



Università
Ca' Foscari
Venezia

Master's Degree in
Economics and Finance

Final Thesis

**The gender-gap in complementary pensions:
from its economic and behavioral determinants
to the possible solutions**

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Academic Year

2019/2020

To my parents: Roberta and Danilo.

*Thank you,
because even in the worst times,
you never failed to support me and,
most importantly, believe in me.*

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INTRODUCTION

The main topic of this thesis revolves around the implications of an ageing society on the pension systems, with particular attention to women and the presence of a gender gap in complementary pensions.

I chose to investigate the topic of the gender gap in complementary pension arrangements because it feels particularly up close and personal given my circumstances: as a woman in an ageing society, currently entering the workforce, I immediately started to care and think about my future and, as a soon-to-be Economics and Finance Graduate, I am also aware of my privilege since in the last few years I managed to follow an academic path which allowed me to gather valuable knowledge and tools that would potentially guide me into making sound decisions in the sphere of personal finance and pension savings.

However, this might not be the case for other women of my generation or other generations, so my thought goes to them, and I wonder: are women considering additional savings arrangements for retirement? Are they making the right decisions at the right time? And, if not, why is this happening?

Hence the purpose of this thesis is to find an answer to these questions and look into some of the feasible solutions.

On a practical level, this thesis will be developed in three chapters. Chapter 1 will provide the reader with some insights on population growth, population ageing, its consequences and poverty in old-age with a particular focus on women.

This will in turn lead us to consider the main source of income in old-age: namely, pensions. Starting with brief introduction of the pension system and its “pillars”, the thesis will then move on to consider the specific case of pension adequacy and sustainability within the EU, highlighting how recent reforms are leading governments to give more responsibility to people when it comes to planning and saving for retirement, hence the rising importance of complementary pension savings. We will then proceed to examine the state and some of the features of supplementary pension arrangements in Europe, emphasizing the presence of a gender gap.

Having established the presence of this gap, in Chapter 2 we will present findings on the causes of mis-planning and under-saving for retirement for all individuals, alongside the determinants of the gap, with the aid of numerous research papers attaining to various

disciplines. At first we will, in fact, examine the economic causes of this gap, then we will move on to the field of behavioral finance and we will consider human beings in the light of their “*bounded rationality*” by exploring some of the most relevant biases at the heart of under-planning and under-saving for retirement. Alongside this, we will then highlight some of the psychological causes to the aforementioned gender gap, as well as the influence of financial illiteracy.

Finally, in the third and last Chapter of this dissertation, we will provide some possible solutions, as well as some examples of best practices and other policy-making initiatives designed and put in place in recent years, in order to tackle the problem of ill decision-making in saving for retirement and to bridge the gender gap in complementary pensions by counteracting the effects of the various determinants of this gap.

For this reason, starting from how improvements of financial literacy seem to advance planning and saving to retirement, we then move on to consider the importance of policy measures involving gender issues, women’s specific needs and the tendency to reduce statutory pension benefits and put in place innovative tax incentives to encourage people to rely more on personal complementary pension arrangements.

Finally, on this note, we will present Europe’s efforts into creating a single market for pension products, specifically envisioned by European legislators and supervisory bodies with the aim to increase the number of individuals (especially of low- and medium-income) enrolling in innovative private pension savings arrangements with the aim of improving the standards of living in the older cohorts of the population.

CHAPTER 1

Ageing Population, Poverty and the Rising Importance of Supplementary Pensions in the Current Era

1.1. Population Growth and Population Ageing

In order to have a better understanding of the relevance that adequate levels of income at retirement have and, in this regard, the subsequent rising importance in the role of complementary pensions, especially considering women and the alarming existence of a gender gap, we must take a step back and give a proper context to this issue.

In the next few pages, in fact, we will analyze in depth the reality of population growth and in particular population ageing. These trends, together with the consequences of an ageing population on the economy and people's financial wellbeing, will be investigated to give the reader a sense of the significance of demographic circumstances when in saving and planning for retirement.

In this regard, we will then introduce the reader to the pension system and in particular to complementary pensions, their figures and the incidence of the gender gap.

i. The Latest Trends in Population Growth and Population Ageing

According to the United Nations¹, in recent and future years the world population is expected to keep growing: as a result, this development could represent a serious challenge to sustainable and inclusive growth on an international level.

Despite the overall and continued increase in the total world population, evidence shows that the growth rate, defined as the percentage change in the number of individuals in a population expressed as a fraction of the initial population, has undergone significant changes in the last decades.

¹ United Nations, Department of Economic and Social Affairs, Population Division (2019). "World Population Prospects 2019: Highlights" (ST/ESA/SER.A/423).

Specifically, its value reached the peak around 1965 and 1970, and is now slowing down: this trend is expected to continue further, at least until the end of the 21st century, as pictured in the graph presented here below.

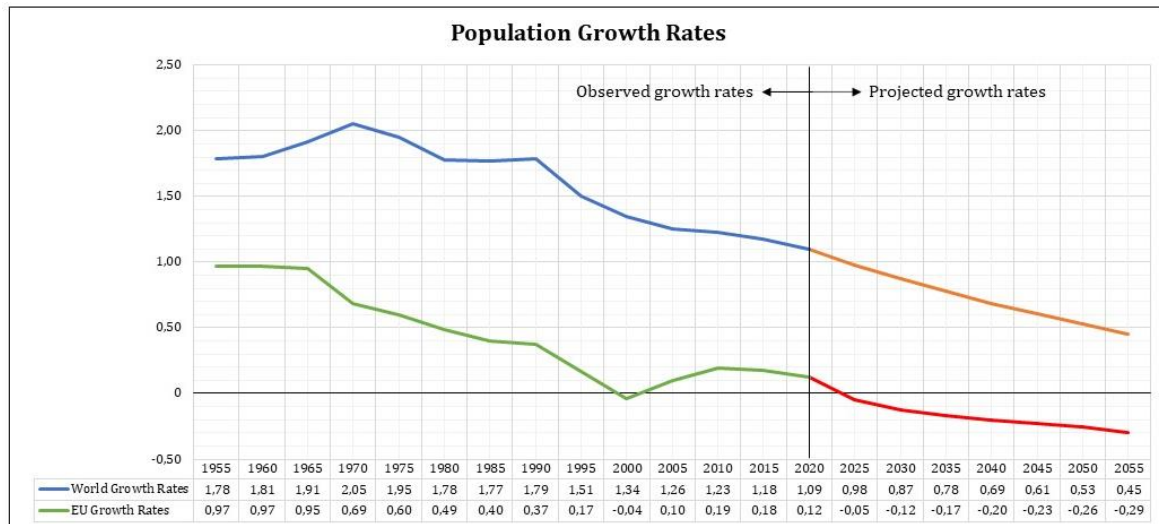


Table 1 - World Population Growth Rates. Own elaboration from UN – World Population Prospects 2019.
(source: <https://population.un.org/wpp/Download/Standard/Population/>)

This means that the total population in the world is still expected to grow but, due to the decline in the growth rate, this increase will happen at a slower pace compared to the past. Some studies also estimated that there could be a 27 per cent chance that, before 2100, the world population could stabilize and even begin a decreasing trend.

But let us now consider the current situation and the more immediate trends in detail.

We already mentioned the fact that, at least in the foreseeable future (as presented in **Table 1** above), world population is still likely to increase: in fact from the current 7.8 billion individuals, experts have estimated that it could reach 9.7 billion by 2050, as pictured in **Table 2**.

Most of this growth is expected to be highly influenced by an increase of the total population in Sub-Saharan African regions as well as Central and Southern Asia, while the combined population of Europe and North America seems to be stabilizing, meaning that the size of the population in the latter regions is expected to remain more or less unchanged.

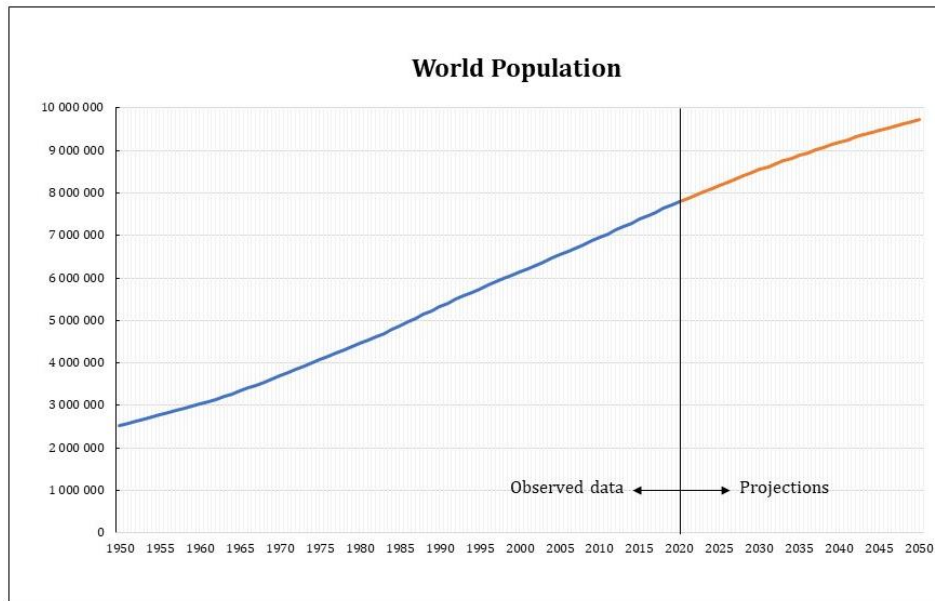


Table 2 – Total World Population (expressed in thousands), observed and projected (1950-2050).
Own elaboration from UN – World Population Prospects 2019.
(source: <https://population.un.org/wpp/Download/Standard/Population/>)

Underneath the changes in population size and composition, it is possible to highlight several drivers, the main ones are: fertility rates, mortality rates and life expectancy, migration and finally the age profile of the population.

According to the OECD definition, the total *fertility rate* (TFR) is the total number of children that would be born to a woman, over her lifetime, if she was to live at least until the end of her reproductive life and if she was, during that period, to give birth to children according to the prevailing age-specific fertility rates experienced.

In the last seventy years, the global fertility rate has fallen considerably: while women in the 70s, at a global level, were expected to bear at least five children during their lifetime, now this number has been halved: on average women are currently expected to have about 2.5 children.

Despite the data on population’s increase introduced above, this downward trend in the total fertility rate is expected to continue, reaching the figure of 2.1 children per woman in 2050: this will entail a slowdown in the global population growth.

It is worth to spend a few more words on this “2 children per woman” statistic, since studies have shown that it is the so called “*replacement-level fertility*”, or the exact rate at which a given population, excluding the effects of migration, is able to replace itself from one generation to the next.

Always according to the Population Division of the Department of Economic and Social Affairs of the UN, this reduction in the fertility rate can be attributed to the continued progress of a

series of different factors connected to the current state of human development, such as: reductions in child mortality, increased urbanization, wider access to improved healthcare and reproductive services, family planning and, most importantly, women's empowerment through increased levels of education as well as growing levels of labour force participation.

A second key factor of population growth is *life expectancy at birth*. According to the World Health Organization, it can be defined as the average number of years that a newborn is expected to live if current mortality rates continue to apply.

Life expectancy for a newborn in the 1950s was equal to 48 years, while now is approximately around 69-72.6 years of age around the world. In the next decades this number is expected to rise even further in all demographic regions and, according to UN estimates, it is likely to reach the global value of 76 years².

This constant and rapid increase of the average life expectancy can be ascribed to the increased accessibility to ever improving healthcare systems, alongside other advancements in lifestyle, diet and hygiene.

It is fundamental to point out that, just like the total fertility rate, the average life expectancy is characterized by significant disparities in different regions of the world: in particular the highest life expectancy levels can be found respectively in North America, Europe, Latin America, North Africa, the Middle East and the Asia-Pacific region, with levels that are generally above the average of 69-72.6 years. The only exception is Sub-Saharan Africa, where the current levels of life expectancy fall dramatically below the global average (down to 55 years of age).

Strictly correlated to the increase of life expectancy at birth is of course the fall in the *mortality (death) rate*, that can be defined as the ratio between the number of deaths and the size of a certain population, in a given time period.

The same ratio can also be used, considering specific causes of death, in order to compute case-specific death rates, as opposed to the *crude* mortality rate defined above.

Moreover, studies show that currently higher mortality rates are being recorded in lower-income countries: national income levels are therefore a factor that is influencing (crude) mortality rates due to their direct ties to a country's standards of living.

² UN's World Population Prospect 2019 specifies that: «Across all countries and regions, projected gains in life expectancy are contingent on continued progress in the prevention and treatment of diseases that cause mortality, [...] as well as the absence of catastrophic events, such as war or major epidemics or fatal diseases».

Of course, this UN paper was published before the Covid-19 pandemic. Since it is still an ongoing event, it is impossible to quantify its impact on the world population dynamics just yet.

An additional factor affecting population growth is *migration*.

Net migration can be broken down into two different components: international migration and internal migration.

Internal, or domestic, migration is usually linked to the process of urbanization and mostly consists in movement of a country's population from its rural to its urban areas.

On the other hand, international migration streams affect the distribution of people at macro-regional level: since generally migrants belong to the working-age cohorts of the population, affluent countries will benefit from an increase in overall population and also, generally, from a reduction in the age of their population, causing a decrease in the old-age dependency ratio. As a result, emigration countries will experience a decline in population size and an increase in their old-age dependency ratio.

The topic of old-dependency ratios, as well as the one on the age profile of the population, will be discussed further in the next pages of this thesis.

Let us turn the attention to population of Europe.

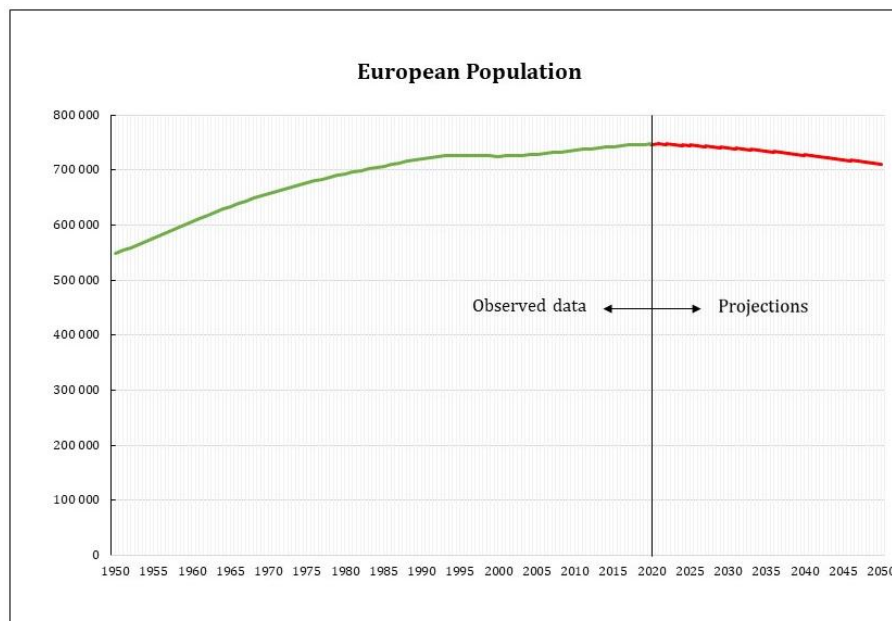


Table 3 - Total European Population (expressed in millions), observed and projected (1950 – 2050).

Own elaboration from UN – World Population Prospects 2019.

(source: <https://population.un.org/wpp/Download/Standard/Population/>.)

Looking at **Table 3** presented above, one can clearly see that, compared to the table of total world population, Europe's total population (present and future) is characterized by a hump-shaped graph: this is the effect of the steep decline and the below-zero growth rates pictured in green and red in **Table 1**.

According to the Demographic Outlook for the European Union (Eatock D., 2019)³, in addition to the increasing life expectancy and the general declining trend of fertility rates, Europe is characterized by demographic tendencies that are affecting different European regions in various ways.

For example, the most relevant population decline is recorded in the eastern and southern regions of the continent, while a significant growth can be observed in Ireland, United Kingdom, Belgium, Austria, the Netherlands as well as urban areas, metropolitan centers and coastal areas. On the other hand, peripheral and rural areas are increasingly affected by depopulation.

Lastly, one of the most important elements that are currently contributing to the changes in the European demographic balance is the immigration flow stemming from non-EU countries.

However, the most relevant demographic trend not only in Europe, but in the entire world, is represented by *population ageing*.

As of today, according to the UN⁴, in at least 17 countries in the world, older people⁵ account for more than one fifth of their population.

On a global level, in 2019, there were at least 703 million of people aged 65 or over.

Geographically the largest number of old people can be found in three main areas of the world: (the 37 per cent) in Eastern and South-Eastern Asia, Europe and North America (that account for 28.5 per cent of the total share of population aged 65 and over).

ii. From Population Ageing to its Consequences

Nerlich et al (2018)⁶ explore the macroeconomic implications of population ageing, using Eurostat data, via the elaboration of an overlapping generations model (OLG), designed to describe demographic developments and interactions among age groups.

The OLG model is characterized by an infinite time frame and assumes a total population composed of a working-age cohort along with a pensioner cohort, so that households are characterized by a two-phase economic activity during the lifetime: a working period first and

³ Eatock D., (2019), "*Demographic Outlook for the European Union 2019*", ERPS – European Parliamentary Research Service.

⁴ United Nations, Department of Economic and Social Affairs, Population Division (2019). "*World Population Ageing 2019: Highlights*" (ST/ESA/SER.A/430).

⁵ For the purposes of this paper, we set the "old age" threshold considering the age of 65.

⁶ Nerlich C. & Schroth J., (2018), "*The economic impact of population ageing and pension reforms*", Economic Bulletin Articles, European Central Bank, vol. 2.

a retirement phase later. The model considers also a productive sector in which two categories of firms produce capital and consumption goods; finally they also take into account the fiscal sector by introducing several forms of public revenue and expenditure.

According to the results of this model, the economy seems to be affected by an ageing population in numerous ways, however, the most significant effects of ageing in the Euro area are the ones connected to the labour market and to changes in the patterns of consumption and saving.

In particular, the results presented by Nerlich et al (2018) seem to entail the possibility that the effects from an ageing shock could determine a decline in economic growth, which is connected to the reduction in the level of GDP per capita.

Turning our attention specifically to the effects of ageing on the labour market, the model seems to suggest a negative effect of ageing on the labour supply, due to a limited share of young workers entering and participating in it, in conjunction with a decrease in participation rates for older workers.

Always according to Nerlich et al (2018), productivity could also be negatively affected by an ageing population, since deterioration in the health of older workers and possible difficulties in adapting to new technologies, could influence the level of output per worker.

Another potential and extremely relevant implication of ageing in the economy is linked to consumption and savings: in this respect, the model seems to indicate an increase in precautionary savings that could lower long-term interest rates, alongside the reduction in consumption per capita.

These findings are corroborated by Aigner-Walder and Döring (2012)⁷ and their simulations based on data from the 2004/2005 Austrian household budget survey, considering in this case a time horizon set up to 2050.

According to their findings, private saving rates are set to increase while observing an overall reduction in consumption which is mainly caused by the decline in consumption observable in the cohort of retirees, this is potentially caused by: the elimination of work-related expenses, a switch from bought to home-produced goods, an increased desire to save in order to leave a bequest, as well as reduced consumption due to age and health reasons or even due to lower levels of pension compared to the ones envisioned by individuals before retirement.

⁷ Aigner-Walder B., Döring T., (2012), "The Effects of Population Ageing on Private Consumption — A Simulation for Austria Based on Household Data up to 2050.", *Eurasian Econ Rev* 2, 63–80.

Finally, always according to Nerlich et al (2018), an ageing population could cause shifts in the demand, for instance in the case of services, which could then be translated in a series of changes in the level of relative prices.

Fiscal balances are also heavily affected by increased levels of elderly individuals, since this could add pressure on public spending especially considering aspects such as pensions, health and long-term care of the population.

