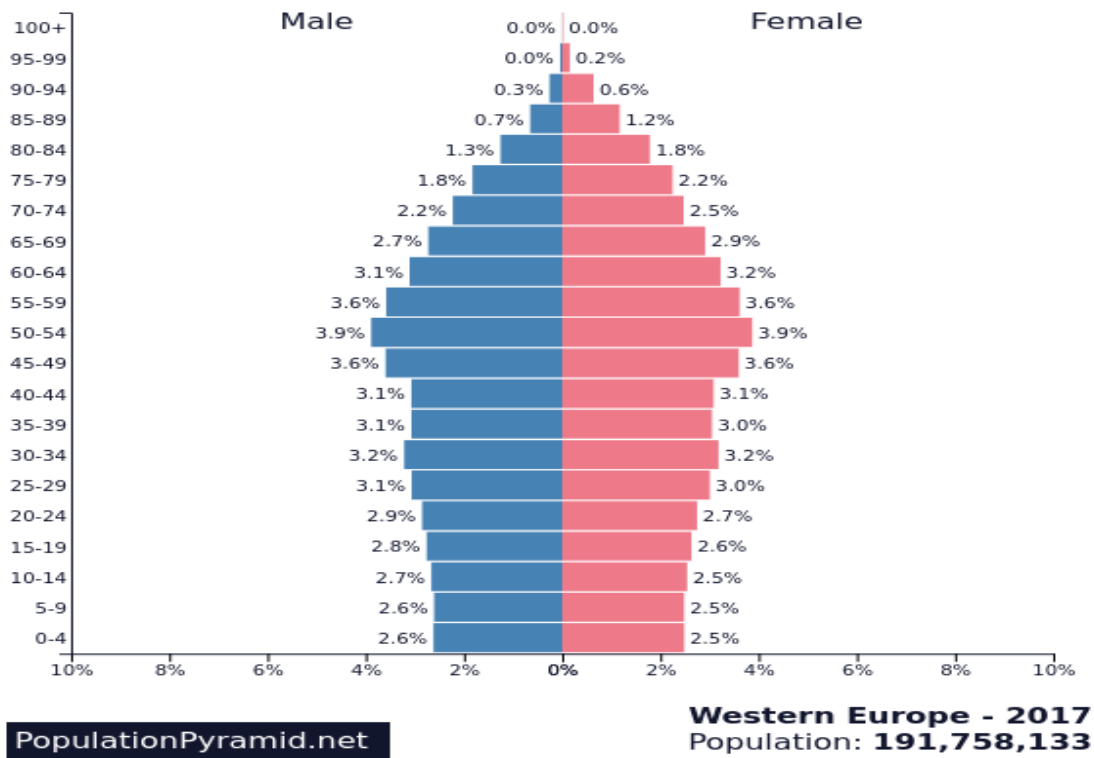
Fig. 4 Homicide rates in Europe in the past seven centuries¹⁴.

¹⁴ Source: www.ourworldindata.it

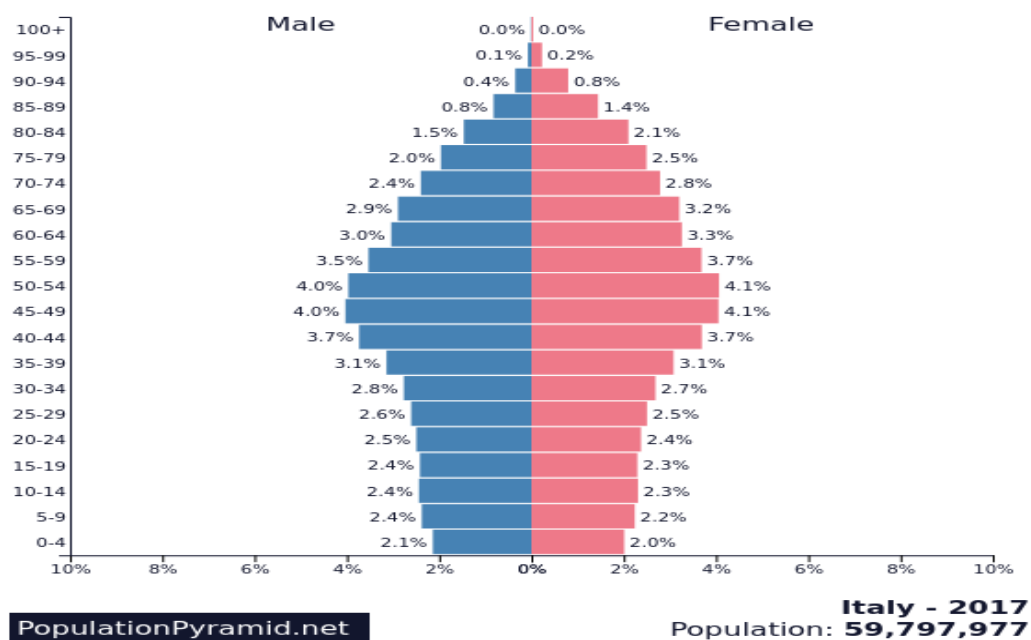
Pyramids of age structure, world population.

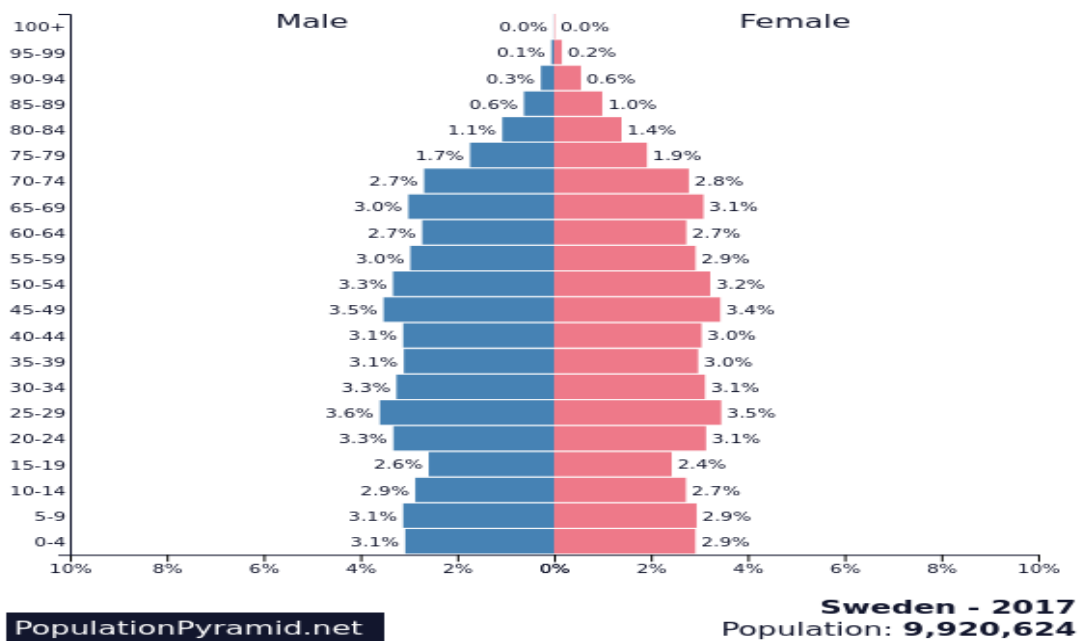


The next two pyramids draw a comparison between the situation in western European countries and sub-Saharan countries. The situation is updated at 2017.



