MASTER

ACTUARIAL SCIENCE

MASTER´S FINAL WORK

INTERNSHIP REPORT

THE THREE PILLARS OF INCOME AFTER RETIREMENT

A COMPARATIVE STUDY

JOLANTA LASOVSKA

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SUPERVISION
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ABSTRACT

This is a study that provides a detailed outlook on pension systems of three countries: UK, France, and Switzerland. The rules and benefits available to retiring individuals in the private sector under the three pillars of retirement income are explained in detail. The aim is to get a sense of what benefits a member can be entitled to and whether this is adequate for maintaining an acceptable lifestyle.

The focus throughout the work remains with the accrual of member benefits and not those of survivors or dependant. Example calculations and simulations were provided for Pillar I benefits of each country, these aid the understanding of how the state calculates its benefits, even though not primarily used as a mean of comparison but rather to see the mechanics of formulas and which provide a higher benefit given the same assumptions.

To conclude some statistics are provided towards the end of the chapter about average pensions for different households as well as expenditure to be able to see how much of the income goes to expenses.

KEYWORDS: Post-retirement Income; Three Pillar System; UK; France; Switzerland

TABLE OF CONTENTS

Acknowledgments i

Abstract ii

Table of Contents iii

Table of Figures v

Table of Appendix Figures v

Table of Tables v

Glossary vi

1. Introduction 1

2. Structure of Pension Systems 3

3. Pillar I – Member Benefits 5

3.1 – UK 5

3.1.1 The New State Pension – Benefits & Eligibility 5

3.1.2 The New State Pension – Pension Increases 8

3.1.3 The Old State Pension 9

3.2 – France 10

3.2.1 Basic Pension – Statutory Retirement Age 11

3.2.2 Basic Pension – Early & Late Retirement 13

3.2.3 Basic Pension – Pension Increases & Rates 13

3.3 – Switzerland 15

3.3.1 OASI – Contributions 16

3.3.2 OASI – Benefits 17

3.4 – Overview of State Pensions 18

4. Pillar II and Pillar III 19

4.1 – UK 19

4.2 – France 23

4.3 – Switzerland 26

5. Survivors Entitlements 30

5.1 – Pillar I: State Pensions 30

5.2 – Pillar II: Occupational Pensions 31

6. Pension Simulations and Examples 33

6.1. Pillar I Benefit Simulations 33

6.2. Comparing Retirement Income to Quality of Life 37

8. Conclusion 39

References 41

Appendices 46

Table of Figures

Figure 1 – Retirement-income architecture 3

Table of Appendix Figures

Figure A1 – Early Retirement 46

Figure A2 – Late Retirement 46

Figure A3 – Family Related Top-ups 46

Figure A4 – Orphan Pension Entitlements 47

Figure A5.a)– Switzerland Pillar I (Female 1 Year Missing) 47

Figure A7.b)– Switzerland Pillar I (Female 1 Year Missing) 48

Table of Tables

Table 1 – Tax Brackets 8

Table 2 – Additional State Pension 10

Table 3 – Quarters required - depending on the year of birth 11

Table 4 – Reduced rates for Basic Pension 12

Table 5 – CSG Contribution Rates 14

Table 6 – Post-Retirement Income Allowance & Contributions 16

Table 7 – Overview of State Pensions 18

Table 8 – Contribution Basis 24

Table 9 – CEG Contributions 25

Table 10 – Temporary Pension Increases/Decreases 26

Table 11 – Statutory Minimum Contributions 27

Table 12 – Survivors Entitlements 32

Table 13 – French Pillar I Simulation Results 35

Table 14 – Swiss Pillar I Simulation Results 36

GLOSSARY

- ASP - Additional State Pension
- ASPA - Allocation de Solidarité aux Personnes Âgées
- CASA - Contribution Additionnelle de Solidarité Pour l'Autonomie
- CPI - Consumer Price Index
- CRDS - Contribution Pour le Remboursement de la Dette Sociale
- CSG - Contribution Sociale Généralisée
- DB - Defined benefit
- DC - Defined contribution
- DOB - Date of Birth
- DOB - Date of Retirement
- DPSC - Date Pensionable Service Commenced
- EEA - European Economic Are
- LSC - Lisbon Service Centre
- NI - National Insurance
- NSP - New State Pension
- OSP - Old State Pension
- PI - Permanent Incapacity
- SPA - State Pension Age
- SRA – Statutory Retirement Age
- WTW - Willis Towers Watson

1. Introduction

The purpose of this research comes from pursuing a curricular internship at Willis Towers Watson (WTW), specifically the Lisbon Service Centre (LSC), which deals with pension systems daily. Working with mainly UK pension systems directly I was curious to see, learn and compare the systems of other countries and how they differ.

The LSC specifically has links to many Western European countries which provided a base of choice for which countries could be investigated into in more depth. Along with looking into UK as that is directly linked to my internship, the idea is to choose one country that relies mainly on state pensions unlike UK and another that relies more on all the pillars of retirement income like the UK.

The process of choosing the other two countries consisted of looking at a combination of resources. To begin with there were a list of 11 countries excluding UK with which LSC has a retirement department. This was a starting point. Using the (Mercer, 2021) the countries were rated from A to D, A being the best. The UK rated as a B and given my wish for a similar pension system, the choice reduced to three countries: Germany, Ireland, and Switzerland.

At this point a graph of income sources of older people from (Harker, 2022) and statistics on poverty rates for retirees from (OECD, 2022) were used to further choose the countries. Ireland was discarded as it mainly relies on state pensions unlike UK, and thus from the two remaining countries based on the poverty rates of Switzerland (18.8%) and Germany (9.1%), I chose Switzerland as I was curious to find out why it is classed as a sound system by Mercer, yet the poverty rate is the highest out of the 11 countries to start with.

Finally, out of the last countries remaining that all rely mainly on state pensions, France was chosen as it has the second lowest poverty rate (4.4%) which I found interesting given the system is rated a C+ whilst the other countries have a better rating yet a far worse poverty rate. Thus, the final set of countries in this work will be UK, France, and Switzerland.

The objective of this work is to understand the different rules for claiming benefits from both state and private pensions and in turn lead to an analysis of whether the pensioners income is adequate to sustain an acceptable standard of living. The analysis is

performed looking into expenses at retirement in the three different countries, to make the comparisons as fair as possible and finally draw conclusions from the findings

To summarise, the structure of the paper is as follows. Chapter 2 will talk about the general structure of pension systems. Chapter 3 will focus on Pillar I member benefits followed by Pillar II & III member benefits in Chapter 4. In Chapter 5 the survivors entitlements will be briefly discussed. Chapters 6 is dedicated to pension examples and statistics. Chapter 7 concludes.