Similar results at a world level are presented by Turner et al (1998)⁸, who provide us with evidence on the macroeconomic implications of population ageing through the implementation of a different model: the Minilink model on the base of OECD data.

In the specific case of this model, as opposed to the OLG model mentioned earlier, the time frame considered is limited and it goes up to the year 2050.

The purpose of this multi-region general equilibrium macroeconomic model is to investigate the long-term implications of an ageing population on the economy and the related policy issues. It does so by considering the interactions among three different types of agents (namely governments, households and firms) in the goods market as well as in the financial assets market.

The agents considered in the analysis belong to five distinct macro-regions: the US, Japan, Europe and lastly a fast-ageing and a slow-ageing “rest-of-the-world” region. For the purposes of the model, each region produces a single imperfect good for the other regions.

Demographically speaking, the model identifies three different cohorts: young (below working-age), working-age (individuals aged from 15 to 64 years) and old (people aged above the working-age upper threshold of 64 years); in order to better assess the macroeconomic effects of the ageing population, similarly to the OLG model, the Minilink model is also based on a reference scenario that assumes unchanged policies.

As a result, the model by Turner et al (1998), highlights the following phenomena: a reduction of the economic growth rate due a decreasing labour force, reduced output growth and reduced technical progress.

On the subject of public finances, the ageing population is found to increase public expenses for pension commitments as well as for public health care, potentially increasing budget deficits.

⁸ Turner D., et al. (1998), "*The Macroeconomic Implications of Ageing in a Global Context*", OECD Economics Department Working Papers, No. 193, OECD Publishing, Paris, <https://doi.org/10.1787/502646045314>.

However, when it comes to private savings behavior, Turner et al (1998) differs from the findings of both Nerlich et al (2018) and Aigner-Walder and Döring (2012): in this case, in fact, the model seems to suggest a reduction in the share of private savings. This difference, citing Sturm (1983)⁹, is attributable to the drivers of population ageing: when it is caused by lower fertility rates, with a consequent reduction in population growth, then aggregate savings are expected to decrease. On the other hand, when the driver behind population ageing is the increased life expectancy in combination with the life-cycle model (that divides life into an accumulation phase and a decumulation phase, which usually coincides with retirement), then savings are bound to increase due to people's willingness, in view of an extended retirement period, to maintain similar levels of consumption to the ones experienced during the working years.

The results of these models, however, are considered in a reference scenario where policies remain unchanged, therefore it is important to highlight that, in reality, policy makers can intervene and mitigate the effects of population ageing on the economy by conceiving and applying a wide set of policy responses and reforms.

Since the ageing trend in the population is expected to continue in the next decades as well, the importance of the above-mentioned considerations concerning the impact that an ageing population has on the economy, and the relative policy-making initiatives, will play a key role in the achievement of an inclusive and sustainable economic growth.

We will now focus specifically on the concept of "*old-age dependency ratio*" (OADR, in short), due to its importance in the light of statutory pensions and public expenditure.

The presence of a growing ageing population is set to denote a rise in the OADR, which is deemed a particularly useful indicator since it provides us with an expression of the ratio between the number of people aged 65 and over and the number of individuals aged 15 to 64, expressed per 100 persons of this 15-64 working age group.

The OADR is of paramount importance in the light of retirement and the consequent policy-making, because it provides information on the pressure of the increasing number of old people on the productive cohorts of the population.

⁹ Sturm P. H., (1983), "*Determinants of Saving: Theory and Evidence*", *OECD Economic Studies*, No. 1, p. 147-96.

The highest levels of OADR can be found in Europe. Specifically, in the year 2000 the total age dependency ratio was about 24.3% while now, according to 2020 data, the ratio equals 32%, and it is projected to increase up to 57.1% by 2100.

A visual representation of the population ageing phenomenon and therefore of the rise in the level of old-age dependency ratio, can be given by the Eurostat’s population distribution pyramids presented here below.

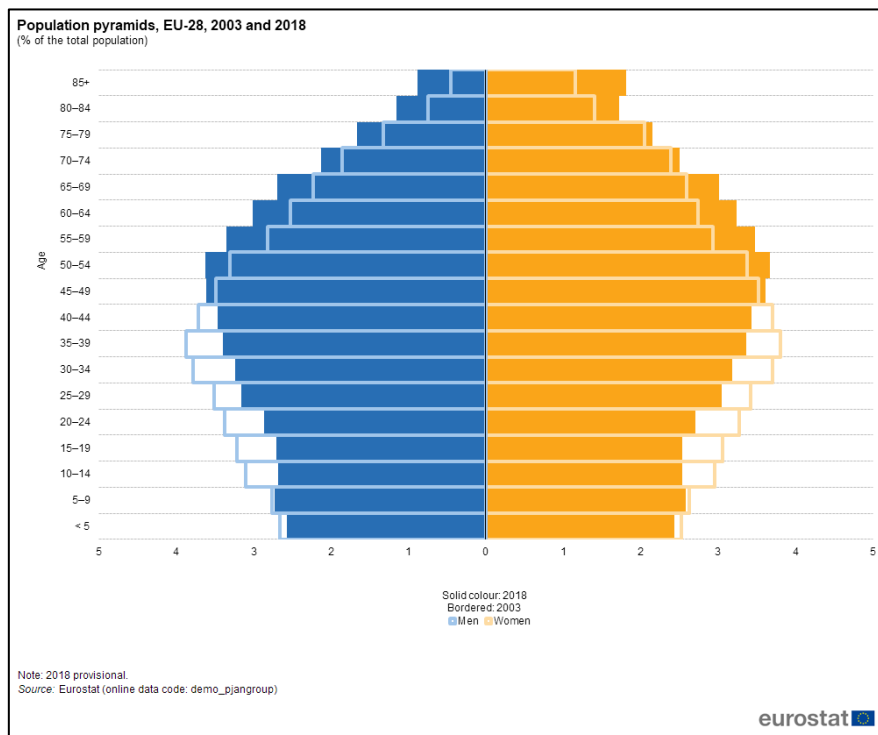


Table 4 – EU-28 2003-2018 Population Pyramid.
Source: Eurostat

Population distribution graphs, such as the one presented in **Table 4**, are particularly useful in order to visualize several aspects of a population, since they simultaneously present its age structure and gender ratios.

Normally, growing populations are characterized by a pyramid/triangular-shaped graphs, that would be the case of a so-called “expansive” population pyramid.

Let us now look at the first pyramid introduced here: this is based on past data.

At a first glance it is possible to see how, in the fifteen-year span considered by the dataset, the percentage of population in the age groups from 10 to 44 years old (bordered in the graph) has moved up the pyramid. Besides that, it is also evident a decline of the percentage of

people in the younger cohorts of the population, shadowed by an increase in the percentage of population that belongs to older cohorts.

Let us now examine the projections given by the population pyramid here below (**Table 5**).

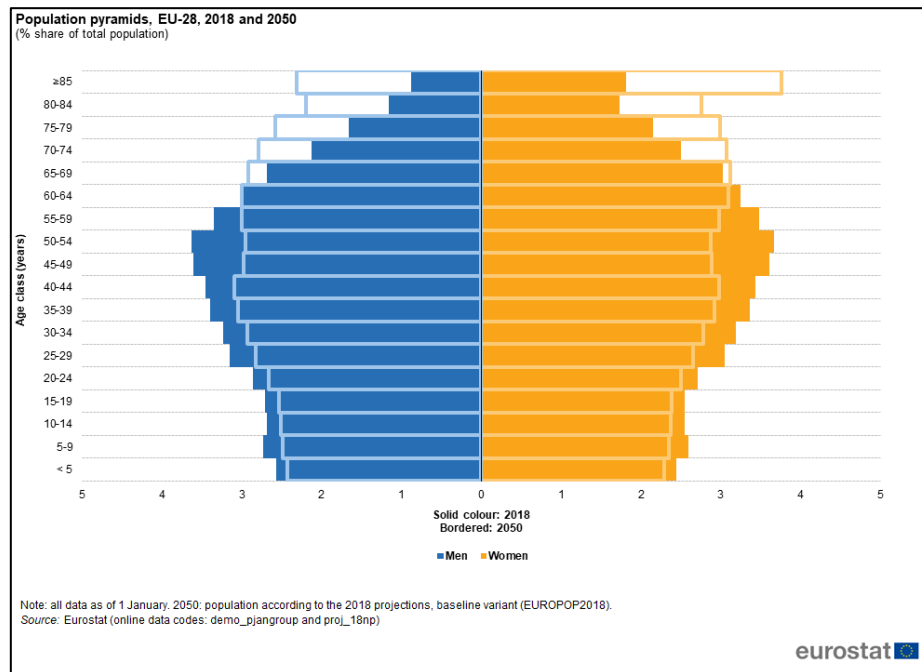


Table 5 - EU-28 2018-2050 "Projected" Population Pyramid.
Source: Eurostat

In 2050 (bordered in the graph here above), the percentage of younger people in the pyramid is expected to shrink even further compared to the percentage of people that belongs to the younger cohorts: this is the case of a "constrictive" pyramid, and it is the effect of some of the aforementioned factors such as lower fertility rates, the increase of life expectancy and the reduction in death rates.

However another important takeaway here relates specifically to women. In fact, both in the "past" and in the "projected" population pyramid, one can immediately notice the prevalence of women in the older age groups.

This is a worldwide trend, with women currently outliving men by 4.8 years (UN World Population Ageing), this gap is however expected to narrow in the future.

The same also goes for Europe: where despite a reduction in this gap, 2018 data showed that for every man aged 65 or over, there were 1.32 more women¹⁰.

¹⁰ European Union (2019), "Ageing Europe. Looking at the Lives of Older People in the EU. 2019 Edition".

iii. Old Age and Poverty Risk: Focus on Women

Older cohorts of the population finance their consumption in different ways; for simplicity, they can be briefly summarized by three key words: assets, transfers and work.

The key word “*work*” indicates the share of older people’s consumption that is financed by labour income. Based on recent findings¹¹, the senior share of labour seems to be slightly increasing worldwide, when compared to the past. This is the consequence of the increase in the share of the population aged 55 and above (the near-seniors), as well as the seniors.

The main reason why some individuals belonging to the older cohorts of the population are still forced to participate in the labour force is mostly due to the fact that they do not feel safe enough or they are not granted a pension or another type of social protection that would allow them to maintain satisfactory living conditions after retirement.

Furthermore, this phenomenon presents significant differences across different parts of the world: in fact, older people in regions like Europe, where social security systems are more established, developed and generous, are less likely to be in the labour force compared to the share of elderly people in the African, South American and Asian-Pacific regions.

One additional way in which seniors can finance their consumption are “*assets*”. By assets we intend people’s own assets and wealth, accumulated during the working phase of their lives and consumed, at a later date, during the retirement phase.

Asset consumption currently prevails in countries where wealth-transfer systems are limited or less established. This is the case, for example, of Southern Asia and South-Eastern Asia.

The third key word mentioned above is “*transfers*”; they can be either public or private.

Public transfers, are usually intended as public programs, and therefore are the combination of a country’s pensions, health care and other social welfare programs.

On the other hand, private transfers are the ones provided by members of the family or other private sources.

Needless to say that in most cases people do not rely exclusively on one of the aforementioned consumption financing options, but rather choose a mix of the three.

For instance, in Europe and other high-income regions of the world, the combination of assets and transfers, particularly the ones characterized by a private nature, constitutes the biggest share of financing for old people’s consumption.

¹¹ Gammarano R., (2018), “*What About Seniors? A quick analysis of the situation of older persons in the labour market*”, ILOSTAT Spotlight on Work Statistics, n° 1 – May 2018.

At this point, having considered the main sources of income that older people have, let us look more into the details of the economic and financial situation of the elderly.

According to OECD data¹², on average 13.5% of individuals aged 65 or over are in a state of relative income poverty while, for the population as a whole, the poverty rate is currently at 11.3%; where, relative income poverty is measured considering the number of people who are living with an household income that is less than 60% of their median national household disposable income.

It is necessary to point out that, around the world, the share of individuals living below the relative poverty threshold varies a great deal. In addition to that, poverty varies also among the different age sub-groups: people aged 66 to 75 have a poverty rate around 11.6%, while this value increases up to 16.2% when one considers the “very” old share of the population, aged 75 and over.

Despite this, starting from the mid-1990s, the world has been experiencing a shift in the overall level of poverty: the highest poverty rates are no longer observed in the older cohorts of the population, but rather in the younger age groups.

A very similar pattern in old age poverty can be observed in Europe, where the most recent data show that the older population affected by poverty and material deprivation is declining; where “material deprivation” is another useful indicator of poverty, due to its more practical connection to everyday life occurrences, since, according to the Eurostat definition¹³, it can be described as *«the enforced inability to pay unexpected expenses [...], to afford some items considered by most people to be desirable or even necessary to lead an adequate life»*.

Despite the somewhat positive findings presented here, when analyzing poverty data, one very worrying fact can be easily noted: in general, both at a worldwide level and at the European level, women are much more likely to face poverty and material deprivation. According to EU data presented in the 2019 edition of the “Ageing Europe” report, while the material deprivation rate for men aged 75 or more is around 3.6%, when considering women of the same age, the values almost doubles: being equal to 6.1%.

¹² OECD (2019), “Pensions at a Glance 2019: OECD and G20 Indicators”, OECD Publishing, Paris.

¹³ Eurostat Glossary: Material Deprivation (link to the web page: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Material_deprivation#:~:text=Material%20deprivation%20refers%20to%20a,adequate%20h eating%20of%20a%20dwelling%2C).

Additional data from the 2018 Pension Adequacy Report seem to indicate that, in the EU, at least one in five women (older than 65) are considered at risk of poverty or social exclusion.

The evidence presented above is even more concerning when considering additional statistics proving how older women are more likely to be living alone and much more likely to outlive men; this suggests that they are not only more likely not to be able to make ends meet, but they do so for longer periods of time in which, due to age-related health issues, they are also expected to increase their need and therefore their demand for additional health care or long-term care services.

That is why the problem of an ageing population and poverty, especially among women, is a poignant phenomenon that governmental bodies and policy-makers need to address; however, in order to take action and find an answer for this problem, it is fundamental to understand the causes and of women's higher level of poverty and its intensification in the old-age.

According to Cagatay (1998)¹⁴, in a working paper from the Social Development and Poverty Elimination Division of the UN, poverty is indeed a gendered phenomenon, since it is possible to observe a higher level of vulnerability to chronic poverty within women, not simply from an income-based perspective but also from the point of view of material deprivation.

This dualism in poverty is also supported by Millar (2003)¹⁵, who presents an interesting insight on the fact that, in most cases, income alone does not provide adequate information on poverty and living standards of households, since domestic and caring work are classified as "unpaid", but should be taken into account since they determine the way resources are converted into living standard at a household level. For instance, given that domestic and caring work seems to be largely carried out by women this, in some cases, prevents them to fully commit themselves to the labour market but, on the other hand, it could potentially lift a part of the care duties off of men therefore enabling them to dedicate themselves entirely to the labour market, in turn increasing potential earnings at a household level.

Hence, with this dualism in mind, we now move on to consider additional findings on women's poverty and the development of this phenomenon in old age.

¹⁴ Cagatay N., (1998), "*Gender and poverty*.", UNDP, UN Social Development and Poverty Elimination Division.

¹⁵ Millar J., (2003), "*Gender, poverty and social exclusion. Social Policy and Society*", University of Bath Online Publication Store, 2 (3), pp. 181-188.

Additional findings on this matter are provided by Bastos et al (2009)¹⁶: the peculiarity of their analysis lies in the fact that it is carried out by studying poverty from both a static and also a dynamic point of view.

This empirical research is based on a longitudinal database containing microdata from Eurostat's ECHP (European Community Household Panel) from the year 1995 to 2001, collected by the Portuguese statistical Institute (INE – *Instituto Nacional de Estatística*). The variables considered in the analysis include measures of household income, various indicators of living standards and deprivation, as well as personal and other demographic characteristics.

Bastos et al (2009) with their “static” cross-sectional analysis, confirm that women have a higher tendency to be affected by poverty both in terms of income and in terms of material deprivation; with certain groups of women that appear to be more vulnerable to poverty compared to others. Among these groups we can mention: women in large families and lone-parent families with children, women with low education levels, low income and precarious or part-time employment, the unemployed, immigrants, and elderly isolated single women. In these groups, social transfers are the most important mechanism to decrease the risk of poverty.

From a “dynamic” prospective Bastos et al (2009) find that women seem to be also characterized by higher levels of poverty persistence or, in other words, they tend have longer poverty spells during their lifetime. This seems to be particularly true for old isolated women: therefore ageing, lone-motherhood and labour market under-participation appear to be the key determinants of poverty.

These results are confirmed and integrated by Munnell (2004)¹⁷ who provides us with information based on 2002 data from the U.S. Social Security Administration. According to the findings presented in this article, the main determinants affecting the levels of poverty among older women are: being non-married (especially in the case of the widowed and the divorced, in the event of higher dependance on husbands' earnings), with all of this being worsened by women's higher survival rates and by the growth of divorce rates and the number of never-married women.

¹⁶ Bastos A., Casaca S. F., Nunes F., Pereirinha J., (2009), "*Women and poverty: A gender-sensitive approach*", The Journal of Socio-Economics, Volume 38, Issue 5, March 2009, Pages 764-778, ISSN 1053-5357.

¹⁷ Munnell A. H., (2004), "*Why Are So Many Older Women Poor?*", Just the Facts 10, April 2004, Center for Retirement Research at Boston College.

Secondly, another determinant of women's old-age poverty is represented by their lower lifetime earnings: these are in turn rooted in women's lower wages, higher rates of part-time work and fewer years spent in the labour force compared to men; all of these circumstances play a role by negatively affecting earnings, contributions, replacement rates and consequently women's benefits upon retirement.

Another determinant of women's old-age poverty, according to Munnell (2004) is inflation: this has, in fact, a negative influence on non-indexed pension benefits, reducing their purchasing value.

Additional factors influencing women's poverty levels in old-age are presented by Gornick et al (2009)¹⁸, based on the LWS¹⁹ database. In particular, they highlight that poor older women hold lower levels of liquid financial assets, however when these women are home-owners, the level of financial assets they possess increases. Then, arguably, women renters theoretically possess lower levels of financial assets and could therefore increase their levels of poverty or material deprivation.

Finally, Choudhury and Leonesio (1997)²⁰, using data from the National Longitudinal Surveys focusing on Mature Women (NLSMW²¹ in short), provide us with an explanation of the economic situation of older NLSMW participants through the implementation of an ANOVA procedure. This approach allowed them to compare women's earlier-life economic situation with the status they experience during their old age.

The results of this type of analysis allowed Choudhury and Leonesio (1997) to state that early-life financial situation has indeed an influence on economic well-being in the latter stages of women's lives.

In addition, life-cycle aspects such as labour market experience, number of children and marital histories are also connected to the financial circumstances of elderly women.

¹⁸ Gornick J. C., Munzi T., Sierminska E. & Smeeding T. M., (2009), "*Income, Assets, and Poverty: Older Women in Comparative Perspective*", *Journal of Women, Politics & Policy*, 30:2-3, 272-300.

¹⁹ It is the *Luxembourg Wealth Study Database*, a cross-national database in association with the LIS (the *Luxembourg Income Database*, containing harmonized income microdata from 50 industrialized countries). Specifically, the LWS contains harmonized wealth microdata from 10 industrialized countries, including household- and person-level income data. (source: LIS Data Center website, <https://www.lisdatacenter.org/our-data/>)

²⁰ Choudhury S., Leonesio M. V., (1997), "*Life-cycle aspects of poverty among older women.*", *Social Security Bulletin*, Vol. 60 (No. 2): 17-36.

²¹ The NLSMW is a complex longitudinal survey which is a program of the US Bureau of Labour Statistics, considering older women, those aged 64 and over. (source: NLS <https://www.nlsinfo.org/weights/nlsmw>)

In the specific analysis carried out by Choudhury and Leonesio (1997), the data concerns the 1991 – 1992 time period.