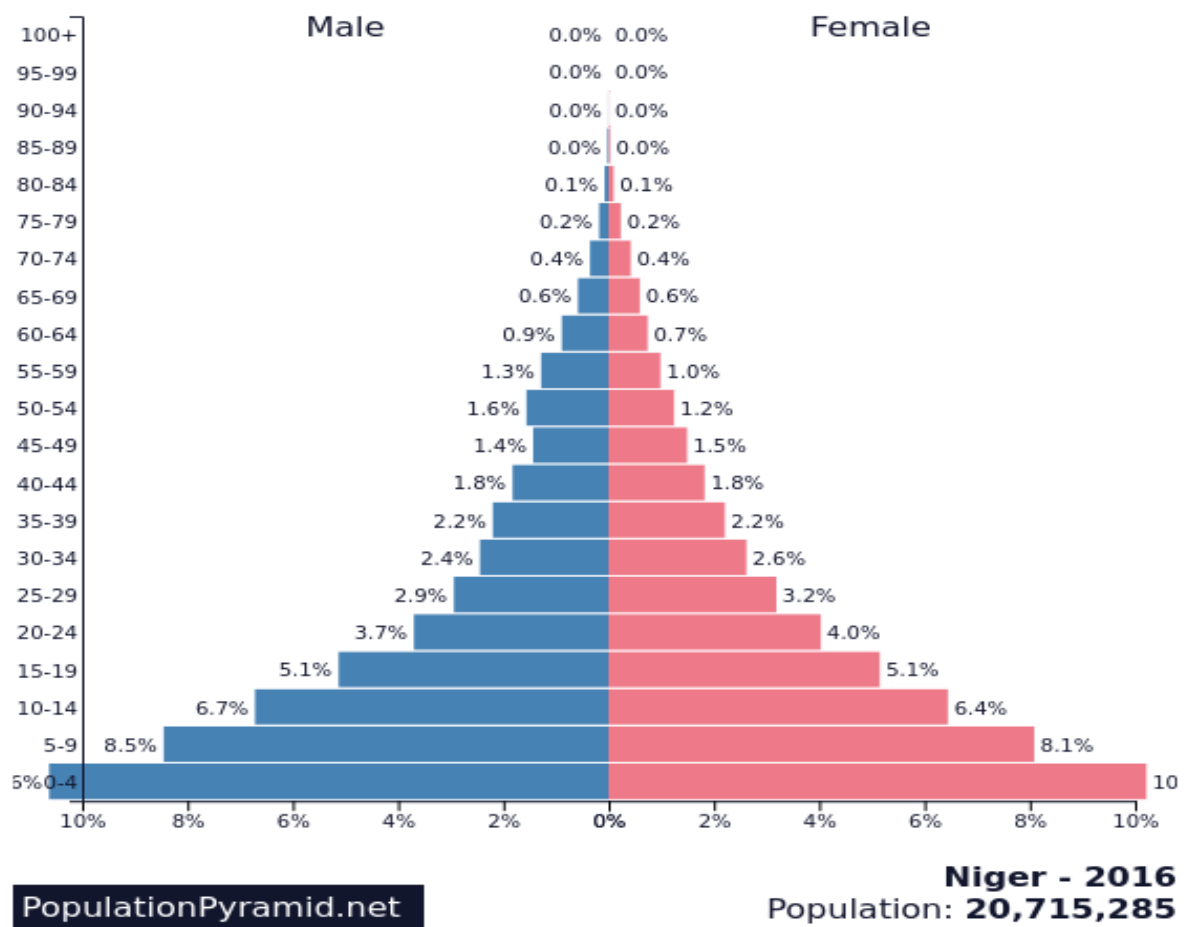
The first group presents a structure in which the larger strip corresponds to the part of the population aged 50 – 54 (3.9% of the entire population), while the previous and the following strips 45 – 49 and 50 – 54 years old are the second largest (3.6% of the population). The strip corresponding to younger population are instead smaller as we move downwards along the vertical axis falling below the 3% for strip and reaching 2.6% for the three strips representing people younger than 15. This fact underlines as new-born children are not enough to replace those people that are nowadays in their forties and fifties and it is sound to forecast an increase in dependency rates of population. For a more detailed analysis I compared how two countries although belonging to the same group can presenting differences. Previous chapters were focused on fertility rebound: the influences of public welfare and family policies on fertility choices by household are here again easily observable.





All northern European countries are in a similar situation if confronted with Sweden in terms of a future replacement, while in Mediterranean countries the situation is certainly critical. In the case of Italy, as showed by the pyramid, there is a swelling in correspondence to those aged nowadays 45 – 49 and 50 – 54 (both at 4% of the entire population) while the bottom strip (children younger than 4) is at 2%.

Least developed countries in the world such as sub – Saharan countries present a very different age structure and much different proportion, indeed the young cohorts are almost fourfold than people nowadays aged 40 – 44.



Basically these last countries mentioned have not completed yet the demographic transition and are still recording really high fertility rates with a consequent particularly young population; Niger can be considered one of the nation with the youngest medium age and with higher growing population rates.

3.2 WORKING AND DEPENDENT POPULATION

I reported a table below showing a forecast of worldwide age structure in a 90-year-long period containing a forecast until 2050. It emerges immediately that population aged more than 65 (the

part considered dependent) was just at 5 % in 1960, the first year observed arriving at a 9 % during the current year, 2018, while a realistic forecast estimates it at 16 % by the 2050: a three-fold increase in less than a century.

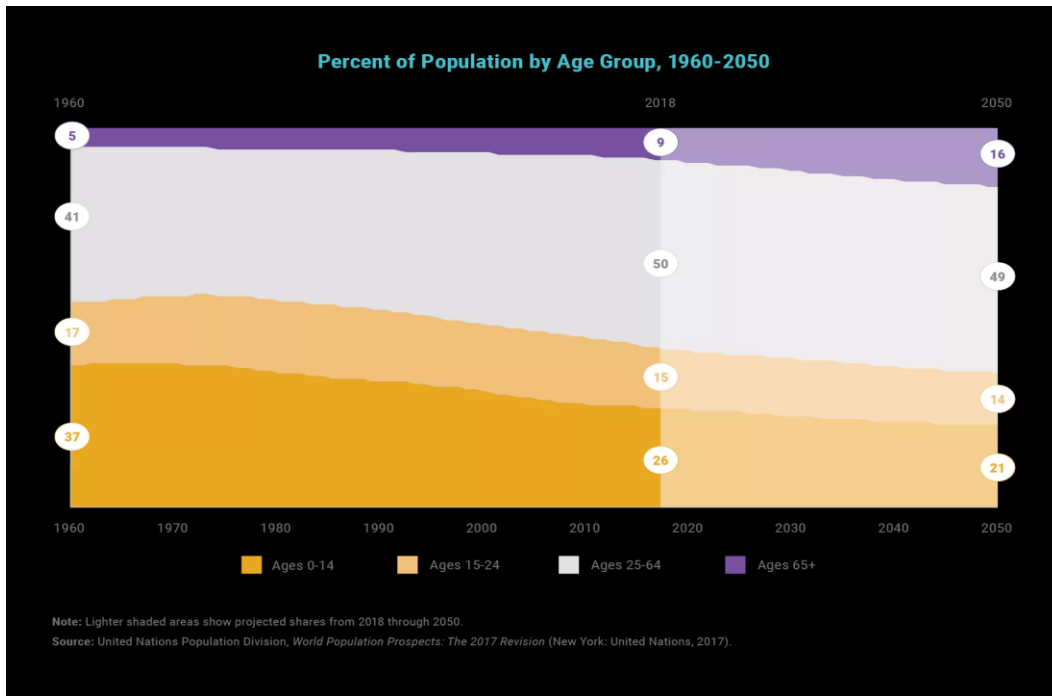


Fig 5 Percent of world population by Age Group, 1960 – 2050¹⁵.

As age pyramids have already told us about cross-country differences, expectations for the future age distribution consist in three possibilities for each scenario:

- Northern European countries, where the current fertility rate are close to the replacement rate, could maintain a relative stability, behaving like a cylinder,
- Countries of Mediterranean Europe, characterized by a visible population aging that cannot be replaced considered their low fertility rate. Huge government expenses will be necessary in supporting care policies for elders. The country population could decrease from actual levels without visible change in trends.
- Least developed countries (mainly sub – Saharan countries) are characterized by high fertility rates, along the highest worldwide and shaping a particularly young society

¹⁵ Source: United Nations Population Division, the 2017 report.

in a general framework of augmented population. In 2100 according to Hoornweg and Pope (2013), many African cities will become the most populated in the world with a level of development comparable to current megalopolises and urban agglomeration¹⁶.

The possible impact of immigration flows has to be considered in the first two scenarios. Migrants looking for better life and work opportunities arriving in western countries belongs to working population enlarging the strips in the lower and middle part of the pyramid age, furthermore foreign families present much higher fertility habits than Europeans ones.

3.3 A LONG TERM ANALYSIS

In the previous section I cited three world areas and for each group I reported data of a country whose features are a good representation of its whole sample (Sweden, Italy and Niger). Here I draw a dynamic comparison between them in long-term demographic trends looking at data about total population, population growth in absolute and percentage terms, migration/emigration flows, median age, fertility rate, density and urban population. Data collection are reported in five-year time span from 1955 to 2015 and for years 2016, 2017 and 2018. Data are forecasted until 2050.