2. Structure of Pension Systems

Before exploring in detail, the different pension systems of UK, France, and Switzerland, a good starting point is to understand what components make up a pension system. In general, the architecture of a pension system is categorised into three classes, namely the three 'pillars' of retirement income (OECD, 2021) Figure 2 below shows what each pillar consists of, as well as the method of financing.

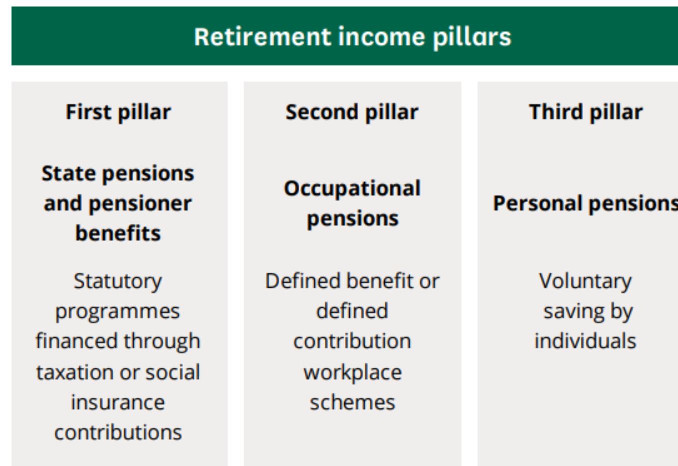

Figure 1 – Retirement-income architecture

Source: (Harker, 2022)

The first pillar as shown in the above figure is managed by the state. These are schemes that are available to the general working age population and in some countries may be compulsory even during periods of unemployment. The rules governing the contributions to the state pension differ from country to country as well as their reliance on it. In some countries, the state pension is the only source of retirement income for most people, whilst in other countries it corresponds to a smaller portion and should be combined with pensions paid by occupational schemes (Pillar II) -which can also be mandatory for some countries.

Pillar II in general tends to follow a defined benefit (DB), defined contribution (DC) or hybrid structure which as the name suggests is combination of the two. A DB scheme is one in which the amount of the benefit depends usually on the length of service and either the final salary or some sort of average salary. Members' contributions are usually fixed while the employers' may vary, to guarantee a correct accumulation of benefits. Benefits paid by DC schemes, on the other hand, depend on invested contributions made by both employer and employee. The accumulated value is then used to calculate an

uncertain benefit upon retirement. The benefit depends on contributions, returns of investments as well as any additional fees and charges.

The final pillar, Pillar III, comprises personal savings, which are voluntary schemes that individuals can participate in and save for their retirement if they wish to increase benefits and improve their post-retirement lifestyle.

The following chapters will focus first on the state pensions of the earlier mentioned countries (Chapter 3) and then on the occupation and voluntary schemes (Chapter 4). The attention remains on member benefits. Any additional benefits, such as survivors' entitlements, will be included in Chapter 5.

3. PILLAR I – MEMBER BENEFITS

As previously mentioned, state pensions are the responsibility of the government and in each country different rules apply to claiming benefits. The main purpose of this chapter is to outline the general eligibility criteria of each of the three countries of interest to us and outline what benefits are included and how individuals can access them.

3.1 – UK

As of April 6, 2016, the UK introduced a New State Pension (NSP) which affects both men and women who were born on or after April 6, 1951, and April 6, 1953, respectively. (Thurley, 2021) explains that the end goals of the transition to the NSP are: (i) to simplify the system and make it easier for pensioners to contribute to the public system; (ii) to promote private savings for retirement. The initial transition is complex as individuals who are reaching and are close to reaching their retirement have contributed both to the old state pension and the new one. Thus, both must be considered to guarantee that no loss is experienced by the retiree with the transition.

One of the tools used in the NSP is the starting amount, which is calculated based on national insurance (NI) contributions before 6 April 2016. This amount makes sure that pensioners do not receive less than the benefits they would have been entitled to if they were still under the Old State Pension (OSP). The starting amount, as explained by (Department for Work & Pensions, 2022a), uses the contribution history up to April 2016 to calculate two amounts: one as if the individual remained with the OSP, less any deductions from contracting out (which will be explained later); and another hypothetical amount, where the individual had the NSP from the beginning of their working career. The highest of these two amounts is taken and is the starting amount, guaranteeing this way that members are not worse off in the transition between the two state pensions.

3.1.1 The New State Pension – Benefits & Eligibility

Qualifying years – An individual may earn a qualifying year to his/her national insurance record if one or more of the following criteria are satisfied, as explained by (Department for Work & Pensions, n.d.-h):

- NI contributions paid while working and earning at least £242/week from a single employer.

- Employed and earning between £123 and £242 a week from one employer. In this case, NI contributions are not paid but time is still counted.
- NI credits received for receiving:
  - Jobseeker's allowance (Unemployed);
  - Child benefits (Parent);
  - Carer's allowance (Carer).
- Paying voluntary contributions.

With the new state pension an individual is eligible for claiming a pension when reaching state pension age (SPA); however, there must be at least 10 qualifying years as defined above to be eligible for any state pension. These years do not need to be consecutive. Gaps may arise in the contribution history due to living abroad, for example. When there are gaps, non-consecutive qualifying years may be added. The pension amount will only be based on the years worked in UK.

The current 2022/2023 amount for the new full state pension is £185.15 per week or £9,627.80 per year. This requires 35 qualifying years to obtain, thus there is still a possibility of receiving a full pension even with some gaps. The term 'full' in this sense means that any qualifying years above 35 (in the case of NSP) and below SPA will not increase the amount received. The amount will be pro-rated if the contribution history is between 10 and 35 years. An example calculation provided by (Department for Work & Pensions, n.d.-h) shows that a member with only 20 qualifying years would receive a proportioned pension equal to $(185.15/35) \times 20 = 105.80$.

In certain circumstances, if income is low upon reaching retirement, then the retiree may qualify for pension credit which brings the pension to a sufficient minimum. This is income-tested and depends not only on individual income but also on that of the partner, if applicable. The pension credit is independent of the state pension and if one does not qualify for any NSP the pension credit can still be applied for. The single person basic rate tops up income to £182.60 a week. (Department for Work & Pensions, n.d.-d)

For members whose starting amount does not reach the full state pension, they are able to add qualifying years to their record that were earned after the transition. This can

be done until their SPA, or the full amount is reached, whichever is sooner. There may be members who have a starting amount that is already higher than the full amount; in this case the extra amount is called a 'protected payment' and any qualifying years post 2016 will no longer increase the pension amount. Members who have no contribution history prior to the transition and members who began to contribute after 2016 will be subject to the NSP rules only. As stated by the guide for the NSP, it is more probable that the pension would be calculated using only the new state rules if the member was born after 2000 or became resident in UK only after 2015.