Personal characteristics also seem to play an important role in the definition of women's level of old age poverty; specifically, low education levels, poor health and onset health problems, living alone and being non-white seem to have a considerable explanatory power on aged poverty.

In conclusion, having underlined the causes and the factors affecting women's old-age poverty, we also need to consider that, as stated by Cagatay (1998), gender inequalities in the financial and economic aspects of women's life could possibly have a negative effect on the poverty status of households as a whole, with undesirable effects on the overall levels of poverty within the various countries.

Hence, tackling the problem of poverty risk in women, as well as their aged poverty, is an important step in order to achieve sustainable economic development and growth.

iv. Sustainable Growth Agendas.

In this respect, the General Assembly of the United Nations back in 2015 developed the "2030 Agenda"²², a resolution that contains seventeen different sustainable development goals (SDGs) with the ultimate ambition of achieving a future that could be better and sustainable for the population of the world.

The goals are very different in nature: they range from the reduction of poverty, hunger and inequalities, to climate action, innovation and economic growth; and they are all linked to specific targets and indicators in order to allow policy-makers and the general public to monitor the progress toward achieving said targets.

A considerable number of these goals can be seen in the light of population ageing and old age poverty.

For instance, goals 1, 3 and 8 ("no poverty", "good health and wellbeing" and "decent work and economic growth" respectively) can be taken altogether and translated into concrete actions aimed at the promotion of planning and saving for retirement, in order to achieve a higher level of financial autonomy and health amongst people, especially in the latter years of their lives.

Another example is the combination of goals number 10 and 8 ("reduced inequalities" and "decent work and economic growth"), that could be converted into measures with the

²² United Nations, (2015), "*Transforming Our World: The 2030 Agenda for Sustainable Development*", A/RES/70/1.

objective of reduction and elimination of phenomena like old age isolation and discrimination, while also promoting generational equity and fiscal sustainability.

On a concluding note, all of the above-mentioned initiatives could also be implemented to include Sustainment Development Goal number 5, which is “gender equality”.

Europe has also implemented a similar strategy, with the objective of achieving “jobs and smart, sustainable, inclusive growth” across the Union, in order to recover from the crisis. That can be done by setting medium and long-term reforms aimed at boosting growth, occupation and safeguard public finances.

Approved and adopted in June 2010 by the European Council²³, *Europe 2020* was a 10-year plan accompanied with a set of initiatives and corresponding indicators to measure and monitor the progress of this EU initiative and the country-specific reforms stemming from it. For the purposes of this thesis, the most relevant objectives of this strategy and that is worth mentioning, are the ones tackling the problem of poverty and social exclusion, as well as the problem of sustainability of public finances through, among other things, the reform of the pension systems across Europe.

1.2. From Pension Systems to the Role and Current State of Supplementary Pensions

Bearing in mind what has been discussed in the first paragraphs, the main focus of this dissertation will now move on to consider various aspects of the main source of income for older people, especially in higher-income regions of the world like Europe, and that is: pensions.

First and foremost will be presented an introduction to the pension system, mentioning its pillars as defined by the World Bank and, at a later stage, the thesis will examine the levels of pension adequacy in Europe with a deeper insight in the world of supplementary pensions since these are the instruments that could paint a key role in the in the light of pension reforms and the shift towards individual earnings.

²³ European Commission, (2010), “*Europe 2020. A European strategy for smart, sustainable and inclusive growth*”, Brussels March 2010.

iv. A Brief Introduction to the Pension System.

In order to have a better understanding of the subjects that will be examined more in depth in the next pages, it is necessary to present a brief introduction of the pension system, intended as the large ensemble of public and private sources which are set in place with the purpose of providing payments to people retired from work.

From an economic perspective, according to the life cycle model, adult life can be seen as a combination of two phases: an *accumulation phase* and a *distribution phase*.

The accumulation phase usually begins when individuals enter their working life and consequently an higher income phase of their lives, when they can start to build up wealth and plan for the future. Hence, part of the income is not used for immediate consumption, but rather saved in order to increase the amount of consumption in the latter stages of life: this practice is known as "*consumption smoothing*", and finds its roots in the people's desire of stability and predictability in life, that is economically translated into an attempt to have a stable path of consumption and wealth through the different stages of one's life.

The sooner the accumulation phase starts, the better off individuals will be in the distribution phase of their life.

This last stage of a person's life, usually coincides with retirement, and it is when income begins to decrease while other expenses -such as health-related expenses- start to arise, and consequently the savings that were built up during the accumulation phase, have to be accessed and used by the retirees. This can happen in different ways: through annuities, lump-sums and other solutions, depending on the specific profile of the different financial products that can be selected by individuals.

Pension systems must be designed to accommodate for different patterns and different needs in both the accumulation and the consumption phase, and that is why generally experts tend to agree when stating that pension systems should be based on a set of various pillars.

Numerous sources tend to envision a pension system as a system that is based upon three main pillars; however, according to the World Bank²⁴, if one wants to better summarize the complexity of modern-day pension systems, it is necessary to extend the "three pillar" system to a wider "five pillar" framework.

The five pillars, as outlined by World Bank (2008), are:

²⁴ World Bank (2008), "*The World Bank Pension Conceptual Framework*".

- the “*zero pillar*”. Typically the responsibility connected with the set up and the financing of this pillar falls upon governments, therefore it is characterized by a non-contributory nature and its purpose is solely poverty avoidance, providing minimal protection when other types of (pension) income are not sufficient.

Part of this *zero-pillar* are instances like social pensions, social assistance, survivors’ insurance and other supplementary or integrative benefits provided by the State: these are generally means-tested, therefore the eligibility and the level of benefits received is conditional to specific levels of income.

- the “*first pillar*”, characterized by a mandatory nature, it includes all those pension schemes that are usually set up by governments and funded by contributions in connection to earnings in a pay-as-you-go basis: in this case, the beneficiaries receive their benefits thanks to the contribution collected from the paychecks of current workers.

This first pillar is set up with the purpose of helping individuals to limit the uncertainty of financial markets as well as addressing individualistic-based risks such as inappropriate planning and myopia in judging future circumstances and life expectancy.

It is necessary to point out that the planning of this first-pillar relies upon both demographic developments and political choices, and is therefore subject to risks of different nature.

- the “*second pillar*” that is generally composed of those private occupational pension schemes, usually arranged by employers, in order to support the benefits coming from the first pillar. Given their qualities, these schemes can be voluntary or compulsory, according to State-specific regulations.

Pension schemes in this pillar can either be “defined contribution” (DC), if the pension benefit depends on how much is paid into the pension and the investment performance of the pension fund, or “defined benefit” (DB), if the scheme promises a specific income.

- the “*third pillar*” includes the individual saving schemes that are designed to provide the beneficiary with future withdrawals and other different forms of annuities. The schemes encompassed in the third pillar are mostly supplementary, private, discretionary and, most importantly, flexible: in fact, these plans are usually designed to accommodate for contributions that reflect the needs and capacity of each individual payee.

Since these are generally investment products, like many of the second pillar pensions, they are mainly subjected to risks related to financial markets.

- and finally, a “*fourth pillar*” which is non-financial in its nature and includes both informal family support as well as the set of labour market policies aiming at extending working-life and other social programs dedicated to health care and housing for the elderly.

In order to properly evaluate pension system, as reported by Lannoo et al (2014)²⁵, it is important to keep in mind that pension provisions face numerous risks, that could potentially affect contributions, investments, returns, eventually causing negative effects during the payout phase.

In this respect, Lannoo et al (2014) consider four main types of risks: first of all *financial risk*, or the risk related to the uncertainty of returns on earnings underlying long-term investments. In fact, pension savings and investments usually need to consider an investment period ranging between thirty and forty years so that outcomes, a priori, are uncertain; this means that results are not unknown per se, but rather the probability related to them is unknown.

The second risk, which is particularly relevant for pensions, is identifiable with *longevity risk*, and it is associated with the implications of increasing life expectancy and, specifically, with the risk of individuals living more than expected and therefore requiring more pension assets than expected. Given the recent trends in population ageing presented earlier, multiple experts concur that the most effective way to modulate the potential effects of this risk (especially on first pillar pensions) is through the introduction of higher statutory retirement ages.

The third risk identified by Lannoo et al (2014) in their study is *behavioral risk*. This is specifically related to the receiving-end of pension benefits: that is, individuals²⁶. The main determinant of this risk is the lack of financial literacy, which in turn causes people to carry out sub-optimal practices during their investments²⁷, all of this will in turn have a negative impact on portfolio performance and which will be translated into (unexpectedly) lower benefits.

Finally, the fourth risk is *regulatory risk*, and it is related to changes in regulations and their effects on the pension system, across all pillars. In the case of Europe this is particularly

²⁵ Lannoo K., Barslund M., Chmelar A., von Werder M., (2014), “*Pension Schemes*”, European Parliament, Directorate General for Internal Policies. Policy Department A: Economic and Scientific Policy, Study, August 2014. (document available at: <https://www.europarl.europa.eu/committees/en/home>)

²⁶ In, particular, non-professional investors.

²⁷ Lannoo, Barslund, Chmelar, von Werder M (2014) provide us with examples of these sub-optimal practices, and these are: trading too often and incurring in additional trading costs, lack of portfolio diversification, neglect to appropriately balance risk profiles when approaching the retirement date.

intricated since, in addition to country-specific regulatory risks, future retirees and institutions must also take into account regulatory risks stemming from EU legislation.

Somehow connected to regulatory risks, Blommestein et al (2009)²⁸, in their paper analyzing risks within the context of private pension plans, also consider the presence of the *inflation risk*, namely the risk that inflation (negatively) affects investment returns therefore reducing real benefits through the loss of purchasing power; in addition to the threat of *bankruptcy and solvency risks*, that can be defined as the risk that a particular institution, at a certain point in time, is no longer able to meet its debt and financial obligations.

In addition to the “five pillar” description of the pension system, the World Bank also provides a set of primary and secondary criteria to evaluate the design of pension systems.

Primary criteria involve: *adequacy*, measuring how effective the pension system really is in its goals of consumption-smoothing and old-age poverty prevention, *sustainability* in the light of public spending, *affordability* and therefore accessibility for individuals, *equitability* so how the pension system measures against its redistributive role, and finally *robustness* and *predictability* in the anticipation and reaction to economic, demographic and political changes. Secondary criteria involve the effectiveness in diminishing the effect of labour market distortions (such as: employment opportunities, job security, wages, hours worked, retirement age and so on), as well as the contributions that pension systems have when considering savings mobilization²⁹ and the development of financial markets.

v. Pension Adequacy and Sustainability in Europe.

Let us now move the conversation specifically to the European Union, that is particularly interesting in the light of its unique heterogeneity in income levels and pension settings within the different countries but, at the same time, its common efforts in striving for a collective set of regulations.

As stated in the 2018 Pension Adequacy Report³⁰, within Europe, because of its diverse macroeconomic contexts and standards of living, levels of average pensions in absolute value

²⁸ Blommestein H., Janssen P., Kortleve N. and Yermo J., (2009), “*Evaluating Risk Sharing in Private Pension Plans*”, OECD Journal: Financial Market Trends. Vol. 2009/1.

²⁹ Where savings mobilization is defined as the development of safe and sound institutions where individuals can save their money with the concrete expectation of receiving, at a later date, the full value of their deposits increased by a real return.

³⁰ European Commission (2018), “*Pension Adequacy Report 2018. Volume 1. Current and Future Income Adequacy in Old Age in the EU*”.

and pension expenditure as a share of GDP fluctuate a great deal: however this does not deter us from acquiring a thought-provoking set of evidence that can be useful in the assessment of the performance of the pension systems across Europe.

The aforementioned report presents a very interesting set of calculations with the objective of looking at changes in the at-risk-of-poverty (AROP) rates, as a result of changes in some of the underlying macroeconomic factors.

In the first scenario, calculations show changes in the AROP rates in the case of equal median income between older and younger cohorts of the population, while income distribution is kept at country-specific levels. The results seem to indicate that in countries characterized by low levels of relative income (hence, below EU average), if provided with an increase of this figure, they would experience a drop in old-age income poverty, therefore attributing their current high AROP rates in the older cohorts of the population to their low levels of income. This is the case of countries like: Cyprus, Sweden, Malta, Lithuania, Latvia and Estonia.

On the other hand, in other countries, higher median incomes imply a limited effect on AROP rates, indicating a stronger effect of distribution.

In a second instance, the report presents the results of calculations in which the old-age income follows the same distribution as the European average in all the states, while maintaining the country-specific medians. The results show that in countries like Italy, Croatia and Romania, AROP rates would decrease: therefore highlighting the effect of old-age income inequalities.

At the opposite side of the spectrum there are countries like Denmark, Sweden, Czech Republic, Slovakia and the Netherlands where the presence of low old-age poverty rates can be attributed mostly to the presence of relevant degrees of income equality.

However it is important to highlight that the adequacy of a pension system is not measured solely on the task of old-age poverty avoidance, but it is also crucial to consider the way pensions help mid and higher-income individuals when it comes to maintaining living-standards that are comparable with the ones they experienced in the periods before retirement.

So, after highlighting the effects of income level and income distribution in the at-risk-of-poverty rates, the report provides useful information to judge the adequacy of European pension systems by considering replacement rates.

In particular, the paper considers the aggregate replacement ratio (ARR, in short), that is computed by taking into account the gross median individual pension income of the 65-75 cohort and the gross median individual earnings of the working population aged 50-59, with the exclusion of social benefits. As a result, this ratio provides a direct comparison between late career earnings and the early years of retirement, assessing if and how a pension income can help to maintain the standards of living experienced in the last years of working-life.

Currently these replacement rates present substantial differences among different countries: while the EU-average AAR is 58% meaning that, in aggregate, pensions in the early years of retirement amount to more than half of the late-career earnings, on the other hand, country-specific values range between the excellent 88% AAR recorded in Luxemburg and a value of 35% observed in Ireland.

Providing a measure of the goodness of European pension systems is the fact that, in the last decade, data show an overall increase in the replacement levels (which is consistent with the reduction of old-age poverty mentioned in the previous paragraphs).

Further assessments seem to indicate that replacement rates are higher among people with lower incomes, highlighting the importance and the effectiveness of the redistributive role played by the zero pillar's minimum income schemes.

Moreover, among the various available income sources, statutory contribution-funded pensions appear to be the ones yielding the most equal incomes.

Despite some improvements in the overall level of adequacy, inequalities still stand.

In line with worldwide considerations provided by Arza (2015)³¹ in her discussion paper presenting analysis on 2014 World Bank data, highlighting the fact that women in general present lower coverage rates compared to men, with this gap also extending to occupational pensions in countries where there is a substantial influence of the second pillar on retirement income.

These findings are also supported, at a European level, by the data presented in the Pension Adequacy Report (2018), revealing that, in addition to the fact that 20% of old women (with more than 65 years of age) in Europe are at risk of poverty and social exclusion while this

³¹ Arza C., (2015), "*The Gender Dimensions of Pension Systems: policies and constraints for the protection of older women* ", UN Women Discussion Papers.

percentage is equal to 15% for men, there is also a substantial gender gap in pensions that amounts to 37.2%.

Adequacy however, as stated by Price et al (2016)³², is not the only concern when it comes to pensions: one must also consider the level of sustainability within the pension system. The latest European reforms, as explained by Eatock (2015)³³ in a paper dedicated to the assessment of adequacy and financial sustainability of the European pension systems based on Eurostat data, have in fact tackled the problem of sustainability with respect to the pressure on public finances.

The most recent policy prescriptions announced by the governing bodies of the EU have been designed to address two main themes: adjusting retirement age according to demographic trends and improving the development of complementary private retirement saving systems.

The rationale behind the first theme is well explained by Bazzana (2020)³⁴ thanks to a model that investigates the connection between variations in retirement age and their implications on sustainability. The model is based on the existence of three different types of agents: government, active workers and pensioners, and considers the presence of a mandatory pension scheme funded by the government through labour taxation and, in case of deficits, through the emission of bonds. This model is then used in various simulations in order to assess the effects of policy changes on pension sustainability, on the basis of Italian data provided by ISTAT in the years of 2017 and 2018.

In particular, by applying the model by Bazzana (2020) in the context of a simulated retirement age threshold of 67 years (starting from an initial scenario considering a baseline retirement age of 64), this results in an overall improvement in the sustainability of pension schemes, mainly because of a reduction in the number of retirees that in turn results in a reduction of the public expenditure for pensions. However this is not the only positive effect on sustainability: in fact, if the number of retirees decreases, there would be a specular increase in the number of active workers in the market, entailing a larger number of taxpayers and therefore a possible reduction in public debt.

³² Price W., Ashcroft J., Hafeman M., (2016), "*Outcomes-Based Diagnosis and Assessments for Private Pensions: A Handbook*", The World Bank, Report, June 2016.

³³ Eatock D., (2015), "*European Union pension systems: Adequate and sustainable?*", ERPS European Parliamentary Research Service, Briefing November 2015.

³⁴ Bazzana, D. (2020). "*Ageing population and pension system sustainability: reforms and redistributive implications.*" *Economia Politica*, 37, 971-992.

On a more practical note, as stated by Fornero and Monticone (2010)³⁵, current reforms are generally moving towards flexibility rather than fixed and mandatory retirement ages, reflecting the existing needs and differences between different working categories and genders.

Always according to Bazzana (2020), similar results for sustainability could be reached by reductions in the pension benefits provided by governments, however this measure, if considered alone, could potentially jeopardize pension adequacy the financial well-being of some classes of retirees.

As for the second theme addressed by recent EU prescriptions, namely the improvement in the levels of complementary private retirement saving systems, the reason behind it is pretty straight-forward: if individuals are forced or incentivized to be more responsible in planning for their retirement, then public institutions could attempt to shrink public spending for retirement benefits, resulting in the improvement of aggregate public debt levels.

In fact, as suggested by Fornero and Monticone (2010), generous social security systems such as the ones that are present in countries like Italy or Germany, reduce the urgency and need for their own citizens to plan and save for retirement during working-life .

One might argue that these types of reforms could have a negative impact on future replacement rates of first pillar schemes, however always according to Fornero and Monticone (2010), such negative impact would not be automatically translated into a decrease in the adequacy levels of pension systems, but it could even reinforce them thanks to a more than proportional impact of these reforms on financial sustainability. This, in turn, would yield sounder public pension systems and lower levels of public debt for future generations, achieving results that are in line with the sustainable growth objectives mentioned earlier in this Chapter.

In conclusion, sustainability and adequacy go hand in hand: a pension system cannot be adequate in the long run if it is not sustainable, requiring policymakers to find the right balance between the generosity of pension systems and public expenditure. According to

³⁵ Fornero, E., & Monticone, C. (2010) "*Adequacy of Households' Savings and Financial Literacy: Challenges from Pension Reforms.*" EUT Edizioni Università di Trieste.

multiple sources, one of the keys to lighten this burden lays in strengthening the responsibility of individuals in planning and increasing savings for retirement.

vi. Current State of Supplementary Pensions in Europe.

In the light of the “push” towards a higher level of responsibility for individuals, we will now focus specifically on supplementary pension schemes, specifically we are considering now the pension provisions which can be categorized within the second and third pillar of the abovementioned “five-pillars” system.

First of all, it is necessary to point out that, when considering non-statutory pensions we are taking into account a very broad set of pension products provided by many different financial organizations; therefore it is not always possible to have a complete set of data from which we can fully analyze the actual trends and dynamics of this market.

In this instance we are going to rely mainly on data provided by entities like PensionsEurope³⁶, a Bruxelles-based body that represents national associations of pension funds and similar institutions, including members that provide exclusively individual pension schemes.

On a strictly financial point of view -always according to PensionsEurope- despite an extremely diverse pension landscape, the numbers of members, beneficiaries and, most importantly, assets managed in supplementary pension funds have experienced a steady increase in recent years.