Italian population¹⁷

Table 1

Year	Population	Yearly %	Yearly	Migrants (net)	Median Age	Fertility Rate
		Change	Change			
1955	48,372,842	0.75 %	354,848	-40,734	30.1	2.36
1960	49,742,196	0.56 %	273,871	-111,88	31.4	2.29
1965	51,728,664	0.79 %	397,294	-40,734	30.1	2.36
1970	53,578,683	0.71 %	370,004	-46,356	32.8	2.50

¹⁶ Hoornweg D. and Pope K. (2013), "Population predictions for the world's largest cities in the 21st century", Urban Development Series Knowledge Papers, World Bank.

¹⁷ Source: <http://www.worldometers.info/world-population/italy-population/>

1975	55,330,694	0.65 %	350,402	3,879	33.3	2.32
1980	56,419,278	0.39 %	217,717	32,985	34.1	1.89
1985	57,012,352	0.21 %	118,615	53,27	35.5	1.52
1990	57,127,120	0.04 %	22,954	-2,012	37.0	1.35
1995	57,255,193	0.04 %	25,615	30,565	38.7	1.27
2000	57,293,721	0.01 %	7,706	44,795	40.4	1.22
2005	58,808,483	0.52 %	302,952	324,86	42.0	1.30
2010	59,729,807	0.31 %	184,265	201,262	43.8	1.42
2015	59,504,212	-0.08 %	-45,119	52,829	45.9	1.43
2016	59,429,938	-0.12 %	-74,274	70	46.3	1.44
2017	59,359,900	-0.12 %	-70,038	70	46.3	1.44
2018	59,290,969	-0.12 %	-68,931	70	46.3	1.44

Year	Density (P/Km ²)	Urban	Urban Population	Country's Share of	World Population	Italy
		Pop %		World Pop		Global Rank
1955	164	56.6 %	27,365,162	1.74 %	2,772,242,535	10
1960	169	59.1 %	29,395,330	1.64 %	3,033,212,527	10
1965	176	61.5 %	31,820,134	1.55 %	3,339,592,688	10
1970	182	64.0 %	34,272,858	1.45 %	3,700,577,650	13
1975	188	65.4 %	36,166,154	1.36 %	4,079,087,198	14
1980	192	66.4 %	37,465,446	1.27 %	4,458,411,534	13
1985	194	66.5 %	37,938,448	1.17 %	4,873,781,796	14
1990	194	66.4 %	37,921,709	1.07 %	5,330,943,460	17
1995	195	66.6 %	38,123,695	1.00 %	5,751,474,416	22
2000	195	66.9 %	38,307,191	0.93 %	6,145,006,989	22
2005	200	67.6 %	39,743,264	0.90 %	6,542,159,383	22
2010	203	69.2 %	41,343,691	0.86 %	6,958,169,159	23
2015	202	70.9 %	42,166,069	0.81 %	7,383,008,820	23
2016	202	71.2 %	42,306,608	0.80 %	7,466,964,280	23
2017	202	71.5 %	42,447,483	0.79 %	7,550,262,101	23
2018	202	71.8 %	42,587,390	0.78 %	7,632,819,325	23

Year	Population	Yearly %	Yearly	Migrants (net)	Median Age	Fertility Rate
		Change	Change			
2020	59,132,073	-0.13 %	-74,428	70	47.9	1.49
2025	58,623,032	-0.17 %	-101,81	80	49.7	1.54
2030	58,109,918	-0.18 %	-102,62	100	50.9	1.58
2035	57,534,360	-0.20 %	-115,11	100	51.5	1.62
2040	56,872,174	-0.23 %	-132,44	100	51.7	1.65
2045	56,071,394	-0.28 %	-160,16	100	51.6	1.67
2050	55,093,194	-0.35 %	-195,64	100	51.4	1.69

Year	Density (P/Km ²)	Urban	Urban Population	Country's Share of	World Population	Italy
		Pop %		World Pop		Global Rank
2020	201	72.5 %	42,852,899	0.76 %	7,795,482,309	24
2025	199	74.1 %	43,458,945	0.72 %	8,185,613,757	26
2030	198	75.9 %	44,122,611	0.68 %	8,551,198,644	28
2035	196	77.9 %	44,839,617	0.65 %	8,892,701,940	30
2040	193	80.1 %	45,560,659	0.62 %	9,210,337,004	31
2045	191	82.4 %	46,176,585	0.59 %	9,504,209,572	34
2050	187	84.7 %	46,639,674	0.56 %	9,771,822,753	36

Sweden population¹⁸

Table 2

Year	Population	Yearly %	Yearly	Migrants (net)	Median Age	Fertility Rate
		Change	Change			
1955	7,262,623	0.71 %	50,542	10,41	35.1	2.24
1960	7,482,543	0.60 %	43,984	9,453	36.0	2.25
1965	7,745,673	0.69 %	52,626	10,41	35.1	2.24

¹⁸ Source: www.worldometers.info/world-population/sweden-population

1970	8,054,916	0.79 %	61,849	26,196	35.4	2.17
1975	8,197,340	0.35 %	28,485	3,76	35.4	1.91
1980	8,316,338	0.29 %	23,8	17,713	36.3	1.66
1985	8,357,652	0.10 %	8,263	5,96	37.7	1.64
1990	8,567,384	0.50 %	41,946	26,914	38.4	1.91
1995	8,836,420	0.62 %	53,807	31,292	38.5	2.01
2000	8,881,640	0.10 %	9,044	11,694	39.4	1.56
2005	9,038,623	0.35 %	31,397	28,345	40.3	1.67
2010	9,390,168	0.77 %	70,309	52,491	40.7	1.89
2015	9,763,565	0.78 %	74,679	50,792	40.9	1.90
2016	9,837,533	0.76 %	73,968	40	40.9	1.90
2017	9,910,701	0.74 %	73,168	40	40.9	1.90
2018	9,982,709	0.73 %	72,008	40	40.9	1.90

Year	Density (P/Km ²)	Urban	Urban Population	Country's Share of	World Population	Sweden
		Pop %		World Pop		Global Rank
1955	18	69.2 %	5,028,602	0.26 %	2,772,242,535	54
1960	18	72.5 %	5,421,943	0.25 %	3,033,212,527	60
1965	19	77.0 %	5,965,022	0.23 %	3,339,592,688	54
1970	20	81.0 %	6,522,444	0.22 %	3,700,577,650	65
1975	20	82.7 %	6,777,782	0.20 %	4,079,087,198	65
1980	20	83.0 %	6,905,261	0.19 %	4,458,411,534	70
1985	20	83.0 %	6,939,526	0.17 %	4,873,781,796	74
1990	21	83.0 %	7,112,618	0.16 %	5,330,943,460	78
1995	22	83.7 %	7,398,883	0.15 %	5,751,474,416	81
2000	22	83.9 %	7,455,029	0.14 %	6,145,006,989	83
2005	22	84.2 %	7,614,156	0.14 %	6,542,159,383	88
2010	23	85.0 %	7,980,239	0.13 %	6,958,169,159	89
2015	24	85.2 %	8,318,812	0.13 %	7,383,008,820	90
2016	24	85.3 %	8,389,412	0.13 %	7,466,964,280	89
2017	24	85.4 %	8,461,650	0.13 %	7,550,262,101	89
2018	24	85.5 %	8,535,204	0.13 %	7,632,819,325	89

Year	Population	Yearly %	Yearly	Migrants (net)	Median Age	Fertility Rate
		Change	Change			
2020	10,121,686	0.72 %	71,624	40	41.0	1.91
2025	10,435,342	0.61 %	62,731	30	41.3	1.91
2030	10,712,041	0.52 %	55,34	30	42.0	1.92
2035	10,942,470	0.43 %	46,086	30	42.9	1.92
2040	11,157,892	0.39 %	43,084	30	43.5	1.92
2045	11,384,781	0.40 %	45,378	30	43.2	1.92
2050	11,626,301	0.42 %	48,304	30	43.2	1.93