It is important to remark that the starting amount it could be subject to deductions, if calculated using the old rules. This is because the old state pension is composed of two parts: 'The Basic State' pension and the 'Additional State' pension, sometimes known as the 'State Second' pension. This will be more thoroughly explained in the next section, but the main idea is that with the old system an employee had the option to contract out of the additional state pension and pay less NI contributions, if they were involved in an earnings-related scheme at work (a DB scheme for example), or were part of a workplace, personal or stakeholder pension scheme, before 6 April 2012. (Department for Work & Pensions, 2022a).

The SPA varies depending on date of birth and sex. Under the Pension Act 2014 the age will increase from 66 to 67 gradually, and then eventually to 68. The legislation for the increase from 67 to 68 is still to be reviewed and the timetable for the change may still be modified after review. Even if this is the case, the timetable for SPA increasing from 66 to 67 is not planned to receive any alterations as stated by (Department for Work & Pensions, 2014)and anyone born after 6th March 1961 will have a retirement age of 67.

The state pension can only be claimed upon reaching the SPA, but it is not mandatory for an individual to stop working immediately, one may wish to continue working beyond the retirement age and defer claiming until later. Since the system is not automatic, nothing must be done to defer the pension and an individual can just carry-on working. If this is the option, NI contributions are no longer required to be paid after SPA. Deferring may increase the benefit however upon claiming if the benefits exceed the personal allowance, they may also be taxed. If the pension is delayed for at least nine weeks then the benefit will increase by 1% per nine weeks deferred, which yearly equates to around

5.8% for every 52 weeks. There are some limitations as to who can earn the extra amounts, namely those receiving certain benefits or tax credits (including some benefits received by the partner or spouse) are not eligible, see (Department for Work & Pensions, n.d.-b)

To expand further on what may be taxed, in the UK there exists a personal allowance of yearly income which is not taxed. Pensions are regarded as income and thus, in any situation where the pension exceeds a personal allowance, it will get taxed. The amount of tax paid depends on the tax brackets and Table 1 below shows what they are.

TABLE 1 – TAX BRACKETS

Band	Taxable Annual Income	Tax Rate
Personal Allowance	Up to £12,570	0%
Basic rate	£12,571 to £50,270	20%
Higher rate	£50,271 to £150,000	40%
Additional rate	over £150,000	45%

Source: (Department for Work & Pensions, n.d.-c)

3.1.2 The New State Pension – Pension Increases

To make sure that pensions are adequate and meet living costs, the government uses a triple lock for pension increases, as explained by (Thurley & McInnes, 2021). Accordingly, the yearly increase is equal to the highest of: (i) 2.5%; (ii) the average wage growth; (iii) inflation using CPI. Due to the pandemic, for the increase of the tax year 2022/23, the triple lock was reduced to double lock suspending the earnings factor as the earnings were distorted by COVID-19. Many workers were on furlough during spring-2020 and were receiving a lower weekly wage so upon returning full time wages were close to normal creating an overstated sense of wage increase (Athow, 2021). The triple lock does not apply to extra pension amounts, which come from delaying a pension, or in the case of a protected payment. Only inflation will be accounted for.

3.1.3 The Old State Pension

In Section 3.1.1, it is said that the old state pension is composed of two parts: 'The Basic State' pension and the 'Additional State' pension, sometimes known as the 'State Second' pension.

— Basic State Pension

The Basic State pension is the system used for men and women born before 6 April 1951 and 6 April 1953 respectively. Pensioners who have reached retirement prior to 2016 will see their pensions revised annually using the triple lock system. Anyone retiring from 2016 with a prior contribution history, as mentioned before, will receive the highest amount based on either OSP or NSP rules. To this end only some basic details will be mentioned about this system as it is no longer that applicable.

The Full Basic state pension is currently £141.85/week and required 30 qualifying years to achieve. Furthermore, as with the NSP there was an option to defer claiming and increase the payment amount, however unlike the NSP the pension increased by 1% every five weeks instead of nine like it is now. The increased amount can either be paid in higher weekly payments or a one-off lump sum payment if deferral was at least for 12 consecutive months. (Department for Work & Pensions, n.d.-g).

— Additional State pension

The Additional State pension (ASP) is an extra amount along with the basic state pension that men and women born before 1951 and 1953, respectively, had access to. Since 2016 the NSP does not provide this, under certain circumstances it may be inherited.

What one can get depends on their NI history, the years of earnings and whether was contracted out or received a top-up on the Basic State pension. The Additional State pension is made up of a few schemes and Figure 3 below from (Department for Work & Pensions, n.d.-a) shows the scheme names and in what circumstances contributions were made.

The amount depends on: (i) NI history, (ii) years of earnings, and (iii) contracted out or received a top-up. The ASP was made up of three schemes, one may have contributed to more than one scheme. See Table 2 for scheme names and contribution conditions.

TABLE 2 – ADDITIONAL STATE PENSION

	Scheme	Contributed if:
2002 – 2016	State Second Pension	Employed or claiming certain benefits
1978 – 2002	State Earnings-Related Pension Scheme	Employed
12/10/2015 – 05/04/2017	State Pension top-up	Reached SPA before 2016 and opted in

Source: (Department for Work & Pensions, n.d.-a)

There was an option to contract out of the additional pension amount, if in the workplace the employer ran a contracted-out pension scheme. If someone contracted out, then they paid lower NI contributions and thus did not contribute to the additional pension. Since 2016, contracting out is not an option and everyone pays the same level of NI. Upon retirement a person who did contract out would receive the pension from the pension scheme provided by the workplace. (Department for Work & Pensions, n.d.-a)

3.2 – France

In France, the state pension, called ‘pension de retraite de base’ (Basic Pension), is provided by one of the following, as stated by (CLEISS, 2022a):

1. The (regional) retirement and occupational health funds (‘caisses d'assurance retraite et de santé au travail’/ CARSAT)
2. The Île-de-France national old-age insurance fund (‘caisse nationale d'assurance vieillesse d'Île-de-France’) for the Paris region,
3. The general social security funds (‘caisses générales de sécurité sociale’/ CGSS) for the overseas Departments,
4. The CSS in Mayotte.

To note these are schemes for the private sector, there are separate schemes for public service workers that follow similar structures, but the focus here, as with the other two countries, will be on the private sector.