	2016	2017	2018	2019
Total assets managed (bln of Eur)	3.622,72	3.548,89	4.028,21	4.000,75
Number of members	64.276.266	65.145.771	66.460.490	68.327.200
Number of beneficiaries	26.785.728	27.339.932	28.950.558	29.605.652
Number of pension funds	96.099	98.625	101.437	103.698

Table 6 - PensionsEurope statistics on assets, members, beneficiaries and funds.
Own elaboration from PensionsEurope data.
(source: <https://www.pensionseurope.eu/statistics>)

According to PensionsEurope data, presented here at **Table 6**, over the last few years the number of funds members and beneficiaries has gradually increased, while the decrease in total assets managed that can be seen between 2018 and 2019 is due to the fall in equity indexes experienced at the end of 2018 and, in some countries, the increasingly negative cash flow nature of defined-benefit arrangements.

³⁶ PensionsEurope, (2020), “PensionsEurope Pension Funds Statistics and Trends”, March 2020.

Nevertheless, the rise in total assets managed is now expected to continue its growth, in the view of recent positive developments in the market.

This increase in coverage of pension funds is mainly driven by the desire of people to achieve adequate standards of living during their retirement. This attributes supplementary pensions the role of income maintainers.

However, according to both PensionsEurope and the European Commission, coverage displays a clear regional pattern: with high levels of coverage in Northern and Western European countries (in particular in the Netherlands, the UK, Switzerland and Germany) and low or even non-existent levels of coverage in Southern and Eastern Europe. These disparities seem to be mainly due to institutional and other social factors.

Let us turn the attention to a light analysis of the specifics of these non-statutory pension arrangements.

While currently most of their assets are included in DB (defined benefit) plans, namely 87.5% of them are either DB or hybrid schemes, recent trends seem to suggest a gradual shift towards DC (defined contribution) pension plans.

Taking into account asset allocation, due to the low and negative long-term interest rates experienced in the last years, asset managers have been forced to move from traditional asset classes like sovereign bonds and other low-risk asset classes, towards some of the riskier ones in order to achieve adequate yields that would in turn allow the funds to provide adequate benefits to their beneficiaries.

Keeping in mind that pension funds are characterized by long-term liabilities, their investments usually tend to reflect this time-frame: further indication of this can be found in the tendency to invest in private equities and to perform countercyclical investments.

These types of investments suggest that pension funds could also have an active role in the progress of the real economy in Europe, acting as “shock absorbers” and providers of capital for small and medium enterprises as well as for other corporate and infrastructure projects.

Successful investment strategies undertaken by pension funds, are therefore required to balance risk, returns and also costs. These goals are achieved by following a series of common practices, such as: the so-called “prudent-pension rule” that encourages them to put in place investment strategies that are mainly focused on the safeguard of capital while seeking reasonable returns (and therefore avoiding speculative practices), or even pursuing adequate levels of asset class diversification as well as geographical diversification.

Another common practice for pension funds is asset pooling; this is the case when a number of financial institutions come together and proceed to pool their investment capital with the purpose of achieving economies of scale and diversification to lower investment fees and risk. However it is necessary to point out that this practice is still not allowed in all countries.

As already mentioned, one of the key practices of pension funds is risk avoidance. This is extremely relevant since, as described in Ania's latest report³⁷ on complementary pension schemes, safety and trustworthiness are at the heart of people's preferences when considering supplementary pensions. In fact, at a European level, this is the case for 60% of the people who took part to the Insurance Europe³⁸ survey.

Additional remarks from this survey seem to indicate that the other preferences for people, during the accumulation phase are: flexibility of payments, the possibility of bequeathing the funds in case of premature death, liquidity, low costs, simplicity of the investment products, tax benefits and down at the eighth spot of this chart we can find returns.

Therefore we can conclude that people are incline to take more responsibility in saving more for retirement only if they can actually count on guarantees such as the pay back of the principal at maturity or a minimum yield.

As for the pay-outs, 46% of the sample indicates preferences towards life annuities, 30% prefers flexible withdrawals while the remaining 24% favors a single lump-sum pay-out.

Always according to Ania (2020), although coverage levels for supplementary pensions are experiencing a steady increase, people are still under-saving for retirement.

In fact, it is estimated that there is the need for an additional 2000billion of Euros in savings, in order to successfully integrate statutory pensions and achieving optimal levels of pension adequacy.

Even more worrisome is the fact that, according to the Insurance Europe survey, at least 43% of the people interviewed in the sample are not saving for retirement.

This percentage increases even more, up to 50%, when considering women: this 7-8% gap on an aggregate level might not seem like a big deal, however it is not constant across Europe and it can reach levels up to 22% in countries like Italy.

In support of these findings, we also have additional evidence provided by the Pension Adequacy Report (2018), where it is explicitly stated that in Europe men are more likely than

³⁷ Ania (2020), *"La Previdenza Complementare e il Valore della Garanzia"*.

³⁸ Insurance Europe is the Bruxelles-based federation of European insurance and reinsurance.

women to enroll in supplementary pension schemes, therefore emphasizing the existence of a gender gap.

In the next pages of this dissertation we will now dive into the determinants of under-saving for retirement as well as the determinants of the gender-gap in both statutory and non-statutory pensions, considering the problem from several points of view: from the economic causes, to behavioral, psychological and educational causes.

CHAPTER 2

The Causes of Mis-planning and Under-saving for Retirement and the Determinants of the Gender Gap

As briefly mentioned in the closing sentences of the previous chapter, the thesis will now focus on the gap involving man and women in the case of supplementary savings in the view of retirement.

According to suggestions from the Pension Adequacy report, as well as, findings from SHARE surveys³⁹, coverage rates for supplementary pension schemes are likely to be higher for men compared to women.

Hence we will now try to examine this issue further, by trying to single out the determinants that are causing this gap.

We can already anticipate that this is an issue involving multiple aspects of human nature: from strictly economic causes (based on intrinsic differences between men and women), to biases that can be common to the population in its entirety, to other psychological traits that are especially accentuated in women.

In addition, we will also provide findings on the effects stemming from the lack of an adequate level of financial literacy.

2.1. Economic Causes.

According to various sources, the issue of the gender-gap in supplementary pensions is embedded in the larger problem of gender differences and lower pension entitlements that can be also observed in the case of statutory pensions.

In this respect, according to the Pension Adequacy report, European women perceive significantly lower pensions compared to men. Albeit recording a slight decrease in recent years, this gap amounts to 37.2% for women aged 65 to 79, reaching different levels in a spectrum that extends from around 2% in Estonia to almost 40% in Cyprus.

³⁹ As reported by: Börsch-Supan A., Brugiavini A., Jürges H., Kapteyn A., Mackenbach J., Siegrist J., & Weber G. (2008). *First results from the Survey of Health, Ageing and Retirement in Europe (2004-2007). Starting the longitudinal dimension.*, Mannheim: Mannheim Research Institute for the Economics of Aging (MEA). Chapter 6.

The first driver of this gender gap, is the result of differences between men and women in their behavioral and economic performance within the labour market.

However this is not a straight forward connection, in fact, the current level of the gender pay-gap in Europe is settled around 16.3%⁴⁰, while the gender gap in pensions, as mentioned, equals to more than double this figure, hinting not just at the presence of lower levels of income during women's entire lifetime or maybe at a reduction in the income inequalities over the years, but also at the potential existence of additional determinants.

Looking more into the details of the gender gap during the working years, data seem to indicate that women, even if employed in similar positions to men, still tend to earn less: both in terms of lower salaries but also with respect to the prospect of career advancements. Another explanation on why women tend to earn less can be found in the phenomenon of job segregation by gender, as explained by Glass and Kilpatrick (2008)⁴¹. This occurs when workers are distributed across and within occupations based on their gender and not on their skills and competences. This phenomenon seems to be caused by educational and work disparities, as well as by instances like individual preferences, industry culture and job-search dynamics. All of this results in the presence of female-dominated jobs, that are usually the ones offering lower salaries and shorter career paths.

Lower earnings during the lifetime, will have a negative effect on women's contributions and will therefore entail lower pension entitlements at retirement. Or, alternatively, in the case of complementary voluntary pension arrangements, women will be able to save less since a larger share of their income will be needed to finance their (present) consumption.

The problem of women's lower earnings over the lifetime and the consequent lack of resources at retirement, however, is not only limited to work-market dynamics but it is also exacerbated by women's longer life span compared to men. This, for married women, could presuppose longer periods of widowhood and longer periods characterized by lower income levels.

In addition, further evidence presented by Glass & Kilpatrick (1998) in their paper which is based on the observations of American women who belong to the so-called "baby boomer"

⁴⁰ European Commission (2018), "*Pension Adequacy Report 2018. Volume 1. Current and Future Income Adequacy in Old Age in the EU*".

⁴¹ Glass J. C. Jr. & Kilpatrick B. B., (1998), "*Financial Planning for Retirement: An Imperative For Baby Boomer Women*", *Educational Gerontology: An International Quarterly*, 24:6, 595-617, DOI: 10.1080/0360127980240606.

demographic cohort, that is to say the generation of individuals born in the years between 1946 and 1964.

Their article reveals that divorce rates could also play a significant role in women's wealth and their consequent plans to save for retirement, in accordance to the findings on old-age poverty among women presented in the previous chapter of this thesis.

Nonetheless, despite the relevance of both these factors, they appear to be ignored or not properly considered by women when planning for retirement during the accumulation phase of their lives.

An additional reason behind the gender gap in pensions lays behind the *irregular patterns* that usually can be observed in women's occupations.

According to EU data presented in the Pension Adequacy report 2018, it appears that, overall, women work less than men over their lifetime, with this difference reaching a value of almost 5 years in the case of full-time jobs.

Moreover, women are also more likely to work in part-time employment.

The reason behind women's *interrupted career paths* is mostly due to the fact that they are traditionally the ones expected to fulfil the role of caregivers within their families (in the case of both children and also elderly members of the family), but interruptions generate discontinuity in contribution periods and lower levels of income, that in turn will entail lower levels of accrual and, at a later stage, lower pension benefits.

In support of these statements Arza (2015)⁴², in a discussion paper based on the analysis of World Bank, European Commission and Eurostat data from the period between 2013 and 2014, provides statistics demonstrating that the gender gap in pensions tends to be higher for women who have children.

However, Bian & Wang (2019)⁴³, following an extensive literature review of over 64 articles on women's career interruption published in the last two decades, point out that in most of their findings the level of income reduction depends also on the specific context considered: it can in fact vary from one country to another, from the work status before interruption, from the type of industry and the time length of the leave.

⁴² Arza C., (2015), "*The gender dimensions of pension systems: policies and constraints for the protection of older women*", UN Women, Discussion Paper, July 2015.

⁴³ Bian X. & Wang J., (2019), "*Women's career interruptions: an integrative review.*" European Journal of Training and Development.

Further insights on the weight of parental leave on present income, contributions and old-age income is the observed tendency to face downward career trajectories for those women who, after their parental leave, decide to go back into the labour market. This could either happen by choice, specifically when women decide to opt for lower-level positions or occupations that would allow them to dedicate more time to their families whilst working, or this could also be forced on them due to discrimination or lack of support from either their employers or their national governments.

The considerations presented above are common to both the gender gap in statutory pensions as well as in supplementary pensions. We will now present determinants that are exclusively related to the latter type of old age income.

One of the reasons why people might choose not to invest in personal retirement savings is the *over reliance on tax-financed pensions*.

This inclination seems to be especially true for individuals living and working in countries where welfare systems are more generous (Pension Adequacy Report 2018), and it appears to be particularly accentuated in the case of women, due to either lack of knowledge and information on supplementary private savings for retirement, or it could also be in the light of lower lifetime incomes and chances to save for retirement.

However this type of approach, based on the “over reliance” on zero and first pillar benefits, when planning and saving for retirement is not desirable since, as briefly introduced in Chapter 1 of this dissertation, statutory pensions and other social security systems mainly provide their recipients with a basic level of income upon retirement and, in some cases, may not allow those who exclusively rely on them to maintain similar living standards to the ones they were used to experience during the working years of their lives.

Let us turn our attention now to further constraints of economic nature that are involved in the stage of private savings for retirement.

Ania (2020) and the Insurance Europe survey results highlight the fact that, among those who are not saving for retirement, 43% of them are claiming that they “cannot afford” to participate in supplementary schemes, underlining the importance that factors such as having adequate earnings during the working life can have upon retirement. This could potentially penalize women even more when planning and saving for retirement since, as indicated in the findings presented above, they are usually experiencing lower levels of income throughout the entire course of their lifetime.

Taking into further consideration the Insurance Europe survey's results presented by Ania (2020), we can report how 28% of the people interviewed claim that they "do not care" about saving for retirement. This result can either be a consequence of people's over-reliance on their country's welfare system, or this could entail a greater issue: the lack of a *savings ethic* (Glass & Kilpatrick, 1998).

In support of this statement, we can cite Brounen, Koedijk & Pownall (2016)⁴⁴, who proceed with an empirical analysis of 2011 data from the Dutch National Bank Household Survey (briefly, DHS); this survey involves over 2000 Dutch households involved in a six-part questionnaire collecting information about income, employment and pensions, quality of life, financial activities as well as psychological and other personal features⁴⁵. Their work examines the cross sectional variation in financial actions and people's responsibility, by applying both OLS and logit specifications on the dependent variable "willingness to save", which is connected to a survey question inherent the disposition of sacrificing current consumption in order to achieve higher levels of well-being in the future. On the other hand, the model considers as explanatory variables features including: age, upbringing, numeracy and education, self-efficacy and future orientation on household financial planning and savings behavior.

According to the results of their regressions, Brounen, Koedijk & Pownall (2016) are able to state that willingness to save varies across generations, with post war "baby-boomers" being more incline to sacrifice present consumption to achieve greater wellbeing in the latter stages of their lives, compared to those who were born before and after them.

The only exception to this are younger households, especially the ones with higher levels of financial literacy.

Therefore willingness to save and "savings ethic", are not constant over time, but rather unequally distributed and influenced by external factors.

In light of these findings, we can argue that this might be an issue that institutions can tackle by providing an adequate set of policymaking initiatives. This theme will be taken into further consideration in the next chapter of this dissertation.

Finally, Brounen, Koedijk & Pownall (2016) through their empirical analysis, provide additional evidence about the fact that the determinants leading individuals to underestimate

⁴⁴ Brounen D., Koedijk K. G., Pownall R. A.J., (2016), "Household financial planning and savings behavior", Journal of International Money and Finance, Volume 69, Pages 95-107, ISSN 0261-5606.

⁴⁵ Source: CentERdata, institute for data collection and research website at <https://www.centerdata.nl/en/projects-by-centerdata/dnb-household-survey-dhs>.

the need to save for retirement go beyond strictly economic causes, therefore indicating the need to consider other factors of behavioral and psychological nature: these leitmotifs will now be the focus of our discussion.

2.2. The Role of Biases: Common Factors to Men and Women.

An accurate analysis of the determinants of the gap in investment for retirement requires a specific focus on the sphere of behavioral finance and behavioral economics.

Behavioral finance is the discipline that considers finance and financial decision-making by looking at empirical data while also studying the results in the light of aspects like psychology (the study of behavior and mental process) and sociology (the study of human social behavior and groups)⁴⁶.

Behavioral finance is therefore based on the observations of reality and human behavior when uncertainty is involved, studying how emotions can influence decision-making and investments; then, in the case of observed systematic violations in the predicted outcomes of economic models, then behavioral finance intervenes by presenting alternative and integrative theories.

Behavioral finance relies upon the idea of “bounded rationality”, this concept is what distinguishes real life and actual outcomes from theoretical models and the concept of *homo economicus* -the perfectly rational human being- capable of considering all the possible outcomes and choosing the one that will yield the best possible result.

Hence, taking into account behavioral finance, the first determinant of under-saving for retirement is related to risk attitude, and specifically *risk aversion*, where a risk-averse individual is someone who prefers the expected value of a prospect, to the prospect itself or, in other words, a person who prefers a sure outcome rather than one characterized by a level of uncertainty and is therefore willing to sacrifice wealth for certainty, as defined by Ackert and Deaves (2010)⁴⁷.

A risk-averse individual experiences a concave utility function, as opposed to risk-neutral individuals who display linear utility functions indicating that, for the latter group of people,

⁴⁶ Source: Ricciardi, Simon, (2000), “What is behavioral finance?” Business, Education and technology Journal, Fall 2000.

⁴⁷ Ackert L. F., Deaves R. (2010), “Behavioral Finance: Psychology, Decision-Making, and Markets”, South-Western, Cengage Learning, chapter 1.

the only thing that matters when making financial decisions is the expected value of the investment and therefore are not affected by risk considerations.

Eventually, a risk-averse attitude leads individuals into taking sub-optimal decisions when it comes to investments, giving up profit due to the selection of a risk level that does not reflect the actual level of risk they could realistically take on, in direct contrast with one of the basic principles of finance that connects risk with returns.

Risk aversion is therefore particularly sensitive to the matter of under-saving for retirement since it could lead to investments undertaken with sub-optimal risk profiles that, especially in the early stages of saving, could lead to lower returns and therefore lower benefits once a person reaches retirement.

And all of this, according to Bernasek and Shwiff (2001)⁴⁸, is especially true for women.

The empirical estimation carried out by Bernasek and Shwiff is unique and rather interesting: it is in fact based on a dataset containing the results from a survey carried out during spring 2000 and involving only faculty employees from five different universities in the state of Colorado. The survey was designed specifically to collect information on household financial decision-making, while controlling for educational attainment.

These data were then employed in a regression based on a two-limit Tobit regression model, considering the variable “percentage of pension invested in stocks” as the dependent variable (this variable serves as a proxy for “risk level in the investment”, since stocks are considered assets with an inherently higher level of risk compared to bonds).

On a more practical sense, the equation is estimated in two stages: first by applying a dummy variable to gender in order to check whether gender interactions are present (therefore checking if gender has actually a significant effect on risk taking), and secondly by fully considering gender interactions.

Not only the results of this analysis confirm that risk-taking is a gendered phenomenon, but confirm the hypothesis that women are much more likely to take on low and average levels of risk in their investments compared to men, possibly inducing them to overlook the problem of saving and investing for retirement, exacerbating the gender gap in pensions. All of this, regardless of educational attainment.

In some cases, this higher risk aversion in women, according to Glass & Kilpatrick (1998), appears to be caused by the irrational fear that investing would make them lose money and causing them to fall into poverty, probably entailing a lack of financial knowledge.

⁴⁸ Bernasek A. & Shwiff S. (2001) “*Gender, Risk, and Retirement*”, *Journal of Economic Issues*, 35:2, 345-356.

Research shows that the effect of financial literacy is one of the biggest concerns when it comes to women and saving for retirement, and will therefore be investigated further in the next paragraphs.

Behavioral finance is thus extremely relevant since it helps with the task of detecting the presence of possible biases: these are irrational beliefs and preferences, based on wrongful assumptions, that stray investors away from optimal decisions.

In the realm of saving and investing for retirement, experts highlight the presence of several biases that can affect individuals when planning for the future.

The first biases that we can take into consideration are *procrastination* and *self-control*, as explained by O'Donoghue and Rabin (2008)⁴⁹ and by Laibson et al (1998)⁵⁰. These two biases can be considered together in the light of their many similarities and shared factors.

Laibson et al (1998) in their paper explain that, in general, people are aware that they should be saving more for retirement, however evidence shows that they are not taking the necessary actions to fulfill this desire, therefore bringing to light the presence of a mismatch between people's intentions and their concrete actions.

These findings are confirmed by the results of a numerical simulation model based on: the adoption of a mainstream consumption model, the inclusion of an illiquid DB pension plan and a partially illiquid defined contribution plan in the consumer's portfolio, and finally the assumption of hyperbolic discount functions in the consumers.

An hyperbolic discount function is a type of function which is often times used in behavioral economics to study time-inconsistent preferences, since it allows us to model preferences so that events in the short-term are discounted at a higher rate compared to events taking place in the future, and eventually resulting in choices that an hypothetical future-self would prefer not to have made.