Year	Density (P/Km ²)	Urban	Urban Population	Country's Share of	World Population	Sweden
		Pop %		World Pop		Global Rank
2020	25	85.8 %	8,684,062	0.13 %	7,795,482,309	90
2025	25	86.8 %	9,055,720	0.13 %	8,185,613,757	91
2030	26	87.8 %	9,401,891	0.13 %	8,551,198,644	91
2035	27	88.9 %	9,723,661	0.12 %	8,892,701,940	92
2040	27	90.1 %	10,050,953	0.12 %	9,210,337,004	94
2045	28	91.4 %	10,404,361	0.12 %	9,504,209,572	93
2050	28	92.7 %	10,781,930	0.12 %	9,771,822,753	93

Niger's population¹⁹

Table 3

Year	Population	Yearly %	Yearly	Migrants (net)	Median Age	Fertility Rate
		Change	Change			
1955	2,955,541	2.92 %	79,168	1	15.6	7.30
1960	3,388,764	2.77 %	86,645	-5,025	15.8	7.40
1965	3,913,934	2.92 %	105,034	1	15.6	7.30

¹⁹ Source: www.worldometers.info/world-population/niger-population/

1970	4,510,479	2.88 %	119,309	-2,309	15.6	7.55
1975	5,184,811	2.83 %	134,866	-2,753	15.7	7.60
1980	5,988,904	2.93 %	160,819	-3,628	16.0	7.75
1985	6,915,927	2.92 %	185,405	-18,589	15.7	7.90
1990	8,012,861	2.99 %	219,387	-18,383	15.8	7.80
1995	9,477,333	3.41 %	292,894	-536	15.9	7.75
2000	11,352,973	3.68 %	375,128	4,811	15.9	7.70
2005	13,618,449	3.71 %	453,095	-5,699	15.4	7.65
2010	16,425,578	3.82 %	561,426	-5,699	15.0	7.55
2015	19,896,965	3.91 %	694,277	-5,699	14.9	7.40
2016	20,672,987	3.90 %	776,022	-5,699	15.0	7.35
2017	21,477,348	3.89 %	804,361	-5,699	15.0	7.35
2018	22,311,375	3.88 %	834,027	-5,699	15.0	7.35

Year	Density (P/Km ²)	Urban	Urban Population	Country's Share of	World Population	Niger
		Pop %		World Pop		Global Rank
1955	2	5.3 %	155,47	0.11 %	2,772,242,535	93
1960	3	5.7 %	193,336	0.11 %	3,033,212,527	93
1965	3	6.7 %	261,207	0.12 %	3,339,592,688	93
1970	4	8.6 %	388,042	0.12 %	3,700,577,650	89
1975	4	11.2 %	579,024	0.13 %	4,079,087,198	84
1980	5	13.1 %	784,3	0.13 %	4,458,411,534	85
1985	5	14.1 %	974,663	0.14 %	4,873,781,796	83
1990	6	14.9 %	1,191,651	0.15 %	5,330,943,460	82
1995	7	15.3 %	1,445,913	0.16 %	5,751,474,416	78
2000	9	15.7 %	1,778,822	0.18 %	6,145,006,989	69
2005	11	16.2 %	2,204,375	0.21 %	6,542,159,383	64
2010	13	17.0 %	2,790,763	0.24 %	6,958,169,159	62
2015	16	18.1 %	3,609,323	0.27 %	7,383,008,820	58
2016	16	18.4 %	3,808,207	0.28 %	7,466,964,280	58
2017	17	18.7 %	4,020,666	0.28 %	7,550,262,101	57
2018	18	19.0 %	4,247,653	0.29 %	7,632,819,325	57

Year	Population	Yearly % change	Yearly Change	Migrants (net)	Median Age	Fertility Rate
2020	24,074,693	3.89 %	835,546	-5,699	15.1	7.15
2025	29,078,590	3.85 %	1,000,779	-5,699	15.3	6.83
2030	34,993,540	3.77 %	1,182,990	-5,699	15.7	6.43
2035	41,875,504	3.66 %	1,376,393	-5,699	16.1	6.02
2040	49,754,920	3.51 %	1,575,883	-5,699	16.7	5.60
2045	58,628,306	3.34 %	1,774,677	-5,699	17.3	5.19
2050	68,453,727	3.15 %	1,965,084	-5,699	18.1	4.79

Year	Density (P/Km ²)	Urban pop %	Urban Population	Country's Share of World Pop	World Population	Niger
						Global Rank
2020	19	19.7 %	4,749,353	0.31 %	7,795,482,309	56
2025	23	21.8 %	6,331,646	0.36 %	8,185,613,757	54
2030	28	24.2 %	8,473,476	0.41 %	8,551,198,644	51
2035	33	26.9 %	11,246,117	0.47 %	8,892,701,940	41
2040	39	29.7 %	14,769,757	0.54 %	9,210,337,004	38
2045	46	32.7 %	19,169,751	0.62 %	9,504,209,572	32
2050	54	35.9 %	24,561,767	0.70 %	9,771,822,753	29

The dynamic analysis starts from the observation of total population of the countries examined.

Italy and Sweden, in the first year observed, had respectively a population of 48.372,842 and 7.262,623 and occupied the tenth and the 54th position in the world ranking of the most populated countries. For those times Italy was surely a big country, Sweden was a medium sized one in the European context. Niger didn't reach 3 million people, precisely was at 2.900 000 even if in 1955 was still part of French Africa, it became independent in 1960. If considered as an independent country it would have been just the 95th most populated nation in the world ranking. Looking at the upward boxes we can say that both Italy and Sweden in the following decades recorded a slow increasing population: the annual growth never overtook the 1% and the fertility rates were similar at 2.3 at the start of the dataset.

Between the 70s and the 80s the fertility rate became smaller than the 2.1 sons per couple, under the replacement rate where the Italian drop was bigger than the Swedish one. The divergence in total population growth arrived soon: the growth of the Italian population in the 90s was at something like 0,03 per cent, the situation in Sweden was between 0.3 and 0.8 depending on the year.

At this point looking at trends in Niger since the 50s and 60s we can observe completely different trends. Niger presented population growth rate in those years nearly at the 3% per year and fertility rates of a media of 7 sons per women. And the annual population growth increased surpassing the 3% in the 90s and reaching the 4% in recent times. In the last years a 4% increase is recorded although many emigrations towards foreign countries of the order of 5.000 people per year. Such a high fertility represents the features of the first phase of the fertility transition, in the moment in which household use to translate an eventual surplus of income in having more children than before.

Niger was the protagonist of a four-fold population increase in half a century starting from 3 million in 1955 to 11,3 million at the beginning of the 21th century. In less than two decades, from 2000 to 2018 total population doubled. Nowadays so fast increasing trends are not intimating a setback, so Niger population is doubled than the Swedish one and in the global context Sweden is occupying the 89th placement while Niger climb over many other states reaching the 57th placement.

Until here it emerges that the two European countries in 70 years recorded certainly a positive but moderate population increase.

Italy and Sweden have also a modest increase in terms of percentage of people living in urban centres: respectively from 56% to 81% and from 69% to 85% in 63 years, the current proportions are really close each other. In Niger the urban population was at 5% in 1955 reaching the current 19%, a fourfold increase in percentage terms.

In 1955 the median age of the Swedish population was of 35 years reaching after 70 years the threshold of 40. The Italian case reflects its fast aging, at the beginning of the observation it was at 30 years earning 16 years, this should be interpreted as an alarm bell. The two mentioned countries increased their median age although at different rhythms, on the contrary Niger has

ever maintained a median of 15 years with just very little fluctuations, observing deeply we see a rejuvenation of some months.

I have already underlined that Niger is fully in the first phase of the demographic transition, it won't reach the second one until an increase in per capita GDP will be translated weakly in more fertility until arriving at a complete reversal of the proportion. The 'reversal' of the relation, as I called it, is easily observable in the Italian case in the period from 1970 to 1985 where after just 15 years was recorded a one-point drop in fertility: the 1.5% in 1985 versus the 2.5% in 1970. In the case of Sweden the reversal is more difficult to capture in a precise span considering a lower fertility than Italy (just at 2.25 in the 60s) and that welfare and motherhood policies were implemented at the end of the 60s triggering the rebound. The minimum peaks in the 80s (fertility at 1.6) and in the first part of 2000s (at 1.55) were just temporary in Sweden and there was a fast recovery.