Before 1 July 2017, members belonging to more than one scheme, depending on whether they were salaried workers, self-employed, or an agricultural worker, would have to submit claims to each scheme, to receive their pensions. Since that date, they need only to claim from one of the schemes, if they are aligned, as the different schemes will work together to gather information and calculate one single pension. (CLEISS, 2022a)

3.2.1 Basic Pension – Statutory Retirement Age

The legal minimum age of retirement for people born after 1 January 1955 is 62 years old and to be eligible to the full pension the member has to make social contributions for a certain number of quarters of the year, depending on the year of birth, see Table 3.

TABLE 3 – QUARTERS REQUIRED - DEPENDING ON THE YEAR OF BIRTH

Year of Birth	Nº. of Quarters	Year of Birth	Nº. of Quarters
1956-1957	166 (41.5 years)	1967-1969	170 (42.5 years)
1958-1960	167 (41.75 years)	1970-1972	171 (42.75 years)
1961-1963	168 (42 years)	since 1973	172 (43 years)
1964-1966	169 (42.25 years)		

Source: (CLEISS, 2022a)

The full pension with no missing quarters is 50% of the annual average earnings, calculated as explained below. If individuals decide to retire prior to having the required number of quarters, they will receive a reduced pension amount - see Table 4, which displays how deductions are calculated, as a function of the missing quarters.

TABLE 4 – REDUCED RATES FOR BASIC PENSION

Missing Quarters	Rate	Missing Quarters	Rate
1	49.375%	6	46.250%
2	48.750%	7	45.625%
3	48.125%	8	45.000%
4	47.500%	9	44.375%
5	46.875%	10	43.750%

Source: (CLEISS, 2022a)

The above conditions apply to people who decide to retire at the legal minimum age (62) and do not have enough quarters, but a member may retire later, between the ages of 65 and 67, depending on date of birth. Retiring later enables the retiree to apply for the full pension, regardless of having the required number of quarters.

Unlike the UK, which has a flat rate full pension depending only on qualifying years, France uses a calculation with three factors including:

- the average yearly income, calculated using the best 25 years of earnings ('revenu ou salaire annuel moyen', RAM or SAM).
- the payment rate, which has a maximum of 50% and reduces by 0.625 per missing quarter (see Table 3).
- total length of insurance (number of validated quarters).

$$Basic\ Pension = RAM\ \times Rate\ \times \frac{Total\ length\ of\ Insurance}{Max\ No\ Quarters, depending\ on\ DOB} \qquad (1)$$

There are several ways to increase the length of insurance, for example, parents may receive four quarters for the birth of a child, or adoption; in addition, four extra quarters are awarded until the fourth birthday/anniversary (after birth or adoption). For children born after 1 January 2010 parents can obtain extra quarters, that are split between the two in a way of their choosing, within the first six months after the fourth anniversary.

If a child is disabled with an 80% severity rating, the parent(s) raising the child can receive up-to eight additional quarters, but only if the child is also eligible for disabled child allowance or compensation benefit. (CLEISS, 2022a).

3.2.2 Basic Pension – Early & Late Retirement

As mentioned above, people opting for early retirement will face a reduction in their pensions. Besides this, there are other cases of early retirement possible in France. (CLEISS, 2022a)describes three possibilities of retiring early with no penalties.

1. Permanent incapacity or strenuous work – can retire at 60 and claim one of:
   a. accident-at-work, or occupation illness pension, if permanent incapacity (PI) > 20 %;
   b. accident-at-work, or occupation illness pension, if $10 < \text{PI} < 20\%$ and had exposure to work-based risks for at least 17 years, or the incapacity is due to the work.
2. Members may retire at 60 or earlier if a defined minimum of contributions and length of insurance has been met, based on Date of Birth (DOB), Date of Retirement (DOR) and Date Pensionable Service Commenced (DPSC).
3. If retirement is due to permanent disability of at least 50%, or to holding a disabled worker status prior to 31 December 2015, members can retire between 55 and 59. Still they must meet minimum contribution requirements. The minimum depends also on DOB and DOR.

Members who decide to carry on working beyond 62 and already have the required length of service for a full pension can increase their benefit by 1.25% per extra quarter worked since 1 January 2009. While members who reach the DOB related retirement age, e.g., 67, without meeting the required length of service will receive a pro-rated amount of the full (50%) rate pension, unless they choose to delay their retirement and increase the service by 2.5% per quarter, to retire with the full amount. The basic pension cannot exceed €1,714 per month which is 50% of the social security ceiling for 2022. (Direction de l'information légale et administrative, 2020)

3.2.3 Basic Pension – Pension Increases & Rates

Parents and caregivers may also be eligible for pension increases. For parents this depends on the number of children raised. If in the household there were simultaneously three children under 16 for nine years, then the parent(s) receiving a pension can receive a 10%

increase. If certain conditions are satisfied caregivers may receive a monthly boost of €1,146.88. Since 1 January 2011 a dependant-spouse increase (€609.80/year) is only awarded if prior to that date the retiree was eligible and still carries on satisfying the criteria.

Retirement pensions are classed as income and thus are taxed accordingly, but there are certain exemptions of benefits such as the ASPA (mentioned below), which is not taxed. There is an allowance of 10% of retirement income that is tax deductible. For an individual the minimum deduction is €400 whilst the ceiling applies to a household and is €3,912.

Apart from income tax, social security contributions, based on annual gross income, are also required. There are four main contributions:

1. CSG (contribution sociale généralisée);
2. CRDS (contribution pour le remboursement de la dette sociale);
3. CASA (contribution additionnelle de solidarité pour l’autonomie);
4. Social Security contributions (Only applicable to Pillar II pension).

The only contribution that is tax deductible is the CSG, Table 5 below shows the relevant income brackets along with the rates for both singles and couples.

TABLE 5 – CSG CONTRIBUTION RATES

Rate	Reference Tax Income (RFR)		Tax Deductible Rate
	Single	Couple	
0%	< €11,432	< €17,536	
3.8%	€11,432 – €14,944	€17,536 – €22,924	3.8%
6.6%	€14,945 – €23,193	€22,925 – €35,575	4.2%
8.3%	> €23,193	> €35,575	5.9%

Source: (la retraite en clair, 2022)

The CRDS is a flat rate of 0.5% and is paid by all who pay the CSG contribution. The CASA is 0.3% and is only applicable to those paying the CSG rates of 6.6% or 8.3%. The ASPA amount (and certain other benefits) is also not subject to the CASA contribution.