In the specific context of saving for retirement, hyperbolic individuals tend to prefer immediate consumption instead of "sacrificing" part of their current expenditure to achieve higher benefits in the long-term.

⁴⁹ O'Donoghue T., Rabin M., (1998). "*Procrastination in Preparing for Retirement*", Behavioral Dimensions of Retirement Economics. Washington D.C.

⁵⁰ Laibson D., Repetto A., Tobacman J., Hall R., Gale W., & Akerlof, G. (1998) "*Self-Control and Saving for Retirement.*" Brookings Papers on Economic Activity, 1998(1), 91-196.

This tendency, as added by Laibson et al (1998), seems to be driven by factors such as: risk aversion, lack of patience, wealth and varying degrees of commitment.

Specifically, commitment appears to be greater in the case of defined contribution plans for hyperbolic individuals, highlighting how individuals tend to reach higher savings when presented with commitment devices; however, this seems to have lower effects in the case of households characterized by higher degrees of risk aversion.

On the other hand, patience seems to present heterogeneous levels throughout one's life cycle, so that people occasionally present more patience and therefore tend to save more, while in other moments they seem to behave impatiently choosing higher degrees of immediate consumption.

And finally, the tendency to prefer present consumption appears to be more elevated in agents who possess lower levels of wealth, perhaps indicating that people with lower incomes might not afford to save and/or invest in long-term financial products.

This preference towards instant gratification and instant consumption is one of the underlying factors that induce individuals into *procrastination*.

O'Donoghue and Rabin (2008) proceed to study the issue of procrastination in two consequent steps: first by introducing a model based on the hypothesis of present-biased preferences, so that individuals are assumed to give extra weight to immediate consumption therefore favoring present well-being rather than exerting self-control in order to achieve higher levels of well-being in a future moment. Secondly, they introduce a set of "calibration exercises": thanks to this device, they are able to assess the behavior of individuals with present-based preferences when confronted with investment decisions such as switching savings accounts and transferring assets.

Their result seem to suggest that procrastination in saving for retirement is indeed an influential factor and it is not only affected by self-control, but also by the level of naivety of individuals.

Procrastination can therefore present its effect in multiple stages of the accrual period: starting from the initial decision of setting up a retirement plan, but also during secondary stages when individuals are asked to make additional decisions about various adjustments of said retirement plan.

O'Donoghue and Rabin (2008) proved their theories by starting from the assumption that there could be two kinds of people/investors: sophisticated and naïve. While the former are deemed to be fully aware of their self-control problems and can potentially course-correct

their decisions, the latter, on the other hand, are unaware and therefore exposed to severe procrastination due to the combination of both present-based preferences and naïveté. Further evidence shows that people seem to lack attentiveness when saving for retirement, especially when they are supposed to make additional effort, hence it appears that the more important it is for a person to invest wisely, the less likely this will happen. Ackert and Deaves (2010), confirm these findings, pointing out that the bigger the decision, the higher the immediate cost will be, both in terms of effort and time and, as a result, the worse the procrastination.

Briefly summarizing the concepts expressed so far in this chapter, we can state that saving for retirement is a process requiring a high degree of effort for both men and women, since individuals are not just asked to give up current consumption to achieve a higher degree of financial well-being in a distant and therefore uncertain future, but they are also required to obtain and process the right information in order to enroll into a supplementary pension plan. All of this could be costly, and not merely in monetary terms, but especially when considering non-monetary costs such as time and effort. Moreover individuals cannot simply “set-up and forget about” their investments, they are also required to keep an eye on the performance as well as making decisions on possible changes in their investment strategies, for instance, in order to adjust for changes in risk profiles in connection to shifts in personal circumstances during the accumulation phase.

Moreover, by definition, future is uncertain. Therefore, undoubtedly, planning and saving for retirement is also based on a significant degree of uncertainty (both on the financial side as well as on a more personal and biometrical aspect) and, most importantly, it is characterized by a lack of immediate feedback, as stated by Fornero and Monticone (2010)⁵¹. This could be another factor adding up to the set of contributory causes which may result in continued postponements and sub-optimal decisions.

Failing to successfully perform appropriate periodic adjustments to one’s retirement savings account, according to Knoll (2011)⁵², can also be related to another bias: the *status quo bias*. This is defined by Ackert and Deaves (2010) as a preference for the current state or, in other words, resistance and aversion to change.

⁵¹ Fornero, E., & Monticone, C. (2010) “*Adequacy of Households’ Savings and Financial Literacy: Challenges from Pension Reforms*”, EUT Edizioni Università di Trieste.

⁵² Knoll M. A. Z., (2011), “*The Role of Behavioral Economics and Behavioral Decision Making in Americans’ Retirement Savings Decisions*”, U.S. Social Security Administration, Office of Retirement Policy, Society of Actuaries.

This is in turn caused by a comfort-seeking behavior so that, in fear of the possible regret that might follow an alteration of the status quo, people decide not to act.

However, as Ackert and Deaves (2010)⁵³ point out, delaying decisions is not always possible, and people are therefore required to take action and make decisions.

But, especially in the realm of investing and financial decisions, individuals might feel overwhelmed by the complexity and the amount of information they are presented with and that they need to process.

Thus, since people have comfort-seeking tendencies and they prefer situations in which information are easy to process, they will tend to find a way to simplify their decisions.

This is usually done by relying on “mental shortcuts” named *heuristics*. These are defined as methods and quick decision making rules in which individuals only consider a subset of the information at their disposal.

Behavioral finance studies have highlighted the presence of two types of heuristics: “type 1” are characterized by a non-cognitive nature and therefore are automatic and employed when people need to make quick decisions, while “type 2” heuristics are used in the context of effortful decisions where stakes are higher.

In the specific case of saving for retirement, as reported by Benartzi and Thaler (2007)⁵⁴ on the basis of multiple findings from US and UK data on retirement savings, people seem to be passive in their decisions. In fact, they appear to be not quick enough to enroll in advantageous plans, they tend rely on advice and be influenced by their peers (who are not necessarily experts in the field of investments and finance), in addition to scarce adjustments and changes, and finally they tend to put in place naïve diversification strategies.

Hence, the use of heuristics and the unawareness from investors who are using them, can lead them to make decisions that are affected by systematic errors, and that will eventually yield sub-optimal outcomes.

Another bias affecting the goodness of investment decisions and, as a direct consequence, also the goodness of investment decisions for retirement, is provided by Goda et al (2015)⁵⁵, and it can be identified in the *exponential-growth bias* (EGB in short). The findings on EGB are

⁵³ Ackert L. F., Deaves R. (2010), “*Behavioral Finance: Psychology, Decision-Making, and Markets*”, South-Western, Cengage Learning, Chapter 5, pages 83-87.

⁵⁴ Benartzi S. and Thaler R., (2007), “*Heuristics and Biases in Retirement Savings Behavior.*” *Journal of Economic Perspectives*, 21 (3): 81-104.

⁵⁵ Goda G. S., Levy M. R., Manchester C. F., Sojourner A., Tasoff J., (2015), “*The Role of Time Preferences and Exponential-Growth Bias in Retirement Savings*”, National Bureau of Economic Research, Working Paper 21482, August 2015.

provided on the basis of data coming from two online surveys designed to collect information on retirement savings and behavioral characteristics of respondents, administered to over 7'000 American adults between August 2014 and June 2015. Eventually, this lead them to obtain a sample of 2'317 adults in total.

This data was then applied to a “reduced-form” analysis, developing an equation with the aim of estimating the relationships intercurrent between behavioral variables and retirement savings.

The results of this model demonstrate that the EGB can exert its influence in long-term saving decisions: this appears to be a reasonable conclusion, since the EGB is indeed a bias affecting the understanding of compound interest rates.

This bias, in fact, leads individuals to misinterpret the concept of compounding therefore causing them to misjudge the actual growth of an investment: people affected by this type of bias will, instead of properly considering exponential growth, expect their investments to experience linear growth and therefore lower projected returns compared to the actual expected returns.

In the end, this false prospect of lower returns, might lead individuals to underestimate the expected returns from their investments, causing them to be less willing to give up more present consumption with the aim of saving more for their future.

Additional evidence presented by Goda et al (2015), suggests that the EGB is also linked to psychological traits such as overconfidence, hence the EGB might not be simply caused by a lack of understanding of concepts such as compounding and exponential growth, but it might also be due to endogenous factors and attitudes.

In this paragraph we investigated some of the biases and the resulting heuristics that might lead people, including women, who are planning or saving for retirement to procrastinate or not to act efficiently.

We will now focus on other psychological traits affecting enrollment in supplementary pensions or in the different stages of the investment.

2.3. Psychological Traits.

We will now consider the influence that women-specific psychological qualities can have on planning and saving for retirement.

The first psychological trait connected to long-term planning and investments that we are going to consider here is related to confidence or, in the specific case of women, lack of confidence.

Ackert and Deaves (2010) report that gender has indeed a role in investment decision-making, and that men usually tend to be more overconfident than women. In addition to the considerations presented above about the EGB, the work from Goda et al (2015) presents evidence linking the EGB to several different factors, including overconfidence.

In particular, overconfidence seems to emphasize the implications of the EGB: overconfident people are in fact more likely to neglect tools and advice in the realm of retirement savings, leading them to wrongful exponential estimation and in turn this will negatively affect retirement savings.

At this point, one might argue that the lack of overconfidence in women would potentially play a positive role in saving and planning for their retirement, however other studies report that women could experience not just lack of overconfidence, but worse: they could be experiencing *lack of confidence*, especially in the realm of financial decision-making.

In this respect Peat (2018)⁵⁶, on the basis of surveys and quarterly reports from Scottish Friendly's Disposable Income Index in association with the UK-based Social Market Foundation, presents additional evidence connecting the lack of confidence experienced by women to lower participation in investments. Furthermore, the article presents an additional confirmation about the fact that men are generally more likely to save into a pension compared to women⁵⁷.

Another facet of confidence presented by Glass & Kilpatrick (1998), is *locus of control*: a concept developed by the American psychologist Julian B. Rotter back in 1954.

As explained by Van Liew(2013)⁵⁸, locus of control can be defined as the tendency that anyone of us has to perceive control, or its absence, in different contexts of life.

Locus of control can be differentiated into "internal" or "external", where people with internal locus of control believe that they are the ones in charge and in control of their own lives, while

⁵⁶ Peat J., (2015), "Women could be losing money because of lack of confidence to invest and save, says survey", *The Independent*, Sunday 25 March 2018. (source: <https://www.independent.co.uk/money/spend-save/money-women-disposable-income-index-latest-men-stocks-and-shares-isas-saving-investing-banking-a8273076.html>)

⁵⁷ As cited in the article from The Independent, women seem to prioritize saving with the purposes of buying a house or affording other expenses, such as the ones connected to holidays. This might imply that women present stronger present-oriented preferences in consumption, however there is not enough literature that support this hypothesis.

⁵⁸ Van Liew J.R. (2013) "Locus of Control." In: Gellman M.D., Turner J.R. (eds) *Encyclopedia of Behavioral Medicine*. Springer, New York.

people with external locus of control are inclined to believe that life events are influenced by external factors that they cannot control.

In a financial context, people with internal locus of control tend to be more confident and rely more on themselves when making financial decisions, while individuals with external locus of control tend to be more dependent on external advice. Hence, as Glass & Kilpatrick (1998) note, women are more prone to have external locus of control and therefore could experience more difficulties when it comes to trusting themselves and have confidence in their abilities when planning and saving for retirement.

Additional psychological issues that could swerve women away from planning and saving adequately for retirement find their roots in *customs (environment), early-age education and socialization*: this is how families and society transfer values, beliefs and norms to children and therefore shape an individual's mindset and behavior, all of this is particularly important since it will eventually have a significant influence in a person's adult life.

Most notably, Glass & Kilpatrick (1998) point out that, even though the tendency of role definition has undergone significant changes in the last decades, gender-role socialization can still have an important effect on how women perceive their role in society: prompting them into choosing "nurturant occupations" that are usually connected with lower wages, causing the aforementioned income inequalities to grow, as well as driving women towards the role of primary caretakers in the family and contributing to the also aforementioned interruptions in the career paths of women as well as the phenomenon of job segregation by gender.

Associated to this sphere, we also have the issue of *role-definition*. According to this, women tend grow up believing that they will financially be taken care of by men, and therefore are less incline to take their own financial matters, as well as the ones of the family, in their hands, causing them to have less interest and acquire less knowledge of financial matters. Arguably, this would induce them to participate less in supplementary pension arrangements.

This is in line with what was previously stated in Chapter 1, about marriage history being one of the factors influencing poverty rates among women, with divorcees and widowed being more likely to be poor especially at older ages.

2.4. The Impact of Financial Literacy.

In the last pages we mentioned a few times the word “knowledge” connected to financial matters and its influence in financial decision-making, and so now we will proceed to examine the impact of financial literacy on women’s choices of saving and planning for retirement.

First of all we need to define financial literacy, and then we need to give the reader a sense of the current levels of financial literacy.

We can do so by citing Valant (2015)⁵⁹ and the OECD, who define financial literacy as the set of skills, knowledge, behavior and attitude influencing the financial decision-making process of individuals, all these elements are deemed fundamental in the field of personal finance.

The OECD also includes in their definition elements such as: awareness of (personal) financial products, as well as financial resilience and financial stress, in order to provide additional information of financial education and financial inclusion.

Findings from the OECD Financial Literacy Survey⁶⁰, carried out in 26 different countries in Asia, Europe and Latin America, show that out of a maximum financial literacy score fixed at 21⁶¹, the sample on average scored 12.7, highlighting the presence of a substantial lack of financial knowledge.

The scores are reported to vary across countries and economies, with the majority scoring between 12 and 15, with a maximum score of 14.8 recorded in Hong Kong while the minimum was recorded by Italy and it is equal to 11.1 .

Moreover, financial literacy seems to be lower in women as well as in younger cohorts of the population (aged 18 to 29), it is also lower for those who are less “tech-savvy” and for those who report little availability of savings.

With respect to Europe, according to Batsaikhan and Demertzis (2018)⁶², whose paper revolves around the analysis of Standard & Poor’s data on financial literacy acquired through a survey involving more than 150’000 adults in 140 countries worldwide; it seems like the EU (together with US and other non-EU advanced countries) is experiencing financial literacy scores that are, on average, higher than in the rest of the world, but despite this positive

⁵⁹ Valant J., (2015), *“Improving the financial literacy of European consumers”*, European Parliamentary Research Service, Briefing, May 2015.

⁶⁰ OECD (2020), *“OECD/INFE 2020 International Survey of Adult Financial Literacy”*.

⁶¹ A score of financial literacy of 21, according to OECD, means that *«an individual has acquired a basic level of understanding of financial concepts and applies some prudent principles in their financial dealings»*.

⁶² Batsaikhan U., Demertzis M., (2018) *“Financial literacy and inclusive growth in the European Union”*. Bruegel Policy Contribution Issue n°08 | May 2018. [Policy Paper].

statistic, the lower levels of financial literacy recorded in women and younger cohorts of the population still stand.

With respect to one of the main themes of this paper, namely planning and saving for retirement, Batsaikhan and Demertzis (2018) also provide us with proof of positive correlation between literacy scores and saving behavior.

Further evidence that links participation in financial matters and financial literacy is presented in a model implemented by Jappelli and Lapadula (2015)⁶³ on the basis of SHARE and SHARELIFE data from 2010.

Specifically the SHARELIFE dataset presents the results of a retrospective survey centered on the life history for over 25`000 individuals aged 50 and over in 13 European countries, while the SHARE (Survey of Health, Ageing and Retirement in Europe) database provides (present) insights on health and socio-economic living conditions of European individuals aged 50+⁶⁴. Within the datasets considered in this study, financial literacy is measured by combining the responses of four different questions included in the SHARE survey: three of them explore the level of mathematical competence, deemed by Jappelli and Lapadula (2015) as a necessary condition for sound financial skills, while the fourth question relates to the understanding of interest rates and compounding. This measure of financial literacy is then implemented in the context of an OLS regression with other variables such as replacement rate, level of stockholding and presence other risky assets, serving as explanatory variables.

Thanks to this analysis, Jappelli and Lapadula's (2015) most important finding in the light of saving for retirement is the fact that, by introducing a generous security system in the framework of the model (where the generosity of the system is specified within the model by the data on replacement rates), they observe a reduction in people's incentives to save and to acquire more financial knowledge.

Another interesting aspect of the paper by Jappelli and Lapadula (2015), is that it appears that financial literacy is not strictly correlated to years of schooling, giving life to two different considerations: first of all financial literacy can be viewed as a form of "human capital" since it is an intangible asset composed of the set of knowledge, skills and experience possessed by individuals and the population as a whole; while the second consideration is the fact that an

⁶³ Jappelli, T., & Padula M. (2015). "Investment in financial literacy, social security, and portfolio choice". *Journal of Pension Economics and Finance*, 14(4), 369-411.

⁶⁴ Source: SHARE - Survey of Health, Ageing and Retirement in Europe website (link: <http://www.share-project.org/home0.html>).

overall improvement of financial literacy could possibly be useful for the population in its entirety, even for those with longer academic/school careers.

Having underlined some interesting aspects of financial literacy, when it comes to financial planning and saving for the generality of the population, now we move on to consider the specific case of women.

Financial literacy (or, to put it best, the lack thereof) can in fact be one of the determinants of the gender gap in supplementary pensions.

This statement is supported by two sets of evidence. The first is presented by Lusardi and Mitchell (2008)⁶⁵ who provide us with an analysis based on Module number 8 of the 2004 Health and Retirement Study carried out by the University of Michigan, related to American households and their saving decisions⁶⁶; the study considers this specific module since it includes responses on financial literacy and retirement planning from a sample of 785 women responders.

The relationship between planning and literacy is subsequently analyzed through a Probit analysis: as a result, the model displays a strong positive association between financial literacy and retirement planning, also demonstrating that it is indeed literacy the factor triggering planning.

The second set of evidence supporting the thesis we previously stated, is provided by Cupák et al (2018)⁶⁷ based on the analysis of the 2015 OECD/INFE (International Network for Financial Education) survey covering the topics of financial literacy and competences in the adult population⁶⁸. Despite the survey being carried out in 30 countries worldwide, the analysis considers exclusively data on 12'250 observations from the 12 countries that made them available for research purposes.

Financial literacy is then estimated using a wide set of explanatory variables exploring individual and socio-economic traits, including: age, household composition, education, employment situation. In practice, the difference in financial literacy between men and

⁶⁵ Lusardi A. & Mitchell O., 2008. "*Planning and Financial Literacy: How Do Women Fare?*", American Economic Review, American Economic Association, vol. 98(2), pages 413-17, May 2008.

⁶⁶ Source: HRS – Health and Retirement Study (link: <https://hrs.isr.umich.edu/about>).

⁶⁷ Cupák A., Fessler P., Schneebaum A., Silgoner M., (2018), "*Decomposing gender gaps in financial literacy: New international evidence*", Economics Letters, Volume 168, Pages 102-106.

⁶⁸ Source: OECD/INFE International Survey of Adult Financial Literacy Competencies (link: <https://www.oecd.org/pensions/oecd-infe-survey-adult-financial-literacy-competencies.htm>).

women is decomposed through the implementation of a modified Blinder – Oaxaca method, in order to better comprehend the way financial literacy and gender affect individuals.

The results presented by Cupák et al (2018) in their research seem to indicate that, in most European countries, there is a significant gap in financial literacy between men and women. Specifically, this gap seems to be ranging from a fairly low value of 3%, recorded in East-European countries such as Russia and Croatia, to a considerably higher value of 22% in the Netherlands.

Cupák et al (2018) also elaborate more on these findings, highlighting how these regional differences could be based on social norms, corroborating the aforementioned topic of how environment and customs can influence the sphere of financial knowledge and attitude of women.

Notably, they find that lower gaps in financial literacy can be observed in some Eastern-European countries, suggesting that this could be a residual effect of communism, since in that type of political and social regime, women were expected to have a more active role in the economic and decisional aspects of their family and working life.