The last observation is focused on net migration flows. Italy has a renowned story of emigration until the first 70s when the trend was reversed with a maximum peak of immigration between 2005 and 2010. In the last 3 years the net migrations amounted at 70.000 units. Sweden, in the time span considered, has ever had positive net flows, irregularly in the quantity and with a maximum peak between 2010 and 2015, while in the last three years was steady at 40.000 units. Niger on the contrary with just few exception has ever recorded negative net trends with a media of 5.000 individuals emigrating in the last years. However such a number of outgoing individuals is not enough in order to block the increasing in size of the total population of Niger abundantly offset by the high fertility.

A forecast for the Italian future population in 2050 predicts a drop estimating a population of 55 million, 4 million less than nowadays mainly interested by low fertility and ingoing flows insufficient at least in maintaining the actual number.

Sweden combining a good fertility level and net ingoing flows, lower in absolute terms than the Italian ones but bigger in relative terms, is estimated to increase of 1.6 million of inhabitants in 3 decades with a scenario in 2050 of 11.6 million people versus the current 10 million.

Niger in 2050, according to worldmeters's estimates, will be the protagonist of a threefold increase in population reaching the 29th position in the world ranking of the most populated countries with a total population of 68 million against the current 22. At those times fertility

rate will be modestly diminished at 4.8 sons per couple against the current 7.35 but the annual growth of the population will remain over the 3% per year.

CHAPTER 4: GAINS AND LOSS FROM DEMOGRAPHIC CHANGE

4.1 A 'THIRD DEMOGRAPHIC DIVIDEND'

According to a report by the World Health Organization published in 2015, “older adults are the world’s only increasing natural resource”²⁰. Such a defiant statement became necessary to introduce the issue of the report itself: elder population will require more and more resources to support their care even if through precise policies it is possible to involve them creating benefits for the whole society. It is about obtaining a ‘third demographic dividend’²¹

Another report of “The Gerontological society of America” underlines that while in the past the first and the second demographic dividend worked automatically, an eventual third demographic dividend is allowed just after a careful social planning. Authors challenge the diffused anxiety deriving from the general awareness about the perspective of an ever aging population.

The two key points consist firstly in better health and prevention and secondly about an active involvement of people also after retirement in a set of activities granting social utility reusing their human capital.

There are lifelong habits in terms of physical activity which means avoiding a sedentary life at every age, a health feeding mainly based on fruits and vegetables while avoiding fat and junk food and the right times in terms of night rest. A sound public care system based on regularly checks and exams are strongly necessary in a framework of prevention. Considering disabilities hitting people older than 60, the cause comes from non-communicable diseases in the 87% of times.

²⁰ World Health Organization, (2015). “World report on ageing and health”.

²¹ Fried L., (2016), “Investing in Health to create a Third Demographic Dividend”, The Gerontological society of America.

Disabilities are invalidating a person affecting his/her quality of life and compromising his/her autonomy. Non-communicable diseases most diffused are cardiovascular disease, diabetes and cancers. Other risks are related to cognitive decline like dementia, frailty, disability and, more generally, everything causing loss of independence.

The first pillar should be focused on creating a well-structured and efficient public found health system supporting individuals in all the phases of their life strongly focused on prevention. At this has to be added a well aware society about health habits. This two aspects, jointly, could guarantee the defeat of many chronic diseases. An initial investment in this way could allow many savings in a long term perspective considering that the elders will represent from a forth to a third of the entire population.

The second pillar, tightly linked to the first one, consists in rethinking a society in which healthier elders although no more on job can actively contribute through being engaged in activity of public utility. The key point is about exploiting elders' life experience and wisdom. Their intangible assets, as their know how, and their capabilities should be fully transferred to new generations. The report takes as an example a project set up in Uganda where many young people used to leave their original villages, in the country side, and establishing themselves in urban centres where unluckily did not reach a satisfying level of living conditions because of scarce employment opportunities. After receiving a training by a group of older adults this people went back to their rural communities more skilled than before where they could practice their job, in farming or in trade, in a successful manner. One more example comes from the 'Experience Corps program' which is currently operating in some U.S. municipalities. While the first case mentioned is more focused on transmission of job skills, in the latter the project is more centred in volunteering activities for the communities in which elders live. An example of activity consists in helping children attending primary school in their afternoon homework. In the first chapter I talked about the importance of 'private time' spent by parents after their children and a similar idea is certainly valuable.

I mentioned the two cases above in order to have two agreeable examples that in any cases should represents something of ordinary.

The expectation is to graft a virtuous circle in which bettering in health make possible to elders to be involved in such activities and that, vice versa, being active and taking on responsibilities helps them in remaining healthier and even psychologically make them feeling valiant and

appreciated. Such a vision is a certain solution against loneliness at which unluckily in the current society many elders incur.

Every government should seriously considering a similar long term plan building a precise social awareness of ‘elder age risks prevention and involvement’ preventing a future too expensive situation in terms of public care and exploiting an improvement in quality life for senior citizens and their human capital for society.

4.2 POSSIBLE NEGATIVE CONSEQUENCES OF YOUTH BULGES

The aim of the thesis discussed the existence of a correlation between fertility (including more general demographical aspects and age structure) and economic growth.

Often my efforts were directed in underling future difficulties coming from an ever-aging population but even an un-balanced situation in the opposite way can be harbinger of risks.

According to Rahel Schomaker, 2013²², under certain circumstances (diffused unemployment, a poor institutional context, difficulties in reaching a satisfying position in society) a very young population can exhibits negative effects in terms of social unrest. Empirically, a similar description is fitting well the scenario of Northern Africa and Medium Asia, countries that are often touched by many cases of domestic terrorism (not to be confused with international episodes of terrorism). Similar acts of violence exhibit strongly negative effects as they hinder a regular path of economic growth discouraging FDI and tourism related activities exasperating the already weak situation.

The definition given by Fueller (1995)²³ of youth bulges considers a “population share of the 15 – 24 years-olds exceeding 20 per cent and the share of the 0 – 14 year-olds is higher than 30 per cent”. A different possible definition is the one of Heisohn who considers a youth bulge “when the ratio of adequate/prestigious positions (in companies or in the public sector) to the amount of such positions demanded by succeeding sons is substantially smaller than 1”.

²² Schomaker, R, (2013), “Youth bulges, poor institutional quality and missing migration opportunities-triggers of and potential counter-measures for terrorism in MENA”, German Research Institute for Public Administration.

²³Fueller, G. (1995), “The demographic backdrop to Ethnic Conflict: A Geographic Overview”.

Those who feel excluded or not realized are more susceptible to political and religious indoctrination. However in certain countries where the quality of life is seriously affected by hunger, malnutrition or AIDS, this defuse the potential of violence of youth bulges.

An empirical study by Heinshon shows that between 1945 and 2003, in 60 countries out of a sample of 67 in which there was a youth bulge they registered massive bouts and social unrest often connected with all the major religion (with the exception of Buddhism) and different political ideologies. The condition of unemployment acts by lowering the opportunity cost of who is unemployed supplying cheap rebel labour to group apt at episodes of social unrest.

Six main elements have been recognized in having some roles in fostering violent episodes which are: economic deprivation and poverty, the political or institutional environment of a country, political transformation processes and instability, identity issues and civilization clashes, geographic characteristics and, the last one, contagion effects between neighbouring countries.

It is more probable to record episodes of social unrest because of a youth bulge in countries that are in a middle way between a mature liberal-democratic form and an oppressive authoritarian regime. Literature agrees in saying that Muslim people, not for the religion itself but for its extreme positions, are more conducive to violent acts than other religions or socio-economic factors.

In this case, the political and social environment in countries of MENA area are fully consistent with the described dynamics. Worldwide Afghanistan, Pakistan and Israel are the three countries which experienced nearly the half of all the domestic terroristic attack ever performed. Pakistan and Afghanistan have been included in the debate despite geographically they are not properly part of the MENA area.