The social security contributions are 1% and are applicable to Pillar II benefits (mentioned in section 4.2) and only to those who pay 6.6% or 8.3% CSG rate. (La retraite en clair, 2022)

The revaluation of pension amounts happens on the 1st January each year in line with CPI and if in any case the CPI is less than one the amount will remain the same. Due to increased inflation an emergency revaluation has been issued of 4% on July 1st, 2022, on top of the earlier 1.1%. (Direction de l'information légale et administrative, 2022b)

For low-income retirees resident in France, like in the UK, there exists a targeted minimum benefit called the 'Allocation de solidarité aux personnes âgées' (ASPA). The amount is based on income, family circumstances (single or couple) and is available from age 65. The full ASPA amount for (i) single is €953.45/month and (ii) couple is €1,480.24/month. Thus, if income is below the respective amount the correct proportion will be added to bring it to the minimum.(Burel, 2022)

Another element called the Minimum Contributif can also increase the pension if, after claiming all basic (at the full rate) and supplementary amounts, the benefit does not exceed €1,299.36/month. The amount that can be claimed depends on the contribution history: (i) up to € 678.71 (< 120 quarters) or (ii) up to €741.64 (> 120 quarters). (Pierry, 2022)

3.3 – Switzerland

The social security system in Switzerland, as in the UK and France, provides many different benefits, the focus here will be on the old-age, survivors', and invalidity insurance, jointly abbreviated to OASI, from the French AVS/AI, an acronym for 'Assurance-vieillesse et survivants/Assurance-invalidité' (AVS/AI Information Centre, 2021).

OASI is the first of the three-pillar retirement system in Switzerland, compulsory for everyone who lives or works in the country, and it strives to meet the basic costs of living of retirees upon reaching retirement. OASI is financed through contributions from both employers and employees, the self-employed, as well as from those who are not in gainful employment, the definition of which will be explained later. Finally, the public authorities

also pay contributions to the system, which helps with the financing of it. The collection of contributions and payment of benefits is the responsibility of the OASI compensation offices. Pension benefits are regarded as income in Switzerland and are thus subject to progressive income tax that depends on location and earnings. Supplementary benefits are not taxable.

3.3.1 OASI – Contributions

In Switzerland, unlike France and UK, everyone has to make contributions to the OASI, the obligation beginning on the 1 January following the 20th birthday and lasting until retirement, at 64 for women and 65 for men - or later, if retirement is delayed. A person already employed at the age of 17 will start making contributions from January 1st following the 17th birthday. During this period there may be gaps in the contribution history, which may have been caused by living abroad, studying, or frequently moving from employer to employer, for example. If gaps are present this will reduce the pension by 2.3% for each missing year. Under certain conditions it is possible to buy back missing years, however this only applies to recent gaps and not to older ones.

A point to note is contributions are still required even if an individual is already passed their statutory retirement age (SRA) and decides to defer retirement. This is like France whereby one may accrue quarters of contributions to increase their benefit but unlike the UK, where NI contributions cease upon reaching retirement, even if one wishes to postpone. Contributions paid during the deferral period are on any income that exceeds CHF 1,400/month, see. Table 6 for an example showing the allowance and what amounts are liable for contributions.

TABLE 6 – POST-RETIREMENT INCOME ALLOWANCE & CONTRIBUTIONS

	Company A	Company B
Monthly Salary	1600.00	1500.00
Allowance	-1400.00	-1400.00
Liable for contributions	200.00	100.00

Source: (Federal Chancellery, n.d.-c)

As explained by the (Federal Chancellery, n.d.-c), upon retirement the pension will depend on the contributions paid. If one is not employed, the minimum rate must still be paid, which currently is set at CHF 503/year. The only exception to someone not paying while not being in gainful employment is if their spouse or civil partner pays at least double the minimum amount per year. In this case this covers the payment, and nothing must be paid.

Employed and self-employed people must contribute a percentage of their earnings to the OASI. When one is employed, both the employee and the employer pay half of the contributions, which equates to around 4.35% each; the deductions are made by the employer from the gross salary and are paid into the compensation fund. When being self-employed, full contributions (8.1%) are paid by the member to the compensation fund.

3.3.2 OASI – Benefits

The pension amount that can be claimed at 64 for women and 65 for men varies from a minimum amount of CHF 1,195/month to CHF 2,390/month. For married couples or partners, the joint pension amount must not exceed 150% of the maximum i.e., CHG 3,585. Individuals may decide to retire early by one or two full years, or late, by a maximum of five years. In the case of early retirement, the pension will reduce by 6.8% per year; if an early retirement pension is taken contributions are still required until reaching SRA. Additional contributions are not taken into further pension recalculations, also no personal allowance is applied as when retiring after SRA. In the Appendix, Figures 1 and 2 show tables from (AVS/AI Information Centre, 2022) about early and late retirement.

The way the pension is calculated depends on three factors:

1. Number of years of OASI contributions.
2. Earned income.
3. Bonuses for raising children or caring for family members

To receive a full pension, 44 years of contributions are required, reducing by 1/44 for each missing year. Upon reaching retirement, if the income received from pension and other income sources does not meet the basic living costs, then supplementary benefits

may be applied for, but only residing members of Switzerland are eligible to receive this benefit, people living abroad cannot receive it.

The Swiss system also provides a children's pension to retirees who at the point of retirement have children under 18 (or 25, in the case of education). This amount is equal to 40% of the OASI pension. Both parents may at the same time be eligible to receive a children's pension and if this is the case then the amount cannot exceed 60% of the maximum rate of the old age pension (AVS/AI Information Centre, 2021b)

3.4 – Overview of State Pensions

The table below gives a short summary of key points from the first pillar state pensions of each of the three countries. So far, there are some clear differences between the systems in the way they calculate the pensions as well as the benefits that are provided.

From first impressions it appears that the Swiss system provides more varied benefits and pensioners may potentially win more upon retirement depending on their circumstances than the other countries. Of course, this is only one part of the system and comparing solely by state pensions would not be reasonable. In the next chapter the occupations systems and personal savings will be investigated to complete the study of pensioners' income sources.