Moreover Cupák et al (2018) denote how higher levels of GDPs do not automatically call for lower gender gaps in financial literacy: therefore the commitment towards the improvement of financial literacy relates to each and every country, independently of its wealth.

Alternatively, Bucher-Koenen et al (2021)⁶⁹ present a very interesting set of evidence: apparently women *«might know more than they think they know»*.

In fact, according to the results of their latent class model (LCM), estimated in order to assess the “true” level of financial literacy in their sample containing data on financial literacy provided by the DNB (the Dutch National Bank) Household Survey, part of the gender gap in financial literacy can be ascribable to the effect of under-confidence in women.

Moreover, it appears that stock market participation is linked to both financial literacy and confidence, hence women who experience lower levels of financial literacy together with lower levels of confidence, are less likely to invest and take part in the stock market.

In their paper, Bucher-Koenen et al (2021) also point out how confidence can likewise play an important part in the accumulation of financial knowledge and human capital, supporting the thesis that financial knowledge, alongside some psychological factors, can lead women into making sub-optimal long-term financial decisions that could potentially have negative

⁶⁹ Bucher-Koenen T., Alessie R., Lusardi A., van Rooij M., (2021), “*Fearless Woman: Financial Literacy and Stock Market Participation*”, ZEW Discussion Papers No. 21-015, Working Paper, March 2021.

consequences on their financial well-being in the long-term, also given women's longer life expectancy compared to men.

Further evidence that connects confidence, or self-esteem, to financial education and financial literacy is presented by Glass & Kilpatrick (1998) who, citing in turn Sadker and Sadker (1994), assert that self-esteem can influence academic achievements too, in particular when considering scientific disciplines such as mathematics. This evidence could also be easily tracked back to financial literacy, since it could constitute a reason why women seem to underperform in financial literacy.

On a concluding note, regarding the theme of financial literacy, Bannier and Schwarz (2018)⁷⁰ present interesting results highlighting how financial literacy is positively associated with financial wealth for both men and women.

Their analysis is based on the study of cross-sectional data from the German SAVE panel (*Sparen und AltersVersorgE in Deutschland*), a survey developed to the Munich Center of Economics back in 2001 with the intent of studying households' financial behavior and financial literacy, particularly considering the effects on saving and old-age provision⁷¹.

While the survey has been conducted on an annual basis from 2005 to 2013, the paper we are considering here analyzes the results of the 2009 wave of the SAVE survey by estimating a standard Instrumental Variables (IV) Two-Stages Least Squares (2SLS) model.

Additional results from Bannier and Schwarz (2018), also reveal that an increase in financial literacy has a similar effects for both men and women when they present lower levels of education, however, women with higher levels of education seem to benefit more from an increase in the level of financial education compared to men with the same level of higher education.

In conclusion, the extensive literature review presented in this chapter, provides us with several reasons why women tend to plan and save less for retirement.

Starting from the lack of a savings-ethic to biases such as: procrastination, self-control, status quo, exponential-growth bias and the effect of heuristics in financial decision-making, that can be common causes for under-saving and under-investment for retirement in both men and

⁷⁰ Bannier C., Schwarz M., (2018) "*Gender- and education-related effects of financial literacy and confidence on financial wealth*", Journal of Economic Psychology, Volume 67, Pages 66-86, ISSN 0167-4870.

⁷¹ Source: Max Planck Institute for Social Law and Social Policy – SAVE (2001-2013) (link: <https://www.mpisoc.mpg.de/en/social-policy-mea/research/save-2001-2013/>).

women, we also highlighted the possible women-specific determinants of the gender gap in supplementary pensions.

These determinants can be economic in their nature, for instance considering the effects of income inequalities and the consequently greater difficulties when it comes to affording to save for retirement, or the effects stemming from women's higher propensity in having interrupted career paths and over-relying on tax-financed pensions, as well as causes characterized by an intrinsic psychological nature, such as the higher levels of risk-aversion recorded in women, in addition to lack of confidence and the influence of an external locus of control.

Additionally we also provided some determinants, such as role-definition and early-age education, that can be attributed to cultural and environmental forces that, starting from childhood, can influence and shape women's mindsets and personalities.

In the ending section of this chapter, we then shifted the focus of the discussion to financial literacy and its importance in market participation, saving and planning for retirement, emphasizing the presence of a significant gender-gap also in this important element of personal basic financial knowledge, as well as highlighting its connection to both environmental and psychological aspects of life.

We will now proceed to present some ideas and some initiatives undertaken by policy-makers in order to act on these determinants, with the intent of closing the gender-gap in planning, increase retirement savings and investments in supplementary pension plans.

CHAPTER 3

Possible Solutions and Policy-Making Initiatives

With respect to the drivers of under-saving and under-investment lying underneath the gender gap in supplementary pension identified in the previous chapter, we will now consider several possible solutions to these problems as well as providing some examples of effective best practices undertaken by countries and other public and private entities in order to bridge the gap and help the financial well-being of individuals, and in particular women, in the latter stages of their lives.

3.1. Debiasing Through the Improvement of Financial Literacy.

While it is difficult to pinpoint possible solutions to some of the psychological and environmental determinants of the gender gap in planning and saving for retirement, given the fact that those are aspects that belong to the individual sphere and they find their roots in different upbringings and they may also vary among people, even within the same country; it is also true that some other factors, such as biases, could be eliminated for instance through the improvement of education and awareness.

The process of debiasing, according to Ackert and Deaves (2010)⁷², is based on four different steps: awareness, motivation, magnitude and ability to eliminate the bias.

In the first stage, a “biased” individual should at some point become aware of the presence of irrational beliefs and preferences influencing his or her decision-making process. This realization can either be “internal”, or it can be induced by external forces such as books, researches, media, but also people with knowledge in behavioral finance.

The second step to debiasing is motivation. Specifically, the biased person must be determined to correct his or her behavior and, in order to successfully eliminate the bias, this person should also explore to which extent amounts the magnitude of her or his bias.

And then, finally, the person needs to exert mental control in order to be able to effectively remove the bias.

⁷² Ackert L. F., Deaves R. (2010), “*Behavioral Finance: Psychology, Decision-Making, and Markets*”. South-Western, Cengage Learning, Chapter 18, pages 319-326.

In a more practical sense, an educator or any other “de-biaser”, can intervene through actions like: warning about the presence of biases, describing said biases and explaining potential effects, provide feedback and educate through practice.

Therefore the first step to debiasing, and arguably the most important one, is raising awareness on biases and their effects; this can only be done with education, and education in this case is intrinsically connected to improvements of financial literacy that, as discussed in the last paragraph of the previous chapter of this thesis, it is not just a set of financial tools and skills, but it also relates to elements such as general knowledge and financial behavior.

An increase in financial literacy could, for example, provide people with the means allowing them to have a better understanding of exponential growth and therefore possibly eliminating phenomena like the exponential-growth bias.

Other biases, such as self-control and procrastination could be brought to the attention of “biased” people by presenting them with findings on demographic trends, retirement savings, and their importance to financial well-being in the old-age; while the status-quo bias could be eliminated by providing individuals, since a young age, with the right financial tools and financial knowledge in order to reduce the costs (economic and not) of taking action.

It is important to start from a young age and then continuing all through adulthood and therefore the accumulation phase of individuals since, according to Lusardi and Mitchell (2014)⁷³, higher levels of financial literacy are indeed correlated to higher levels of accumulation and therefore higher levels of wealth during retirement.

Moreover, individuals with higher levels of financial literacy, seem to be well informed on pension systems and their dynamics, they usually diversify their portfolios to a greater extent and, in aggregate, they are also likely to pay fewer investment fees: this means achieving better performances with lower costs.

Given the different backgrounds, education levels and the consequently varying degrees of financial literacy in the population, the best approach is to tailor the programs to specific communities, as suggested by Batsaikhan and Demertzis (2018): starting from young people, allowing them to develop a sound savings-ethic, moving then to people entering the labour market in order to raise awareness on the importance of acting early when planning for retirement, to finally women since they are the ones who are experiencing the lower levels of

⁷³ Lusardi A., Mitchell O. S., (2014), “*The Economic Importance of Financial Literacy: Theory and Evidence*”, Journal of Economic Literature 2014, 52(1), 5–44.

financial literacy and since they are also the ones who seem to benefit more from improvements in their financial literacy levels, both in terms of confidence during financial decision-making processes and in terms of higher financial wellbeing.

These suggestions are the results of an analysis on Eurostat and Standard & Poor's data from the Global FinLit Survey⁷⁴, involving over 150.000 adults with interviews being carried out in 148 nations. The questions asked in this survey were mostly focused on four key-notions: basic numeracy, risk diversification, compounding and inflation.

Additional findings on the importance of sound basic financial knowledge presented by Batsaikhan and Demertzis (2018) are based on the analysis of European financial literacy scores as identified by S&P and their association with different macroeconomic variables. From this analysis they observe that poverty rates, social exclusion and severe material deprivation rates present a negative association with financial literacy levels. Moreover, EU financial literacy scores also present a negative association with inequality levels, therefore suggesting that improvements in financial literacy scores, alongside de-biasing objectives, could also serve the purpose of poverty-reduction and achieving inclusive growth goals, as envisioned in the sustainable growth agendas presented in Chapter 1 of this dissertation.

Having highlighted the importance and the implications of financial literacy one could therefore argue that it is of paramount importance for a country's economy to implement a series of programs to improve the level of financial literacy.

In this respect, a successful example of improvement in financial literacy is represented by Austria. As reported by Fessler et al (2020)⁷⁵, data have shown that in the years between 2014 and 2019 Austria has experienced a significant increase in the levels of financial literacy for both men and women and, despite the persistence of a gender gap, the greater increase in financial literacy has been observed in women.

The first reason why Austria sets a good example is that financial education is not only provided by public authorities but also by private stakeholders. As reported by a dedicated OECD (2021) paper⁷⁶, the public authorities involved in the creation and distribution of financial literacy programs include five federal ministries, the central bank, the financial market authority and the agency for environment, all of them acting in cooperation with 31

⁷⁴ Source: <https://gflec.org/initiatives/sp-global-finlit-survey/>

⁷⁵ Fessler P., Jelovsek M., Silgoner M., (2020), "Financial literacy in Austria – focus on millennials", Oesterreichische Nationalbank (OeNB), Foreign Research Division, Monetary Policy & The Economy Q3/20.

⁷⁶ OECD (2021), "Financial Literacy in Austria: Relevance, evidence and provision".

different private and not-for-profit organizations, some with a direct link to the financial sector while others have simply an interest in financial education.

An additional reason why Austria could serve as an example for other countries, is the fact that the initiatives are put in place by targeting several groups of people, in accordance to the evidence and suggestions mentioned above.

For instance, according to Fessler et al (2020), financial literacy seems to be pretty much equally distributed across the different generations, however significant lower scores have been recorded in the 15-28 age group. Therefore, in accordance to these findings, the OECD (2021) report on financial literacy in Austria states that most initiatives (58, to be precise) are in fact targeted to young people: these are usually presented to kids and teenagers both in primary and secondary schools, as well as outside the school system, with most of the programs dealing with topics such as money management and the introduction to basic financial products.

Unlike some other European countries, financial literacy in Austria is not mandatory in schools, however the Austrian government is planning on its introduction in the school curricula by 2023.

Then, it is also worth to mention that over 20 initiatives are targeted to the general population, with at least 11 of them considering also gender differences and, in addition, 2 initiatives which are entirely dedicated to women, with the aim of improving national financial literacy and bridging the existing gap between men and women, as well as influencing the younger generations into the creation of a wider savings-culture.

In order to help people to raise their awareness on the biases that could be affecting them, and therefore helping them to make the first steps into the debiasing process, it is clear that financial literacy programs and other initiatives should also take into consideration aspects regarding the sphere of behavioral finance.

However, in order to tackle the specific problem of under-planning and under-saving for retirement, one could argue that the best practice in this case would idealistically be a financial literacy initiative targeted to people during their working age, providing them with basic information on the pension system in their country, highlighting the need, the potential benefits and the feature of supplementary pension products.

Such initiative was put in place by the Swedbank, as reported by Habschick, Seidl & Evers (2007)⁷⁷, and was put into practice by setting up meetings held at local banks as well as some other conferences that were held directly at the work places, therefore reaching a broader audience.

This type of initiative seems particularly interesting also because in Sweden financial literacy is compulsory and integrated in the school curricula, as reported by the EBF (2014)⁷⁸, and this dualism could be useful in order to integrate the teachings on money management and saving culture provided in schools, with the knowledge of the pension system once people approach the labour market and can effectively understand its dynamics and therefore start to properly plan and save for their retirement.

3.2. The Importance of Considering Women's Specific Needs.

Among the reasons behind the gender gap in complementary pensions, we also considered economic determinants connected to under-saving and under-investing for retirement such as the evidence of lower earnings in women and, consequently, the presence of a gender pay gap.

Hence, one of the keys to bridge the gender gap in supplementary pension arrangements is definitely connected to the elimination of this disparity. With this very intent, the EU has put in place several initiatives, the most important one is the "2017-2019 EU Action Plan"⁷⁹. This plan comprises eight different "actions", aimed at reducing the gap by looking into different angles: first of all by ensuring the enforcement of Article 157 of the TFEU on equal pay, the Directive 2006/54/EC on the implementation of principles of equal opportunity and equal treatment of men and women in employment and occupation, and the 2014 Recommendation on Pay Transparency. Secondly by addressing the problem of women's labour market participation and job segregation by gender, both within sectors but also in a "vertical" sense, stimulating the presence of women in management and directorial positions. The fourth action is then focused on reducing the presence of the so-called "motherhood penalties", namely those systematic disadvantages encountered by working mothers in terms

⁷⁷ Habschick M., Seidl B., Evers Dr. J., (2007), „*Survey of Financial Literacy Schemes in the EU27*“, Evers Jung Financial Services Research and Consulting, VT Markt/2006/26H - Final Report, Hamburg, November 2007.

⁷⁸ European Banking Federation, (2014), "*Financial Literacy Playbook for Europe*".

⁷⁹ European Commission, (2017) "*EU Action Plan 2017-2019 Tackling the gender pay gap*", Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee.

of pay gap, daily experience at the work place, job search and hiring experiences, compared to other childless women.

Then the fifth action aims at the valorization of women’s skills and efforts through equal opportunity policies, while finally the sixth and seventh actions are respectively dedicated to the search of information about the existing gap, its drivers and its implications, and to raising awareness and provide information on the gender gap to the general public.

The goals expressed in these actions are embodied in different types of EU legal acts, stemming from directives (binding legislative acts presenting a goal towards which EU countries must strive towards by adapting their country-specific laws) to opinions and recommendations (non-binding instruments set up by EU institutions in order to suggest a line or give opinions on specific matters)⁸⁰.

In order to assess the effectiveness of these measures, here below we present figures on the gender pay gap.

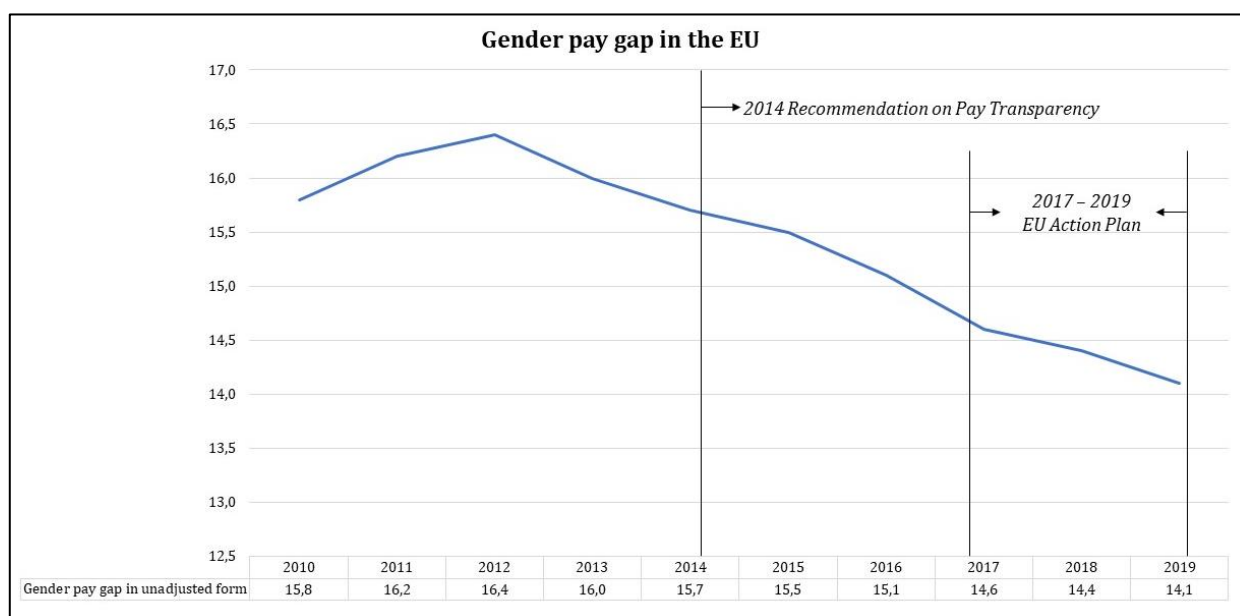


Table 7 - Gender pay gap in unadjusted form, EU 27 countries (from 2020).
Own elaboration from Eurostat data (source: <https://ec.europa.eu/eurostat/databrowser/view/tesem180/default/table?lang=en>).

According to Eurostat data presented here at **Table 7**, the measures adopted by the EU institutions and the Member States seem to be have a positive effect on the overall level of the gender pay gap, in fact, as presented in the graph we see a clear constant downward trend.

⁸⁰ Armour J., Awrey D., Davies P., Enriques L., Gordon J.N., Mayer C., & Payne J., (2016), "Principles of Financial Regulation", Oxford University Press. Book.

Among the seven actions put in place in order to bridge the gender pay gap, we also mentioned that one of them, namely “action 4”, is dedicated to the elimination of “motherhood penalties”, which, as defined by COM(2017) 678 final, is the ensemble of reduced earnings, higher rates of part-time work and career gaps contributing to the gender pay gap.

So, in order to tackle the problem of women’s interrupted career paths the EU, back in April 2017, approved Directive 2017/0085(COD) implementing Council directive 2010/18/EU (known as *Parental Leave Directive*), specifically targeted towards the improvement of work-life balance for parents and other caregivers.

The newest piece of legislation, as explained by communication COM(2017) 252, maintains the main elements of the 2010 directive, which includes the right for a 4-months long parental leave for each parent in order to take care of their child (until the eight years of age), while increasing entitlements to payments and greater flexibility for those who decide to take a parental leave.

One can also point out that, these measures can serve a wider purpose: removing motherhood penalties and increasing the flexibility in parental leaves could potentially lead those women, who are currently postponing or not actively considering motherhood due to a perceived difficulty in balancing work-life and family-life, to expand their families. Arguably this could have a positive impact on fertility rates and, in turn, on future old-age-dependency ratios and demographic trends.

Moreover, in order to improve the sharing of caring responsibilities between men and women, the 2017 Directive introduces the idea of an entitlement to *paternal* leave, which, alongside the introduction of the right to request flexible working arrangements for parents with children up to 12 years old (or for other workers with other caring responsibilities), would allow women to have an easier time balancing their work and their family life, potentially reducing the propensity to interrupt their careers’ path and possibly lightening the impact that role-definition has on mindsets and women’s lives.

However, the actions undertaken through the implementation of these EU Directives, still might not be enough to ensure the wellbeing of both mothers and children; in fact, research by Strang and Broeks (2011)⁸¹ reports that the right balance between mothers and newborns’ needs and women’s participation in labour market can be found in a six-months long maternity leave.

⁸¹ Strang L., Broeks M., (2011), “*Maternity leave policies. Trade-offs between labour market demands and health benefits for children*”, RAND Europe.