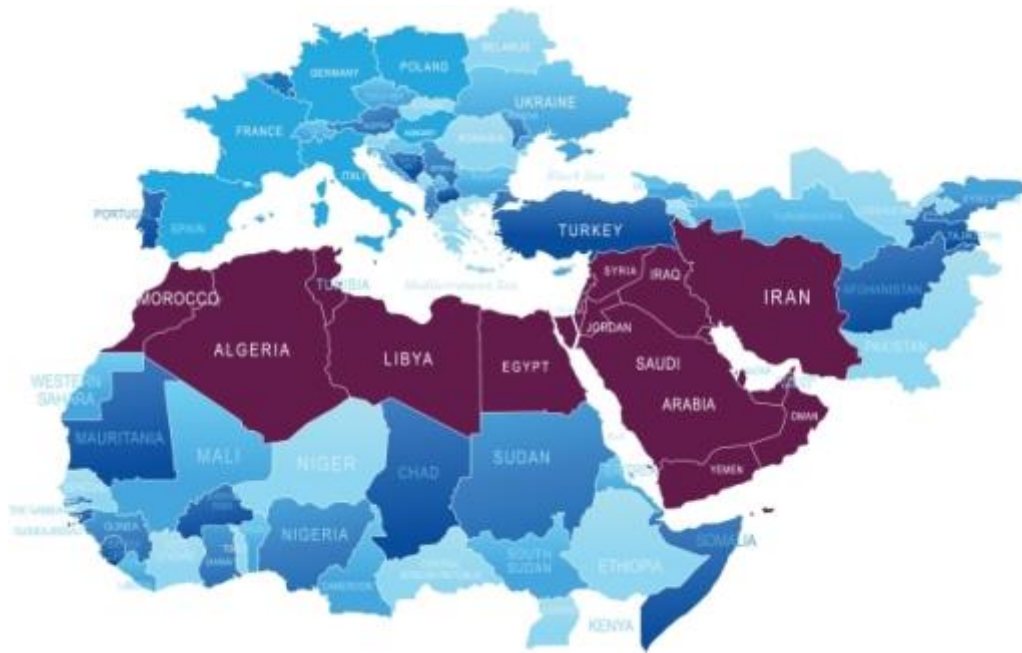
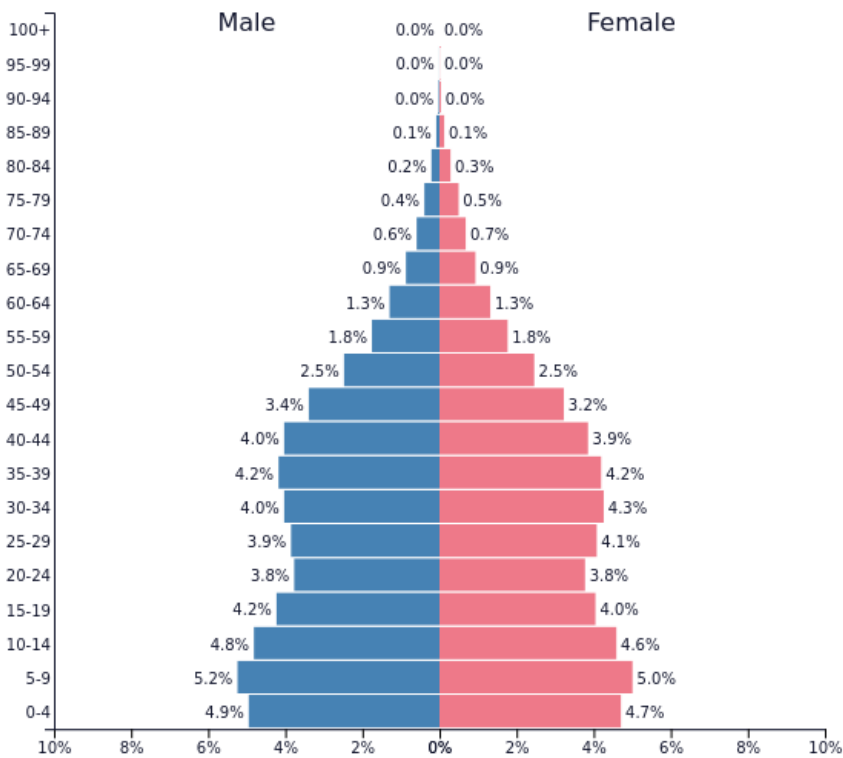


Fig. 1. The countries of the MENA area²⁴

Young people living in similar countries with low opportunities of employment and an unstable institutional framework is said to have two possibilities to wreak their dissatisfaction: voice or exit. But in a weak political scenario without a solid democratic ground and no concrete opportunities of voice the only alternative consists in emigration looking for a place with better placement opportunities. Unluckily if the ‘exit opportunity’ can not to be practiced because of legal, red tape or economical aspects the way of violence became hugely diffused.

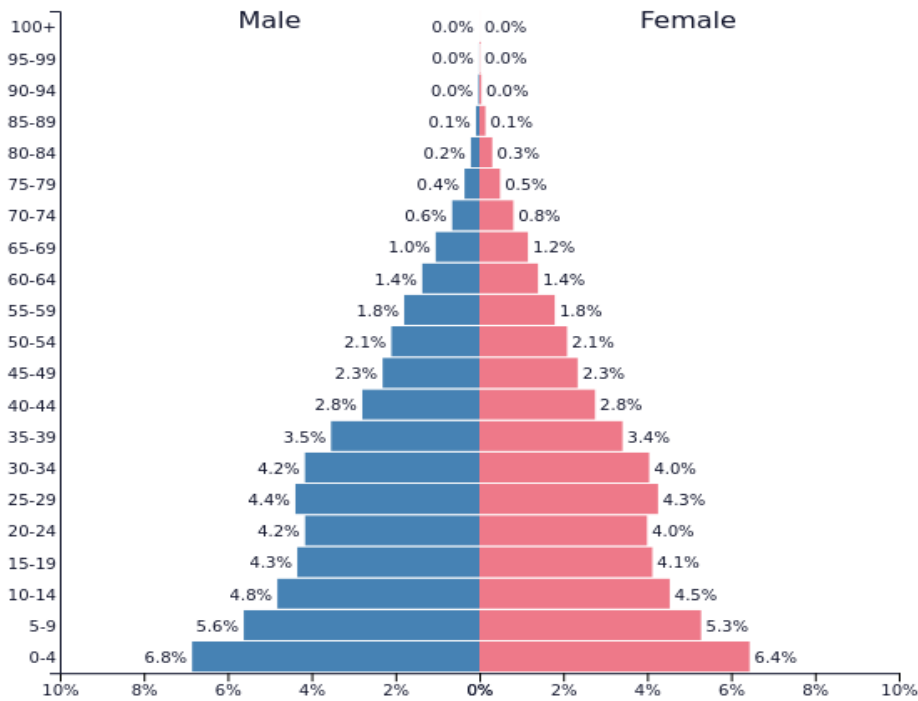
The chronicles of 2011 and 2012, renamed ‘Facebook revolution’, when the discontent resulted in many public protests, were based on the cited assumptions and young people had surely a primary role in promoting similar protests of dissent. The figures below show the age structure of five MENA countries: Libya, Egypt, Algeria, Morocco and Iraq. In each the bottom strips are particularly wide.