TABLE 7 – OVERVIEW OF STATE PENSIONS

	UK	**France**	**Switzerland**
Retirement Age	Depends on DOB	Minimum Age: 62	Women: 64 Men: 65
Early Retirement	No	Yes	Yes
Late Retirement	Yes	Yes	Yes
Years required for full pension	35	Depends on DOB	44
Pension Amount	Flat rate for everyone with 35 years NI	Depends on earnings and length of service	Depends on earnings and contributions
Children's Pension	No	No	Yes
Low-Income benefit	Yes	Yes	Yes

4. PILLAR II AND PILLAR III

In this chapter, both the occupational and personal pension schemes will be studied. An occupational scheme may also sometimes be referred to as a workplace pension, these types of schemes depending on the country may sometimes be mandatory complementing the 1st Pillar or voluntary. On the other hand, the third pillar is completely voluntary and is a means of saving for retirement, based on personal savings. Some methods of savings are based on specific funds, that individuals can contribute to; withdrawals are possible only given certain conditions. Another obvious method is pure savings, that is, people accumulate cash in a savings account that has no specific conditions linked to retiring, being the result of an individuals' will to save for their retirement.

4.1 – UK

The UK practices an automatic enrolment system for general employees in Pillar 2 , whereby anyone eligible to contribute to the workplace pension scheme is given notice that they will be automatically included and have the option to opt out. The conditions required to be met are:

1. One must be classified as a worker that is ordinarily resident in UK;
2. At least 22 years old but under SPA;
3. Earn at least £10,000 a year.

There are however several circumstances apart from the ones above, in which the employer is not obligated to enrol an employee in the pension scheme and some of the reasons include: giving or receiving notice of leaving, having evidence of lifetime allowance protection, which protects from decreases in the allowance, or if the member receives a lump sum due to closing of pension scheme, then leaves the job and re-joins the same job within 12 months. There are several other circumstances that can be found on (Department for Work & Pensions, Workplace pensions), but even if automatic enrolment is not available, usually it is the case that individuals can still request to be enrolled voluntarily and an employer cannot refuse a request to join the scheme. Individuals that are self-employed or are sole directors may contribute voluntarily to a workplace pension called the National Employment Saving Trust (NEST). One can opt-

out at any point; if this happens within a month of being enrolled then the full contributed amount may be refunded, if after this period then the funds will remain until retirement. If someone decides to opt-out and then in again, within 12 months, the employer is not required to accept, but may choose to. In principle, automatic re-enrolment occurs every three years (or sooner, by employer choice) from the date of first being enrolled, allowing anyone who has opted out to enrol again.

Contributions are earnings related and tax deductible. There are two main methods of receiving tax relief:

1. Relief at Source;
2. Net Pay.

With relief at source, the first 20% of income tax is claimed back by the pension fund and added to the pension pot of the member. Here it does not matter if income tax is paid or not, 20% will always be claimed back as contributions are deducted from the resulting income after NI and tax (if any) has been paid. If a higher rate is paid, then the member will need to claim it back him/herself. (Department for Work & Pensions, n.d.-e)

If contributions are paid prior to tax and NI, 100% relief is received but tax must be paid to receive this relief. (Department for Work & Pensions, n.d.-j)

The amount that is contributed towards the scheme depends on whether there was automatic enrolment or not. For members who were enrolled automatically, a percentage of gross total earnings comes from the employer and part from the employee. From April 2019, the minimum that is required to be contributed is 8%, the legal minimum for employers is 3% and the employees 5%. These rates may be higher and usually are with DB schemes, but this all depends on scheme rules. Moreover, some employers may provide the option of salary sacrifice, also sometimes known as a SMART scheme. In this case the employee agrees to sacrifice part of their salary that is put straight into their pension pot by the employer, this in turn may result in reduced tax and NI payments.

The employer in both scenarios of automatic and voluntary enrolment is only required to contribute, if the employee earns above one of the following: £520 a month, £120 a week or £480 over 4 weeks, (Department for Work & Pensions, n.d.-j) anything less and

the obligation is not compulsory. On low incomes contributions will be received from the government still in the form of tax relief.

As mentioned in Chapter 2, there are mainly two types of private pension schemes, DB and DC, although other schemes are possible, such as hybrid which is a combination of the two. In UK prior to 2019 DB schemes were more popular, now DC schemes are growing in popularity. (ONS, 2022) In a DB scheme the retirement income one gets depends on salary and service, most of the time either the final salary is used or some sort of average of the best salaries or lifetime. The final benefit that is received depends on rules and not investments and their returns as is the case with a DC plan. Usually, the age at which benefits can be drawn is no earlier than 55, withdrawing before may require taxes being paid up to 55%. Upon reaching retirement the individual has the possibility of taking a lump sum of up to 25% of the amount, which is tax free, and receive the rest as an annuity that is taxed as income. As mentioned in Table 1 there is a personal allowance (£12,570) that is acceptable, however anything beyond that amount will be taxed. (Department for Work & Pensions, n.d.-f)

In a DB plan the responsibility of making sure that the funds are available to be paid to pensioners lies with the employer and funds cannot be used to other purposes, even in case of financial troubles. If theft or fraud does occur, then the member may be compensated by the Fraud Compensation Fund, see Welcome to the Fraud Compensation Fund | Fraud Compensation Fund. In a scenario where the employer is unable to pay, the employee is usually protected by the Pension Protection Fund, which compensates 100% to employees who reached the schemes' pension age and 90% to those under it. (Department for Work & Pensions, n.d.-j). If a pension scheme does close and the member was automatically enrolled, the employer has a responsibility to automatically enrol them in a new scheme.

A DC scheme is contribution based; it is becoming increasingly popular to find them not only under Pillar III but as part of Pillar II occupational schemes. As said in Chapter 2, in these schemes the contributions paid in by individuals are invested and the benefit gained depends on the performance of these investments. Scheme providers tend to invest in lower risk shares when members come closer to retirement age, which makes sense, as

it is prudent to guarantee stability in the returns closer to retirement (Department for Work & Pensions, n.d.-i)

As opposed to DB plans where responsibility of providing benefits lies with the employer, with DC plans it is usually the pension providers responsibility. Thus, if an employer ceases to exist this will not affect the pension, however if the provider ceases to exist then the benefit may be lost, unless the provider was registered with the Financial Conduct Authority (Financial Conduct Authority | FCA). If it was, then compensation may be received from the Financial Services Compensation Scheme (Financial Services Compensation Scheme | FSCS). Trust-based schemes also exist, where the employer appoints a set of trustees to run the scheme. In this case, if the employer goes out of business, the pension benefit will still be paid but it may be reduced. This happens because the scheme running costs (which the employer will no longer be able to pay) will need to be paid out from the scheme before paying the member's benefits. (Department for Work & Pensions, n.d.-k)

The rules for drawing on the benefits are like DB rules, the earliest age is usually 55, however most providers set a normal retirement age (NRA) between 60 and 65, and a tax-free lump sum can be taken up to a maximum of 25%, the rest would be taxed. In addition, a management fee is also paid to the provider. In some circumstances, if the accumulated amount is small all of it may be taken as a lump sum, but the prior rules remain whereby only 25% is tax free.