In addition to this, Strang and Broeks (2011) highlight the need of harmonizing European policies as well as the necessity to put in place company policies providing access to services such as daycare facilities.

Similar feasible initiatives, as presented in ILO (2011)'s Paper on maternity protection and work-life reconciliation⁸², could be the provision of extended parental leaves as well as the enhancement of the capacity of public child-care and after-school care institutions, in order to achieve further cooperation between the private and the public sector when it comes to meeting the needs of women as mothers and as active members in the workforce.

However it is clear that the involvement of the public sector in these types of provisions implies higher levels of public spending: therefore policy-makers are asked to achieve a tradeoff between women and children's protection, well-being at old age and fiscal sustainability.

Furthermore, ILO's paper, highlights how the effectiveness of the measures dedicated to sharing care responsibilities between men and women seem to present significant variations among different countries, as a result of the way in which European Directives are implemented within the context of each country's legislation, in addition to further social and cultural factors.

And finally, as explained by communication COM(2017) 252, it is necessary to implement some non-legislative actions with the aim to inform workers, especially mothers-to-be or women who are in need of parental leave, on their rights which are based upon the existence of several Directives specifically designed to try and offer them protection against firing and unfavorable treatment in the workplace, consolidating the connection between non-discrimination policies and maternity protection.

3.3. The Rise of a New Balance Between Public and Private Pension Provisions.

As a consequence of low fertility rates and increased longevity, the old-age dependency ratio is also growing and this, especially in the aftermath of the 2008 crisis, is posing severe threats on the long-term sustainability of public pension systems across the Union.

⁸² ILO, (2011), "*Maternity protection in the context of work-life reconciliation for men and women*", United Nations development Programme and International Labour Organization, December 2011.

Since then, according to Carone et al (2016)⁸³, most EU countries have started addressing these sustainability problems through several reforms of the pension systems, striving to maintain a an satisfactory balance between fiscal sustainability and adequate pension incomes.

In this regard, the most common measures adopted through pension-systems' reforms are related to raising retirement ages. This, according to Fornero and Monticone (2010), is not happening exclusively by means of an increase in the traditional mandatory retirement age, but rather through the provision of flexible arrangements for retirement in accordance to gender and working categories, in light of their different traits, different needs and occurrences during their working-years.

For instance, as stated by Carone et al (2016), in a more practical sense these measures can essentially consist in: restrictions of pathways to early retirement (adopted in countries such as Spain, France, Austria, the Netherlands, Sweden and Finland), increases in the required number of years of contribution to receive a full benefit, introduction of penalties and bonuses on people who decide to opt for retirement before or after a specified retirement age.

In addition to the increase of retirement age, one the most prominent measures in recent pension reforms is related to the reduction of public pension benefits, hence the trust towards second and third pillar pension arrangements.

These types of measures, in fact, have a duplicitous implication: first of all, they lead to a straightforward reduction of public spending and secondly, reducing private pension benefits and therefore the "generosity" should also increase the level of aggregate savings since, as stated in the previous chapters, the generosity of pension systems in general is one of the elements discouraging people from enrolling in supplementary pension plans.

However, in accordance to Amaglobeli et al (2019)⁸⁴, these reforms need to be carefully planned in order to avoid potential destabilizations of a country's welfare system, causing future retirees to fall into poverty in their old age. This can only be done with the introduction of adequate antipoverty programs as well as by boosting private saving through the active promotion of a shift from public pension provisions to personal pensions.

⁸³ Carone G., Eckefeldt P., Giamboni L., Laine V. and Pamies Sumner S., (2016), "*Pension Reforms in the EU since the Early 2000's: Achievements and Challenges Ahead*", European Commission, Discussion Paper 042, December 2016.

⁸⁴ Amaglobeli D., Chai H., Dabla-Norris E., Dybczak K., Soto M. & Tieman A. (2019), "*The Future of Saving: The Role of Pension System Design in an Aging World.*", Staff Discussion Notes. 19. 1.

Since, as stated in the Pension Adequacy Report (2018), these are actual financial products and in order to encourage people to rely on them, it is essential to provide them with: sound and resilient banking sectors, reduction of costs and improvements in people's trust, as well as adequate levels of financial knowledge so that people can be fully aware of which options they have and how to choose among them (Fornero and Monticone, 2010).

3.4. Fiscal Incentives and Regulatory Actions: the Introduction of a Single Market for Private Pension Plans.

In the light of a "less generous" state pension system, those individuals who wish to maintain upon retirement similar standards of living compared to the ones they had during their working-years, they need to rely more heavily on other sources of income.

According to Börsch-Supan et al (2008)⁸⁵, one of the main reform trends is the shift towards supplementary pension schemes. The coverage of these types of provision, as mentioned in the first Chapter of this dissertation, varies a great deal among countries and different demographics, thus this is an important factor that must be considered in pension reforms.

In this context, in addition to financial literacy and awareness programs, arguably there is a need for other initiatives that could potentially have beneficial effects on take-up rates, especially in lower- and middle-income groups.

All countries already offer fiscal incentives in connection to personal pensions, however in order for these tax benefits to be truly effective on take-up rates, they must be able to provide an adequate and tangible advantage compared to other forms of investment.

As mentioned in the Pension Adequacy Report (2018), a potential example in this regard is represented by the case of Germany, since it provides two different types of financial incentives to encourage people to save for retirement: first of all in the form of tax incentives and, secondly with the provision of direct non-tax incentives based on co-payments with the specific purpose of increasing the attractiveness of personal pension savings also in the demographic groups with lower and middle incomes.

⁸⁵ Börsch-Supan A., Brugiavini A., Jürges H., Kapteyn A., Mackenbach J., Siegrist J., & Weber G. (2008). *First results from the Survey of Health, Ageing and Retirement in Europe (2004-2007). Starting the longitudinal dimension.*, Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

Chapter 6 – "Work and Retirement", Paragraph 6.3 - "Public, occupational and Individual Pension Coverage", pages 222-230.

According to OECD (2019)⁸⁶, the most effective tax incentives for retirement savings are the ones deviating from the so called “TTE” regimen, which stands for “taxed-taxed-exempt”: this is a conventional form of taxation for savings and other types of earnings. In this case the contributions are taxed since they stem from after-tax earnings, then returns on the investments are also taxed, while withdrawals, or benefits in the specific case of pensions, are exempted.

There are still OECD countries providing a TTE tax treatment for retirement savings, these countries include Australia, New Zealand and Turkey.

However now, the majority of countries, including Germany, apply a EET (exempt-exempt-taxed) regimen: in this case, contributions and returns are tax-exempt, while benefits are subject to taxation upon withdrawal.

Of course other tax regimes (for example EEE, TET, TEE and ETT) are possible and applied in several other countries.

Moreover tax rates vary across countries and according to the specifics of the investment: duration, types of assets, income of the plan-holder.

Let us turn our attention back to the example of Germany. As reported by OECD’s 2019 paper on financial incentives for funded private pension plans, private voluntary pensions in this country can either be occupational or personal, and are usually offered by life insurers or pension funds. Most contributions are not taxed⁸⁷, returns on investment are also tax-exempt, just like there is no ceiling and no tax applies on the lifetime value of the funds accumulated. At last, taxation is applied upon withdrawal. Usually the tax rate applied is the individual’s marginal rate of income tax, however this may vary from the type of pension, the amount of benefits paid (pension income from *Direktzusagen*, or direct commitments, used to be characterized by a 40% tax-free allowance, however recent reforms have set its gradual transition to a 0% allowance by 2040) and the type of payment (annuities vs lump-sum payments).

Moving on to non-tax incentives, in the German private pension system there are two types of incentives: employer matching contributions, in the case of occupational private pensions, and government fixed nominal subsidies, this last provision however amounts to a maximum

⁸⁶ OECD, (2019), “Financial incentives for funded private pension plans”, OECD Country Profiles.

⁸⁷ With the only exception being *Pensionskassen* and *Pensionsfonds*, in which contributions are subject to a ceiling and, if contributions exceed this ceiling, they are no longer tax-deductible and therefore must be taxed at the individual’s marginal rate of income.

of EUR 175, with an additional one-time bonus of EUR 200 specifically for young people (under the age of 25) who decide to set up a pension plan and choose to claim for the subsidy.

Another example in the case of non-tax incentives is provided by Austria. In this case the government provides tax-free matching contributions (on the base of a match rate of 4.25%) to people who decide to opt for private pensions. These plans, in order to be eligible for tax incentives, must be characterized by a time frame of at least 10 years and they must provide a capital guarantee; moreover those who wish to apply for this subsidy, must not be on the receiving end of any other security pension allowances.

These forms of direct co-payments however, are not widespread, and therefore one could argue that an alternative strategy to deal with the problem of under-saving for retirement is to potentially increase the magnitude of these types of co-payments, perhaps introducing an additional “bonus” specifically for women, with the specific intent of also bridging the gap in the share of women who decide to invest in supplementary pension provisions.

Upon the examination of the several supplementary (private) pensions in Europe and the connection to their respective country-specific pension systems, one peculiarity immediately catches the eye: despite EU’s efforts to strive for a common regulatory framework, there is an evident heterogeneity in the features of private pensions across all countries; in fact, they not only differ in terms of tax rates, tax-incentives and non-tax incentives, but also in terms of the actual structure of the funded private pension system.

This heterogeneity, in turn, is translated into a fragmentation of the EU market for personal pensions. This has clearly not gone unnoticed by EU institutions: they⁸⁸ are in fact taking steps in the direction of EU-single market for personal pensions, under the belief that an increase in the investment of long-term savings could benefit capital markets as well as offering EU citizens the possibility to improve and increase the way they plan and save for retirement and eventually their financial well-being in the old age.

The first steps towards the establishment of this EU-single market were taken at the beginning of 2013 with the creation of the *TFPP*, the Task Force on Personal Pension.

⁸⁸ By “they” we mean “EU institutions” and in particular EIOPA, the European Insurance and Occupational Pensions Authority, which is part of the three “ESAs” (the European Supervisory Authorities) the financial regulatory institutions responsible for the micro- and macroprudential oversight at the EU-level.

In particular, EIOPA’s responsibility, as an independent advisory body, is to protect the public interest by ensuring financial stability, and confidence in the insurance pension markets (source: https://www.eiopa.europa.eu/about/mission-and-tasks_en).

After a series of preliminary reports, in 2016 EIOPA published an advice paper on the development of standardized pan-European (supplementary) pension products (PEPP, in short); this proposal was later accepted by the Commission that, one year later in 2017, released a legislative proposal on PEPP comprehensive of a feasibility report and a set of recommendations on the tax treatment of PEPPs for each Member Country.

Upon further discussions and developments, on 25 July 2019, the final regulation was finally approved. Ultimately, after the submission of the regulatory and implementing technical standards by EIOPA to the Commission on 14 August 2020, the regulation would be effectively applicable from the following year, hence with the first PEPPs to be issued no later than in the beginning of 2022.

Having reviewed the timeline for the implementation of an European single market for personal supplementary pensions and the introduction of PEPPs, we will now turn our attention on the specific features of these products, highlighting the rationale behind them and the possible benefits, especially in the light of the considerations expressed in the first chapters of this thesis.

According to EIOPA's (2014) preliminary report⁸⁹, the rationale behind a single EU market mainly stems from the goal of developing awareness and increase complementary retirement savings in the light of the general shift towards higher levels of individual responsibility in obtaining an adequate retirement income, in line with the principles of sustainability of public finances and sustainable growth.

The tool envisioned to reach these goals is the introduction of standardized personal pension products, with some additional flexible features that would allow products to be specifically targeted to different groups of consumers.

In particular, as described by EIOPA (2016) on their advice paper⁹⁰, personal pension products should be characterized by an individual membership and contributions paid to an individual account, therefore not involving employers: this would be helpful in order to maximize individual responsibility, and it would also be easier to manage in the case of self-employed or people with non-standard (or interrupted) careers.

The objective of these products is clear: providing an income after retirement; and for this specific reason EIOPA envisions penalties correlated to the possibility of early withdrawal along with a minimum commitment threshold of 5 years.

⁸⁹ EIOPA, (2014) "*Towards an EU-Single Market for Personal Pensions. An EIOPA Preliminary Report to COM*".

⁹⁰ EIOPA, (2016), "*EIOPA's advice on the development of an EU Single Market for personal pension products (PPP)*".

PEPPs are set to be provided by private entities such as insurance companies, asset managers, banks, selected investment firms and selected occupational pension funds, whereas EIOPA's task is to set up and update a central register in which all PEPPs are going to be recorded (European Commission – Fact Sheet 2019⁹¹).

Of course PEPPs are provided with switching rights: therefore if a PEPP saver decides to change its provider he or she will be able to do it (no earlier than five years from the conclusion of the contract) and at a capped switching cost.

The variety and the different nature of the providers listed above, highlight once more the personal and supplementary nature of pan-European pension products in relation to public pensions.

An additional feature of PEPPs is portability: consumers, in the eventuality of change of residence within European borders, will be able to open a sub-account with the same provider in the new country of residence; on the other hand, if this option is not possible (for example, in the case in which a certain provider does not provide its services in the consumer's new home state) then savers will be allowed to switch to a new provider without delays and without additional costs, allowing them to continue in their contributions.

These products are therefore offered on a “pan-European” basis, and they find their roots in the frame of an EU-single market.

Furthermore, these products must be: safe, transparent and cost-effective.

By “safe”, EIOPA (2016) implies that the products should be embedded in a robust and harmonized regulatory framework, in line with EU regulations on: authorization, good governance standards, fit and proper management, distribution, capital requirements and product oversight (including measures to avoid conflicts of interest), in line with the latest developed directives and regulations. The providers are therefore asked to achieve these standards through prudent risk management and by carrying out compliance, internal control and audit duties.

All of this, according to EIOPA, would serve consumer protection objectives, enhancing people's trust on investment products and institutions with the hope of incentivizing the take-up of these innovative pension arrangements.

However, strict governance measures can also impose higher costs on the providers that, in turn, will transfer them to the consumers. This impasse could be potentially offset by an

⁹¹ European Commission, (2019), “*Capital Markets Union: Pan-European Personal Pension Product (PEPP)*”, European Commission – Fact Sheet.

increased number of enrollments which would lead institutions to achieve economies of scale, and therefore cost reductions through the distribution of these “collateral” costs among a greater number of consumers.

Moreover, PEPPs are set to add another layer of consumer protection since they are based on a default investment option (namely the “Basic PEPP”) which is set to provide capital protection in the form of either a capital guarantee or other mitigation techniques, and with costs restricted at 1% of the yearly accumulated capital, as stated by the European Commission (2019) in their fact sheet.

Then by “*transparent*” EIOPA, on their 2016 advice paper, suggests that PEPPs should disclose and provide all the relevant information in order to allow consumers to reduce the complexity of their decisions.

Hence, information disclosure is a mandatory element in PEPPs, and EIOPA indicates that it would be preferable if these information were also user-friendly and accessible online.

The main staple of PEPPs’ transparency is set to be provided through a “Key Information Document” (KID), containing pre-enrollment information such as: risks and expected returns of the investment, costs and charges. All of this, with the intent to allow consumers to reduce market inefficiencies arising from information asymmetries, improving knowledge, trust and allowing them to optimize their decisions.

In addition to this, EIOPA states that further information must also be disclosed at specified times during the life of the product, consequently providing consumers with periodical performance assessments and other information on contingencies such as transfers, switches and decumulation.

And finally, “*cost-effectiveness*” in PEPPs is achieved through standardization and the possibility to carry out cross-border transactions. In fact, economies of scale in personal pensions are seldomly achieved because of limited access to the entire EU market, mainly due to country-specific regulations.

Cost-effectiveness, according to EIOPA (2014), can be attained through the exploitation of cross-border opportunities, as well as through the achievement of economies of scale and by encouraging fair and open competition amongst providers and other market players.

All of the aforementioned elements are mandatory and they are envisioned to allow PEPPs to be somewhat standardized at least in their main features; however EIOPA has also proposed a variety of elements that can be flexible, in order diversify the supply, create competition among the different providers and meet specific consumers’ needs.

These adjustable elements comprise: flexible retirement dates, various payouts methods during the decumulation phase, possible provision of an insurance against biometric risks⁹², restrictions (caps) on costs and charges on investment options, and the possibility to switch investments during the life of the product (charges and minimum holding periods could apply).

Additional flexible characteristics are the types of investments that providers can undertake: in fact, in line with the goals of sustainable growth and sustainable development, EIOPA and the Commission encourage investments based on the ESG or, in other words as defined by the CFA Institute⁹³, the practice of considering environmental, social and governance issues when selecting and executing investment strategies.

Finally, PEPPs regulation does not cover the topic of taxation and tax incentives, hence the provision or lack thereof are in fact left to the discretion and the regulations of each Member State, however EIOPA and the Commission recommend⁹⁴ these products to be treated with the same tax relief as other national personal pension products.

Therefore, in the light of the consideration on tax incentives presented in the first part of this paragraph, a successful strategy in order to boost take-up rates of supplementary pension products is to combine these innovative, pan-European, safe, consumer-oriented products with the most favorable tax benefits, with a special attention and therefore the provision of benefits dedicated to women in order to strive for the goal of bridging of the gender gap in supplementary pensions.

In conclusion, just like the determinants of under-saving and under-investment in supplementary pensions stem from multiple sources (economical, behavioral, environmental and social/educational), the possible solutions are numerous and different in their nature. Our suggestions and the steps that in some cases have been already taken by various countries and European institutions in order to deal with this issue, begin from a reinforcement of financial literacy, starting from a young age to develop a dependable savings ethic and basic money management knowledge, to initiatives that at a later stage should highlight biases and provide solutions or tools to avoid them and, most importantly, raise

⁹² Therefore in case of death (or disability) during the accumulation phase the funds will be accessible and/or left as a bequest.

⁹³ CFA Institute, (2015), *“Environmental, Social, and Governance Issues in Investing. A Guide for Investment Professionals.”*, ISBN: 978-1-942713-21-0.

⁹⁴ European Commission, (2017), *“Commission Recommendation of 29.6.2017 on the tax treatment of personal pension products, including the pan-European Personal Pension Product”*, C(2017) 4393 final.

awareness and addressing the issue of insufficient retirement savings, especially considering initiatives tailored to women and the improvement of their financial literacy, given the presence of a substantial gender gap in the field of financial literacy which, according to multiple studies, could also be connected to the gender gap observed in complementary pensions.

Along with financial literacy, in order to close the gender gap in supplementary pensions, it is also fundamental to bridge the gender gaps present within women's working-life: this can be done by supporting and carrying forward the initiatives that are already in place within the EU concerning the elimination of the gender pay gap and ensuring equal opportunities, as presented in this dissertation, since the latest data seem to demonstrate their effectiveness. And, in addition to this, it is also important to address the problem of interrupted career paths and contributions related to the effect of motherhood penalties, encourage shared child-care duties and anti-discrimination policies for women in the work place.

Finally, arguably the most important step in the encouragement and increased accountability of people in their retirement savings is to continue to reform public pensions systems, in particular considering benefits and their sustainability for public spending, while the public and private sector shall cooperate to create a safe, trustworthy, innovative market for private pensions with the possibility of offering convenient and easy-to-access products (such as the PEPPs), with adequate tax benefits and tax incentives for different classes of individuals and their specific needs, perhaps again with specific features designed for women and their circumstances, given their lower incomes, their working-life circumstances and their extended periods in old age and retirement.

CONCLUSIONS

Chapter 1 of this thesis provided evidence on current trends in population growth and population ageing and how this is causing, especially in Europe, a significant rise in the OADR (old-age-dependency-ratio) that can increase the pressure on public spending for pensions, since these are in fact the main source of income for older people.

In this regard, in order to increase the sustainability of public finances, the latest pension reforms have been focused mainly on the increase of the retirement age threshold, as well as diminishing the amount of pension benefits.

This is set to have an impact on the current structure of pension system, in fact, it creates a “push” towards increased responsibility of people in planning and saving for retirement through the enrollment in supplementary pension plans.