²⁴ Source: openi.nlm.nih.gov.it



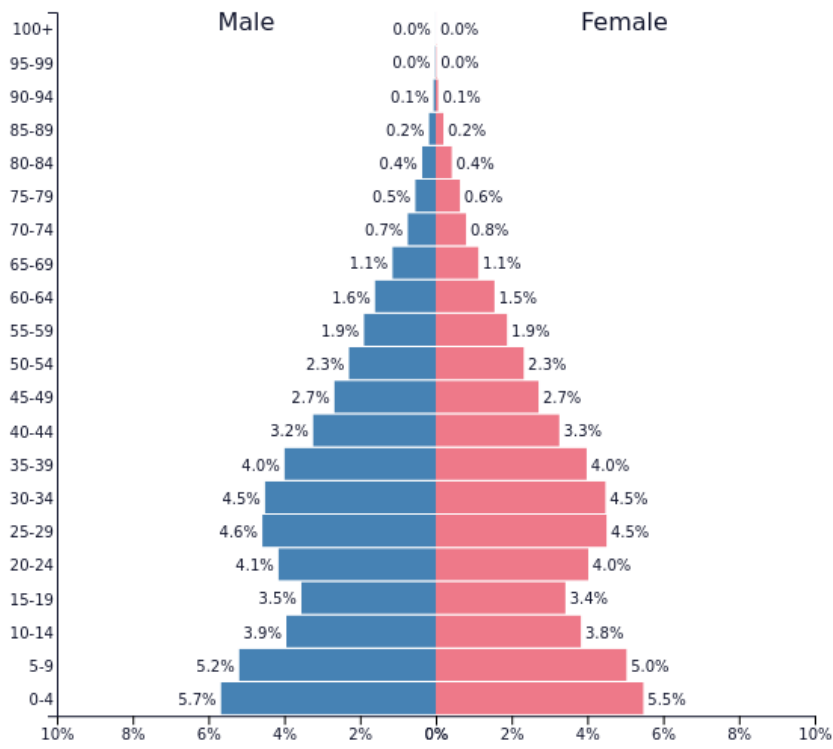
PopulationPyramid.net

Libya - 2017
Population: **6,408,742**



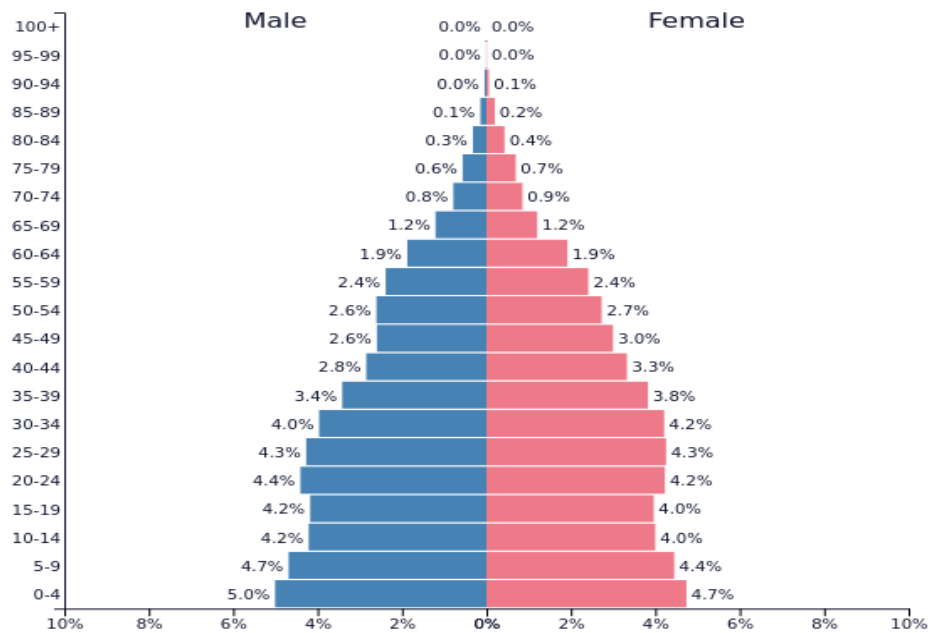
PopulationPyramid.net

Egypt - 2017
Population: **95,215,101**



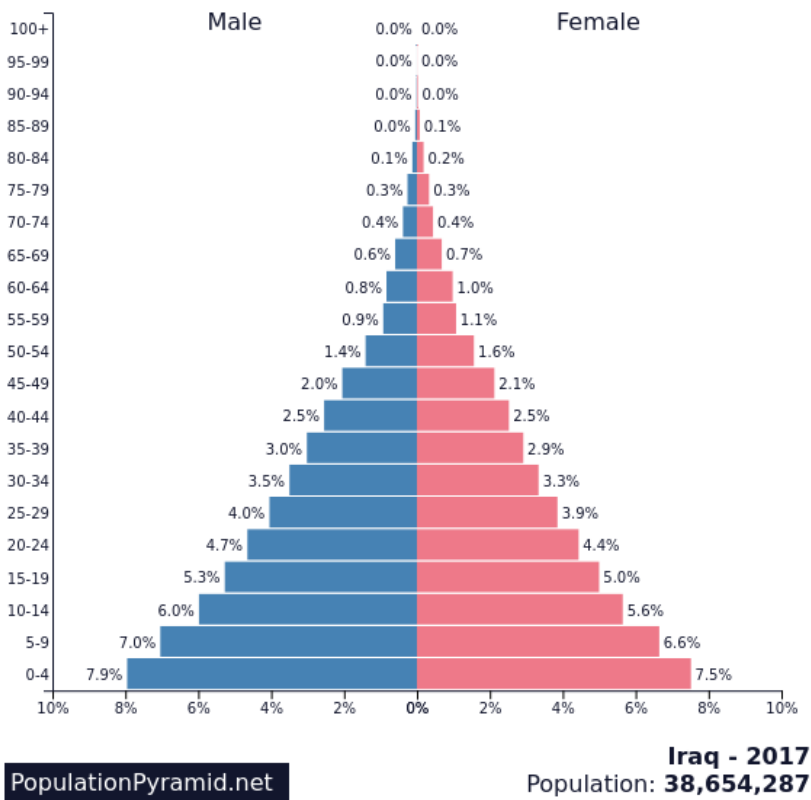
PopulationPyramid.net

Algeria - 2017
Population: **41,063,753**



PopulationPyramid.net

Morocco - 2017
Population: **35,241,418**



Population pyramids of Libya, Egypt, Algeria, Morocco and Iraq²⁵

4.3 DEMOGRAPHIC DIVIDEND AS AN EDUCATION DIVIDEND

Demographic dividend indicates the beneficial effect of change in age structure after a decrease in fertility (and a fall in mortality), there is a large part of literature assessing such effects. Recently Cuaresma, Lutz and Sanderson (2013) stated that a large part of evidence on economic growth are given just in a little part by the demographic effect itself and more heavily by the human capital which include mainly education attainment²⁶. Barro in many studies in the 1990s underlines the qualitative aspect of education rather than a purely quantitative one. Effectively

²⁵ Source: www.populationpyramid.net

²⁶ Cuaresma J. C., Lutz W., Sanderson W., (2013), "Is the Demographic Dividend an Education Dividend?", *Demography* (2014).

in those years many data about student performance through decades and countries became available.

Certainly every discussion focused on economic growth should take research and development activities and education as a key point. Indeed better educated people are more productive in the workplace and higher education is a means for a faster capturing of technological innovation even coming from more advanced countries or through multinational enterprises working in a highly technological sector with headquarters in the country. Macroeconomic benefits in terms of externalities from education (i.e. a well-educated society) are even higher if compared just with those microeconomic ones. Also the requirements to shape and maintaining a solid democratic form of government and the avoidance of authoritarian risks lay the foundations in a good level of education.

A discussion talking in an adequate manner of human capital should include not just education but even the health status of the population and the complex of cognitive and professional skills, however this would represent a hard challenge to be win because of the many data that should be considered so education is usually considered one of the best proxy. In a similar framework it would not be enough considering the level of present generation but even the ‘accumulation’ of it.

Cuaresma, Lutz and Sanderson conclude that empirically through observing a panel data of 105 countries in the period 1980 – 2005 the driving role of education in economic growth is verified.

Furthermore they observe the role of tertiary education in triggering a slowdown in fertility for women.

CHAPTER 5: CONCLUSIONS AND OPEN QUESTIONS

At the beginning I cited the work of Malthus with the neo-Malthusian central idea of the inverse relation between fertility rates and per capita GDP growth, then I showed some empirical data in assessing school performance of quantity versus quality of siblings of a family in particular considering efforts spent after their education in terms of 'private time'.

Restricting the sample to the only OECD countries, the inverse relation works no more: the richer group – the northern European countries – are the most fertile than low performing ones – those of the Mediterranean area -, this phenomenon is named fertility rebound. I described the huge differences between the two groups as the first has created since many decades a well-functioning welfare system supporting families with children, the motherhood and the possibility of both working and caring about family, while the conditions offered by the second group are much weaker.

An ever increasing life expectancy if not counterbalanced by new born will lead to an ever aging population with, according to an OECD report, serious financial risks in the long term requiring increasing efforts in supporting retirement systems and considering that elder population is the more vulnerable.

Retirement legislation should be reshaped in a proportionate way considered longer life expectancies (at first by countries of Mediterranean Europe), however in parallel the World Health Organization is recommending about healthy lifestyle and prevention systems. If a large part of population despite the old age remain healthy this means higher quality of life and lower state expenses; furthermore the WHO report calls for a total rethink of elders role in society turning them in an active role with the possibilities of trigger a third demographic transition.

If population in more advanced countries is unavoidably growing older, developing or least developed countries in the world have a very young population as showed by the age pyramids. The concomitance of a young burden and a poor institutional framework with high rates of unemployment can lead to social unrest and other kinds of violence such as domestic terrorism, weakening the economy of the country and triggering a vicious circle.