If an individual decides to change job or take a leave, then depending on the conditions several different scenarios may occur. If one just leaves a scheme and stops paying, the invested amount will remain in fund until retirement, unless the service length was less than two years (in a DB scheme). Then there may be a possibility to receive a refund of contributions paid or a cash sum that can be transferred into a new scheme. If, on the other hand, one decides to change the job but wishes to carry on paying into the old scheme, this may still be a possibility, or they may combine with the new job pension scheme. The rules will be set out by the providers and in the case of paying to old schemes there may be some drawbacks, as some benefits may only be available to current employees. Taking a leave from a job does not stop contributions, the only difference is the employee contributions are based on actual earned income whilst the employer

portion remains the same, based on the normal working salary. During maternity, if an income is received then contributions are still paid, if not then the employer has an obligation to pay in for the first 26 weeks; after that it depends on the contract. (Department for Work & Pensions, n.d.-j)

4.2 – France

Both France and Switzerland, unlike UK, provide a compulsory occupational pension scheme to their populations. The French Pillar II scheme, Agirc-Arrco, similar to Pillar I, is a pay as you go system. It is also points-based, meaning points are collected throughout the working life and converted into a pension upon retirement. Agirc-Arrco is a merger of two schemes that existed prior to 1 January 2019, Arrco and Agirc. Arrco served general employees and Agirc was for managerial and executive staff. Since the merger, there is only one scheme that covers private sector employees. (CLEISS, 2022a) As previously mentioned, there are other supplementary schemes solely for the public sector, here the focus will remain with the private sector employees.

The pension amount is calculated using the following formula:

$$Pension\ Amount = Number\ of\ Points\ \times Point\ Value, \tag{2}$$

where the number of points is calculated in the following way:

$$Number\ of\ Points = Contribution\ Basis\ \times \frac{Point\ Calculation\ Rate}{Point\ Purchase\ Price}. \tag{3}$$

From equation (3), the contribution basis is the gross salary of an individual, subject to contributions. The point calculation rate which is lower than the contribution rate is the amount that goes towards the pension benefit. The current (2022) point purchase price ‘Prix d’achat du point’ is €17.4316 and point value ‘Valeur du point’ determined yearly is €1.2841 as of 1st of November 2021. (Agric-Arrco, 2022). The pension amount is proportional to income earned over the entire working career, different from the basic pension which only uses the 25 best salaries. (CLEISS, 2022a)

The contributions paid into the system allow an individual to accrue the points which will upon retirement be converted into a pension based on the point value. The amount that is contributed depends on the salary bracket of the individual, Table 8 shows both the

total contribution rates as well as the splits between employer (60%) and employee (40%), within the different salary brackets.

TABLE 8 – CONTRIBUTION BASIS

Basis	Contribution Rate			Point calculation rate
	Employee	Employer	Total	
Bracket 1: €0 to €3,428 (1x monthly social security ceiling)	3.15%	4.72%	7.87%	6.2%
Bracket 2: €3,428 to €27,424 (8x monthly social security ceiling)	8.64%	12.95%	21.59%	17%

Source: (CLEISS, 2022a)

As it can be seen there is a difference from what is contributed and the point calculation rate. The point calculation rate is the actual rate used to calculate the number of points that will later determine the pension amount. The reason for this is that the difference between the two rates will be used for scheme financing. The total contribution rate is calculated using the point calculation rate multiplied by a call rate of 127% (E.g., for bracket 1: $6.2\% \times 1.27 = 7.874\% \approx 7.87\%$). (Agirc-Arrco, n.d.-b)

Like the other two countries, there may be periods of time when contributions were not mad, but points are still earned. Some of these circumstances include long term absence from work (> 60 days), due to ill health, among other possibilities which can be seen on (Direction de l'information légale et administrative, 2022a). There is a possibility to buy back points for periods of higher education or incomplete years, although certain rules apply with regards to how many and in what period they can be redeemed. See (Agirc-Arrco, n.d.-b)

On top of the financing fee (mentioned above) there are extra contributions taken that do not go towards pension benefits, the amount to pay depends on the status of the individual. The different contributions, see (CLEISS, 2022b), can be seen below:

1. CEG: 'la contribution d'équilibre général' the overall balance contribution, which is applied to everyone and varies depending on the salary brackets, the purpose is to compensate for potential pension claims prior to 67. See Table 9
2. CET: 'la contribution d'équilibre technique' the technical balance contribution that applies to salaries in bracket 2, the employees pay 0.14% and the employer 0.21%.
3. APEC: 'l'Association pour l'emploi des cadres', applies to Execs only; the overall rate is 0.06% and is on the portion of salary that is four times the social security ceiling, $4 \times 3{,}428 = €13{,}712$.

TABLE 9 – CEG CONTRIBUTIONS

	Employee	Employer
Bracket 1: €0 to €3,428	0.86%	1.29%
Bracket 2: €3,428 to €27,424	1.08%	1.62%

Source: (CLEISS, 2022b)

The full rate supplementary pension can be claimed upon reaching SRA if: (i) eligible for full basic amount at 62, or (ii) eligible for full basic amount prior to 62 due to long career. In other circumstances, as with the basic pension, the full amount can be awarded regardless of service, upon reaching the DOB linked retirement age (65-67).

Since the merger of the two schemes, a temporary increase/decrease system on the pension amount has been put in place to incentivise workers to work beyond the age at which they become eligible for a full pension. This system is applied to those born after 1st of January 1957 or to those who only became eligible for the Agirc-Arrco scheme after the merger in 2019. Table 10 outlines when these increases or decreases are applicable and for how long.