However, looking at multiple data, a gender gap in pensions is present and it is significant: not only women are much more likely to fall into poverty and material deprivation during the latter stages of their lives compared to men, but there is also a substantial gap in pension income and complementary pension arrangements.

Given the magnitude of this gap and the increased tendency to rely more on supplementary pensions, Chapter 2 is entirely dedicated at singling out the reasons of mis-planning and under-saving for retirement alongside the determinants of the gender gap in complementary pension arrangements.

First we started from economic factors, which are also shared with the greater problems of women’s lower pension incomes. Hence the first determinant is the presence of income disparities experienced by women during the accumulation phase of their lives; this is in turn due to two main factors: the gender pay gap and women’s often irregular career paths.

The gender pay gap entails lower contributions and therefore lower pension income upon retirement or, in the case of supplementary pension savings, this will cause women to contribute less to these supplementary schemes since most of their working-life income is used to finance (present) consumption.

In addition to this, women are also more likely to work part-time or to have irregular career paths since they are usually the caregivers in the families, therefore implying once again lower contributions during the accumulation phase.

Another determinant, which is exclusively related to supplementary pension systems, is women's higher tendency to rely on tax-financed pensions. The reason for this could be strictly economical, or also due to psychological reasons or financial illiteracy.

Finally, one last economic determinant seems to be the lack of a savings ethic.

However, the problem of under-saving for retirement is not solely due to economic reasons, but it is also related to behavioral and other psychological aspects of life, and it involves both men and women.

The second set of determinants presented in this thesis are focused on behavioral finance. In fact, several heuristics and biases can cause individuals to achieve sub-optimal results when planning and investing for retirement, with some of these biases that are particularly critical in women, such as risk aversion.

Other determinants of mis-planning and under-saving for retirement, common to both men and women, are: lack of self-control and procrastination, the status quo bias and exponential-growth bias.

Next, we focused on some additional psychological qualities that might have a negative impact especially on women's efforts to properly plan and save for retirement. These psychological features are: lack of confidence, external locus of control, as well as other issues stemming from early-age education, socialization, customs and role-definition.

Finally we singled out financial literacy or, better said, the lack thereof, as one of the main drivers underlying sub-optimal outcomes in planning and saving for retirement, as well as in participation in investments such as supplementary pension plans. This seems to be particularly true for women, since data identify the presence of a significative gender gap also in financial literacy.

Having highlighted these determinants, in Chapter 3 we then presented some feasible solutions and some best-practices that have been put in place by policy makers in the recent past.

First of all we underlined the importance of improvements in financial literacy in order to raise awareness on the changing dynamics of pension systems as well as to start a "debiasing" process that would eventually lead investors to take action and do it with the best possible outcomes.

In this respect, some of the best practices have been adopted by countries such as Austria: here financial literacy programs are specifically targeted to population groups (especially

young people and women) and provided by both private and public entities, with the aim of creating a sounder money management culture, even from a young age.

In order to achieve better results with respect to planning and saving for retirement, these initiatives could be integrated with programs such as the ones implemented in Sweden, which are specifically targeted to people entering the workforce in order to provide them with the right tools to understand and act according to the dynamics of their country's pension system. One could argue that such initiatives may entail a relatively high cost for the entities that are putting them in place, however research from Mitchell and Lusardi (2015)⁹⁵ shows that investing in financial literacy means investing in human capital, and financial literacy improvements could potentially have benefits for the entirety of the population and the economy.

However, we find that additional research and evidence on the trade-off between expenses for financial literacy programs and their benefits for the population are necessary in order to fully corroborate this statement.

Later we presented some evidence on the importance of bridging the gender pay gap through the extension of the protection and flexibility in maternity or, in general, parental leaves.

And finally, starting from some considerations on the importance of the shift between heavy reliance on statutory pensions and increased responsibility and reliance on private pension provisions, we later on considered the importance of having targeted tax and non-tax incentives together with consumer-friendly, transparent, safe supplementary pension arrangements, like the Pan-European Pension Products (PEPP), in order to encourage consumers, and in particular low- and mid-income women, to consider and enroll in supplementary (private) pension arrangements.

Therefore, exactly like the determinants of the gender gap in complementary pension arrangements are numerous and different in their nature, the possible solutions are also various and diverse.

However one thing is for sure: it is important to take action now, since the trend in the ageing population is bound to continue in the foreseeable future and, in line with the objectives of sustainable and inclusive growth, policy-makers need to carefully address the problem of balancing public spending while ensuring equality and equitability.

⁹⁵ Mitchell O. S., and Lusardi A., (2015), "*Financial Literacy and Economic Outcomes: Evidence and Policy Implications*", SSRN Electronic Journal. 10.2139/ssrn.2568732.

REFERENCES

Bibliography:

- Ackert L. F., Deaves R. (2010), "*Behavioral Finance: Psychology, Decision-Making, and Markets*", South-Western, Cengage Learning. Chapter 1, Chapter 5: pages 83-87, Chapter 18: pages 319-326.
- Aigner-Walder B., Döring T., (2012), "*The Effects of Population Ageing on Private Consumption — A Simulation for Austria Based on Household Data up to 2050.*", Eurasian Econ Rev 2, 63–80.
- Amaglobeli D., Chai H., Dabla-Norris E., Dybczak K., Soto M. & Tieman A. (2019), "*The Future of Saving: The Role of Pension System Design in an Aging World.*", Staff Discussion Notes. 19. 1.
- Ania, (2020), "*La Previdenza Complementare e il Valore della Garanzia*".
- Armour J., Awrey D., Davies P., Enriques L., Gordon J.N., Mayer C., & Payne J., (2016), "*Principles of Financial Regulation*", Oxford University Press. Book.
- Arza C., (2015), "*The Gender Dimensions of Pension Systems: policies and constraints for the protection of older women*", UN Women Discussion Papers.
- Bannier C., Schwarz M., (2018) "*Gender- and education-related effects of financial literacy and confidence on financial wealth*", Journal of Economic Psychology, Volume 67, Pages 66-86, ISSN 0167-4870.
- Barbić D., (2017), "*Investigating the role of financial knowledge, financial skills and behavioral control in explaining individuals' successfulness in managing personal finances.*" Proceeding of 4th International Conference on Humanities, Social Sciences and Education. 2017. (pp. 22-27).
- Bastos A., Casaca S. F., Nunes F., Pereirinha J., (2009), "*Women and poverty: A gender-sensitive approach*", The Journal of Socio-Economics, Volume 38, Issue 5, March 2009, Pages 764-778, ISSN 1053-5357.
- Batsaikhan U., Demertzis M., (2018) "*Financial literacy and inclusive growth in the European Union*". Bruegel Policy Contribution Issue n°08 | May 2018. [Policy Paper].
- Bazzana, D. (2020). "*Ageing population and pension system sustainability: reforms and redistributive implications.*" *Economia Politica*, 37, 971-992.
- Benartzi S. and Thaler R., (2007), "*Heuristics and Biases in Retirement Savings Behavior.*" *Journal of Economic Perspectives*, 21 (3): 81-104.
- Bernasek A. & Shwiff S. (2001) "*Gender, Risk, and Retirement*", *Journal of Economic Issues*, 35:2, 345-356. DOI: 10.1080/00213624.2001.11506368.
- Bian X. & Wang J., (2019), "*Women's career interruptions: an integrative review.*" *European Journal of Training and Development*.
- Blommestein H., Janssen P., Kortleve N. and Yermo J., (2009), "*Evaluating Risk Sharing in Private Pension Plans*", *OECD Journal: Financial Market Trends*. Vol. 2009/1.

Börsch-Supan A., Brugiavini A., Jürges H., Kapteyn A., Mackenbach J., Siegrist J., & Weber G. (2008). *“First results from the Survey of Health, Ageing and Retirement in Europe (2004-2007). Starting the longitudinal dimension.”*, Mannheim: Mannheim Research Institute for the Economics of Aging (MEA). Chapter 6.

Brounen D., Koedijk K. G., Pownall R. A.J., (2016), *“Household financial planning and savings behavior”*, Journal of International Money and Finance, Volume 69, Pages 95-107, ISSN 0261-5606.

Bucher-Koenen T., Alessie R., Lusardi A., van Rooij M., (2021), *“Fearless Woman: Financial Literacy and Stock Market Participation”*, ZEW Discussion Papers No. 21-015, Working Paper, March 2021.

Callegaro L., Wilke C. B., (2004), *“Public, occupational and Individual Pension Coverage”*, SHARE working papers, Chapter 6 – Work and Retirement.

Carone G., Eckefeldt P., Giamboni L., Laine V. and Pamies Sumner S., (2016), *“Pension Reforms in the EU since the Early 2000’s: Achievements and Challenges Ahead”*, European Commission, Discussion Paper 042, December 2016.

Cagatay N., (1998), *“Gender and poverty.”*, UNDP, UN Social Development and Poverty Elimination Division.

CFA Institute, (2015), *“Environmental, Social, and Governance Issues in Investing. A Guide for Investment Professionals.”*, ISBN: 978-1-942713-21-0.

Choudhury S., Leonesio M. V., (1997), *“Life-cycle aspects of poverty among older women.”*, Social Security Bulletin, Vol. 60 (No. 2): 17-36.

Cupák A., Fessler P., Schneebaum A., Silgoner M., (2018), *“Decomposing gender gaps in financial literacy: New international evidence”*, Economics Letters, Volume 168, Pages 102-106.

Eatock D., (2015), *“European Union pension systems: Adequate and sustainable?”*, ERPS European Parliamentary Research Service, Briefing November 2015.

Eatock D., (2019), *“Demographic Outlook for the European Union 2019”*, ERPS – European Parliamentary Research Service.

EIOPA, (2014) *“Towards an EU-Single Market for Personal Pensions. An EIOPA Preliminary Report to COM”*.

EIOPA, (2016), *“EIOPA’s advice on the development of an EU Single Market for personal pension products (PPP)”*.

European Banking Federation, (2014), *“Financial Literacy Playbook for Europe”*.

European Commission, (2010), *“EUROPE 2020. A European strategy for smart, sustainable and inclusive growth.”*, Communication from the Commission, COM(2010) 2020 Brussels, 3.3.2010 .

European Commission, (2017), *“Commission Recommendation of 29.6.2017 on the tax treatment of personal pension products, including the pan-European Personal Pension Product”*, C(2017) 4393 final.

European Commission, (2017), *“An Initiative to Support Work-Life Balance for Working Parents and Carers.”*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM(2017) 252 final. Brussels, 26.4.2017.

European Commission, (2017) “*EU Action Plan 2017-2019 Tackling the gender pay gap*”, COM(2017) 678 final, Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee. Brussels, 20.11.2017.

European Commission (2018), “*Pension Adequacy Report 2018. Volume 1. Current and Future Income Adequacy in Old Age in the EU*”.

European Commission, (2019), “*Capital Markets Union: Pan-European Personal Pension Product (PEPP)*”, European Commission – Fact Sheet.

European Economic and Social Committee (2016), “*Financial Education for All: Financial Education Strategies and Best Practices within the European Union. Second Edition*”.

European Union (2019), “*Ageing Europe. Looking at the Lives of Older People in the EU. 2019 Edition*”.

European Union, (2019), “*Regulation (EU) 2019/1238 of the European Parliament and of the Council of 20 June 2019 on a pan-European Personal Pension Product (PEPP)*”, Official Journal of the European Union.

Fessler P., Jelovsek M., Silgoner M., (2020), “*Financial literacy in Austria – focus on millennials*”, Oesterreichische Nationalbank (OeNB), Foreign Research Division, Monetary Policy & The Economy Q3/20.

Fornero, E., & Monticone, C. (2010) “*Adequacy of Households’ Savings and Financial Literacy: Challenges from Pension Reforms.*” EUT Edizioni Università di Trieste.

Gammarano R., (2018), “*What About Seniors? A quick analysis of the situation of older persons in the labour market*”, ILOSTAT Spotlight on Work Statistics, n° 1 – May 2018.

Glass J. C. Jr. & Kilpatrick B. B., (1998), “*Financial Planning for Retirement: An Imperative For Baby Boomer Women*”, Educational Gerontology: An International Quarterly, 24:6, 595-617, DOI: 10.1080/0360127980240606.

Goda G. S., Levy M. R., Manchester C. F., Sojourner A., Tasoff J., (2015), “*The Role of Time Preferences and Exponential-Growth Bias in Retirement Savings*”, National Bureau of Economic Research, Working Paper 21482, August 2015.

Gornick J. C., Munzi T., Sierminska E. & Smeeding T. M., (2009), “*Income, Assets, and Poverty: Older Women in Comparative Perspective*”, Journal of Women, Politics & Policy, 30:2-3, 272-300.

Habschick M., Seidl B., Evers Dr. J., (2007), “*Survey of Financial Literacy Schemes in the EU27*”, Evers Jung Financial Services Research and Consulting, VT Markt/2006/26H - Final Report, Hamburg, November 2007.

ILO, (2011), “*Maternity protection in the context of work-life reconciliation for men and women*”, United Nations development Programme and International Labour Organization, December 2011.

Jappelli, T., & Padula M. (2015). “*Investment in financial literacy, social security, and portfolio choice*”. Journal of Pension Economics and Finance, 14(4), 369-411. doi:10.1017/S1474747214000377.

Knoll M. A. Z., (2011), “*The Role of Behavioral Economics and Behavioral Decision Making in Americans’ Retirement Savings Decisions*”, U.S. Social Security Administration, Office of Retirement Policy, Society of Actuaries.

Laibson D., Repetto A., Tobacman J., Hall R., Gale W., & Akerlof, G. (1998) "*Self-Control and Saving for Retirement.*" Brookings Papers on Economic Activity, 1998(1), 91-196.

Lannoo K., Barslund M., Chmelar A., von Werder M., (2014), "*Pension Schemes*", European Parliament, Directorate General for Internal Policies. Policy Department A: Economic and Scientific Policy, Study, August 2014.

Lusardi A. & Mitchell O., (2008), "*Planning and Financial Literacy: How Do Women Fare?*", American Economic Review, American Economic Association, vol. 98(2), pages 413-17, May 2008.

Lusardi A., Mitchell O. S., (2014), "*The Economic Importance of Financial Literacy: Theory and Evidence*", Journal of Economic Literature 2014, 52(1), 5-44.

Millar J., (2003), "*Gender, poverty and social exclusion. Social Policy and Society*", University of Bath Online Publication Store, 2 (3), pp. 181-188.

Mitchell O. S., and Lusardi A., (2015), "*Financial Literacy and Economic Outcomes: Evidence and Policy Implications*", SSRN Electronic Journal. 10.2139/ssrn.2568732.

Munnell A. H., (2004), "*Why Are So Many Older Women Poor?*", Just the Facts 10, April 2004, Center for Retirement Research at Boston College.

Nerlich C. & Schroth J., (2018), "*The economic impact of population ageing and pension reforms*", Economic Bulletin Articles, European Central Bank, vol. 2.

O'Donoghue T., Rabin M., (1998). "*Procrastination in Preparing for Retirement*", Behavioral Dimensions of Retirement Economics. Washington D.C.

OECD, (2019), "*Financial incentives for funded private pension plans*", OECD Country Profiles.

OECD (2019), "*Pensions at a Glance 2019: OECD and G20 Indicators*", OECD Publishing, Paris.

OECD (2020), "*OECD/INFE 2020 International Survey of Adult Financial Literacy*".

OECD (2021), "*Financial Literacy in Austria: Relevance, evidence and provision*".

Olsen A., & Whitman K. (2007). "*Effective retirement savings programs: design features and financial education.*" Social security bulletin, 67(3), 53-72.

Peat J., (2015), "*Women could be losing money because of lack of confidence to invest and save, says survey*", *The Independent*, Sunday 25 March 2018.

PensionsEurope, (2020), "*PensionsEurope Pension Funds Statistics and Trends*", March 2020.

Price W., Ashcroft J., Hafeman M., (2016), "*Outcomes-Based Diagnosis and Assessments for Private Pensions: A Handbook*", The World Bank, Report, June 2016.

Ricciardi, Simon, (2000), "*What is behavioral finance?*" Business, Education and technology Journal, Fall 2000.

Strang L., Broeks M., (2011), "*Maternity leave policies. Trade-offs between labour market demands and health benefits for children*", RAND Europe.

Sturm P. H., (1983), "*Determinants of Saving: Theory and Evidence*", *OECD Economic Studies*, No. 1, p. 147-96.

United Nations, Department of Economic and Social Affairs, Population Division (2019). "World Population Ageing 2019: Highlights" (ST/ESA/SER.A/430).

United Nations, Department of Economic and Social Affairs, Population Division (2019). "World Population Prospects 2019: Highlights" (ST/ESA/SER.A/423).

United Nations, (2015), "Transforming Our World: The 2030 Agenda for Sustainable Development", A/RES/70/1.

United Nations Development Programme, (2015), "Ageing, Older Persons and the 2030 Agenda for Sustainable Development".

Valant J., (2015), "Improving the financial literacy of European consumers", European Parliamentary Research Service, Briefing, May 2015.

van Liew J.R. (2013) "Locus of Control." In: Gellman M.D., Turner J.R. (eds) Encyclopedia of Behavioral Medicine. Springer, New York.

van Rooij M., Lusardi A., Alessie Rob J., (2011), "Financial Literacy, Retirement Planning, and Household Wealth", NBER Working Paper No. 17339, August 2011. JEL No. D12,D91,J26

World Bank (2008), "The World Bank Pension Conceptual Framework".

Sitography:

Ania – Associazione Nazionale fra le Imprese Assicuratrici: <https://www.ania.it/>

CentERdata: <https://www.centerdata.nl/en/projects-by-centerdata/dnb-household-survey-dhs>

CFA Institute: <https://www.cfainstitute.org/>

EIOPA: <https://www.eiopa.europa.eu/>

EIOPA, Mission and Tasks: https://www.eiopa.europa.eu/about/mission-and-tasks_en

EUR-lex: <https://eur-lex.europa.eu/homepage.html>

European Commission: https://ec.europa.eu/info/index_en

European Parliament: <https://www.europarl.europa.eu/committees/en/home>

Eurostat, Data Browser, Gender Pay Gap in Unadjusted Form:

<https://ec.europa.eu/eurostat/databrowser/view/tesem180/default/table?lang=en>

Eurostat Glossary, «Material Deprivation» : https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Material_deprivation#:~:text=Material%20deprivation%20refers%20to%20a,adquate%20heating%20of%20a%20dwelling%2C

Eurostat, Population Pyramids, source: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_pyramids_EU-28_2003_and_2018_\(%25_of_the_total_population\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_pyramids_EU-28_2003_and_2018_(%25_of_the_total_population).png)

Eurostat, Population structure and ageing: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population structure and ageing](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing)

HRS – Health and Retirement Study: <https://hrs.isr.umich.edu/about>

LIS Data Center : <https://www.lisdatacenter.org/our-data/>

Max Planck Institute for Social Law and Social Policy - SAVE (2001-2013):
<https://www.mpisoc.mpg.de/en/social-policy-mea/research/save-2001-2013/>

NLS website: <https://www.nlsinfo.org/weights/nlsmw>

OECD: <https://www.oecd.org/>

OECD *iLibrary*: <https://www.oecd-ilibrary.org/>

OECD/INFE International Survey of Adult Financial Literacy Competencies:
<https://www.oecd.org/pensions/oecd-infe-survey-adult-financial-literacy-competencies.htm>

Peat J., (2018), The Independent: <https://www.independent.co.uk/money/spend-save/money-women-disposable-income-index-latest-men-stocks-and-shares-isas-saving-investing-banking-a8273076.html>

PensionsEurope, data: <https://www.pensionseurope.eu/statistics>

S&P Global FinLit Survey: <https://gflec.org/initiatives/sp-global-finlit-survey/>

SHARE - Survey of Health, Ageing and Retirement in Europe: <http://www.share-project.org/home0.html>

United Nations: <https://www.un.org/en/>

UN, World Population Prospects 2019, data: <https://population.un.org/wpp/Download/Standard/Population/>