A decrease in fertility rates has allowed families to provide systematically better education to their children with the creation of a quantity of human capital with no precedent in history. This is surely a key point in explaining that more developed countries are those with low fertility rates considering human capital and human capital accumulation as a driver for growth, as has been suggested by a series of works and by the latest literature.

Unluckily, however, a depression of low fertility rates under the 2.1 sons per couple can put at risk the future development of a country as the intergenerational change is not enough to cover future fiscal burden created by the retirement system and care for elders.

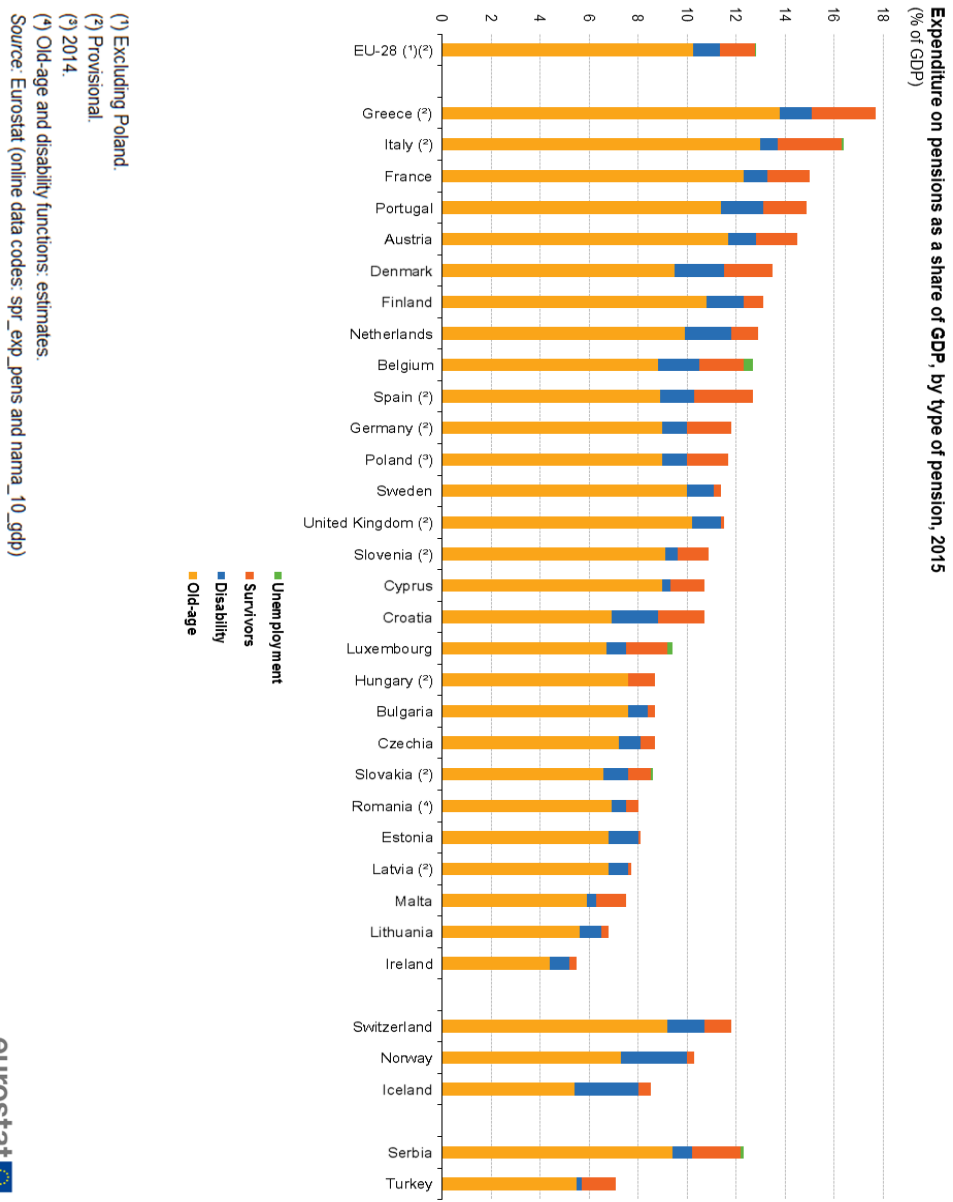
Overly high fertility rates could represent an obstacle to human capital accumulation. Paradigmatic in this sense is the already discussed case of Niger, among the most fertile in the world in which there are about 7 children per women, which figures between the least developed countries in the world.

If high rates of fertility represent an obstacle to development, an excess in the other direction, the depression of its levels can heavily damage the future capacity of a country. If the cultural and sociodemographic aspects influencing fertility decisions of household keep it low, they can be relaunched by welfare and motherhood policies.

At this point it is licit to ask ourselves questions about possible future forecasts.

A first question could be if those countries with fertility lower than, let's say 1,8 sons per couples, can implement family policies similar to those cited talking about the Swedish model in order to foster fertility. Unluckily Mediterranean countries (I am talking about the financial situation of Italy, Greece, Spain and Portugal) have already accumulated a heavy public debt and there is scepticism about promoting extra public expenses for each year without an increase in growth rates. In addition a similar choice should be accepted by employers in a more general framework of social awareness of motherhood.

Regardless of other possible policies, it seems inevitable a deep and continuous review of retirement legislation reshaping it considering the ever increasing life expectancy in order to constraint pension system expenses. However, voters seem to be more prone towards political programmes generous for pensions while at the same time the younger part of the population because of its smallness has difficulties in arresting similar tendencies.



Expenditure on pension as a share of GDP, 2015. Source: Eurostat

The histogram tell us the part of GDP used for pensions. Greece and Italy have the most expensive situations, just Spain is at low level similar at those of northern European countries. Sweden pays the 11% of GDP per year in pensions while Greece is nearly at 17.5%. A second query is about future reform of retirement legislation, if governments in the next years will be able to act in a virtuosos way or on the contrary if they will adopt more 'popular policies' exacerbating the yet critical situation.

If a large part of state expenses is directed towards supporting retirement systems and more generally care for elders, few resources are left for education, research and public funded development activities resulting in weak efforts towards innovation and development, or other conditions necessary to win the global competitiveness. As suggested by the article according to which a demographic dividend should be interpreted more properly as an education dividend, education should be considered one of the most important driver in the functioning of a country.

The third question is about the will of policymakers in devoting enough public funds in education. Everything related to education, research and innovation and highly skilled workers should be considered as an investment able to graft in the long term increasing return to scale. So, how much will be devoted in terms of 'knowledge' in particular if linked to innovation?

One more theme to be discussed is the one about economic migrants. Finding a job is a requisite necessary to obtain a visa allowing the permission to stay, so immigration would enhance the active part of the population, furthermore because of sociodemographic reason they have different fertility habits with bigger families than European ones. A fourth question is the decision about how to deal with immigration considering the two opposite features in demography that can be counterbalanced each other.

All the history of mankind has been distinguished by the wish of moving towards the place offering more satisfying living conditions, emigration is not at all a recent phenomenon. If countries with the perspective of an aging population decides to prevent a 'dependent population burden' could exploit this opportunity. A decision in this sense should include careful policies in managing migration flows, at first asking to immigrants precise fulfillments in order to ease their integration not only in terms of knowledge of the language and of a basic culture but even to show to be inserted in the local community. A project helping to move who wants to migrate could be a possibility to brake episodes of social unrest cited previously giving the possibility of 'exit' to whom wishing for it. One more emphasis should include the

professional skills of arriving migrants, are they able to match the local labor market needs? Or what about an introductory period of training in order to prepare a group of skilled worker ready to be employed in enterprises?

Lastly, the fifth question is related to an increasingly globalized market. The presence of highly skilled professional and workers could make multinational enterprises interested in preferring one location rather than another. Previously I talked about education dividend assuming that the moment devoted to learning is limited just at the first part of the life of a person. What about a plan of continuous free training for updating everyone? Obviously it would be an original solution allowing long term advantages despite resources to be invested in advance. The last mentioned solution could be at the center of a tenable model of economic growth based mainly on international competitiveness that can no to be left just at private employers. A certain level of growth would permit to support extra expenses due to an unavoidable aging population.

Demographic trends could be compared to the walk of an elephant, really slow but really heavy at their arrival. I concluded the thesis introducing five questions on future but I add now a sixth one: are institutions aware of the future troubles without carrying out current choices?

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