Additional family related benefits may be awarded, these give a top-up to the pension for those who have raised children (three or more) or have dependants at retirement. If eligible for both at the same time, the higher of the two will be paid. Every time a child leaves the care of the pensioner the amount will be reassessed. Once all children are no longer categorised as dependant, the 'having children' top-up can be applied for as long

as at least three children have been raised. In the appendix, figure 3 shows in more detail what top-ups are applied in different scenarios. There is a ceiling, applicable to those born on or after 2nd of August 1951, of €2113.22, which is the maximum top-up that can be received on pensions drawn from January 1st, 2022. This cap is revalued according to how the point value evolves. (Agirc-Arrco, n.d.-a)

TABLE 10 – TEMPORARY PENSION INCREASES/DECREASES

Time of Application	Increase/ Decrease	Comment
Upon becoming eligible for full pension	10% Decrease	Applied for 3 years unless the age of 67 is reached sooner, in which case it is removed.
One year after eligibility	No effect	
Postponing 2 years	10% Increase	Applied for one year
Postponing 3 years	20% Increase	Applied for one year
Postponing 4 years	30% Increase	Applied for one year

Source: (Direction de l’information légale et administrative, 2022a)

4.3 – Switzerland

Switzerland’s Pillar II is mandatory for anyone that meets the minimum annual salary requirement of CHF 21,510 from one employer, is at least 24 years old and pays OASI contributions. Together with the first Pillar the aim is to replace 60% of pre-retirement income. (AVS/AI Information Centre, 2021b)

Contributions are taken from a ‘coordinated salary’; this salary is the gross annual income less a coordination deduction of CHF 25,095. The coordination deduction is 7/8 of the maximum annual Pillar I pension of a single person. (Swissstaffing BVG-LPP, n.d.). The maximum gross amount under the mandatory Pillar II is CHF 86,040. Thus, the coordinated salary is between CHF 3,585 and CHF 60,945. The split in contributions between the employer and employee is usually 50/50, however the employer may choose to pay in more. Depending on the age there is a minimum percentage of salary that should be contributed. This is called an old-age credit, see Table 11 for a breakdown. The

minimum interest gained on these credits is set each year by the Federal Council. (Vita Joint Foundations, 2021).

TABLE 11 – STATUTORY MINIMUM CONTRIBUTIONS

Age	25-34	35-44	45-54	55-65
Old-age credit in %	7	10	15	18

Source: (Federal Social Insurance Office FSIO, 2021)

There are instances, such as having low income, being self-employed or in short-term contracts, where contributions are not compulsory. In this case the individual may choose to contribute voluntarily. Voluntary contributions are also possible if there are gaps in the contribution history. Contributions are tax deductible but the benefit itself upon retirement will be taxed.

The schemes are managed by private pension funds, thus contribution rates may differ from scheme to scheme, as different regulations apply to each – the only requirement is the minimum rate. Even though contributions are compulsory, there may be times when contributing may not be required, for example, when the individual becomes unemployed, moves abroad, or starts a study or training programme. During the time in which no contributions are paid, the amount accrued in the fund must be transferred into a vested benefit account. Unless the vested benefit account is chosen by the individual, the accumulated capital will automatically be transferred to the Substitute Occupational Benefit Institution (Federal Chancellery, n.d.-a). The member may choose to move to a more rewarding account. Once the period of not paying contributions is over the benefits need to be transferred again into the fund of the new employer.

In UK and France, members can only withdraw the pension amount upon retirement and there are very few situations in which early withdrawal is possible. In Switzerland, however, there are many more circumstances in which early withdrawal is authorized, for example:

1. To buy a home, pay off mortgage or acquire shares in housing cooperatives before retirement, if certain conditions are met.

2. Become self-employed; given it is not mandatory to contribute while self-employed, self-employed may withdraw prior accumulated benefits, if certain requirements are met.
3. Leaving to a country outside the EU entitles to a full pay out, whilst if moving to a country within the EU only the non-mandatory part of benefits will be paid out, the rest will remain in Switzerland until retirement.

More information on the requirements can be found on 2nd pillar (ch.ch). If none of the above situations applies, then the benefits can usually be drawn at SRA only. A reduced pension may be paid with some schemes, if retiring early (earliest 58).(AVS/AI Information Centre, 2021b)

The retirement pension is calculated using a conversion rate that for the minimum mandatory pillar II schemes is currently 6.8% (employer may choose a higher one), multiplied by the accrued benefits upon retirement. Unlike Pillar I, Pillar II does not depend on years of contributions but solely on benefits accumulated. Upon retirement the benefits may be taken as a lump sum if the provider allows for it and if the old-age pension is lower than 10% of the minimum Pillar I OASI pension. (AVS/AI Information Centre, 2021b)

An invalidity pension may also be provided for anyone with at least 40% invalidity. The conversion rate used is the same as for normal retirement (6.8%). The calculation of the invalidity pension uses benefits with interest accrued up to the point of becoming disabled. Then the statutory minimum contribution for the relevant ages (See Table 11) is used until the retirement age that would have been, here the contributions do not accrue interest. The degree of disability determines how much of the pension will be received, see. (AVS/AI Information Centre, 2021b) for more information.

Switzerland's voluntary third pillar is split into two parts: 3a and 3b, the restricted and unrestricted saving schemes, respectively. The restricted fund is an individual voluntary insurance which pays out benefits only on occurrence of an insured event, such as retirement, death, or invalidity. In some cases, also when buying a house or becoming self-employed, like the second pillar. The statutory retirement age is that of the first pillar OASI, early or late retirement is available and can be up to five years earlier or later at

which point either a lump sum or monthly pension can be withdrawn. Survivors benefits may also be provided, the amount, type and how the benefits will be paid depends on the institution with which the contract is signed (AVS/AI Information Centre, 2021b).

Contributions are tax-deductible in the year of payment; nonetheless a tax is still paid upon withdrawing the money. There is a maximum amount that can be contributed into pillar 3a that is tax-deductible; for people covered by an occupational scheme, the maximum is CHF 6,883 and for the self-employed without a pillar II scheme, contributions may be 20% of income, up to a maximum of CHF 34,416. (Federal Chancellery, n.d.-b).

The unrestricted saving scheme (3b) has no special rules, as it is based on savings accounts, life insurance and investments; not being specifically retirement linked, they do not face any strict withdrawal rules. (Federal Chancellery, n.d.-b).

5. SURVIVORS ENTITLEMENTS

As mentioned at the beginning of Chapter 3, the focus in this study is to look into member retirement benefits. However, since survival benefits are very often linked to retirement benefits, it is reasonable to include this chapter, which will briefly look over the survival benefits available in the three countries.

5.1 – Pillar I: State Pensions

Surviving spouse benefits are available in both France and Switzerland, but not in the UK, under new state pension rules. The NSP has been designed in a way so that after the transitional period is over, when everyone will only be subject to NSP rules, no survivors' benefits will be inherited. The reasoning behind such a change is that generally women received a much lower pension than men until their deaths, at this point there was a gain due to inheritance. The new system is designed in a way that allows everyone to earn the full rate pension on their own. Thus, post transition, there will be no valid reason for inheritance of pensions. (Department for Work & Pensions, 2013)

The key difference between France and Switzerland spouse pensions is that in France the benefit is income tested and doesn't consider marital status after spousal death, unlike in Switzerland. This means that in France a widow or widower can remarry and still receive a spouse pension if the joint income does not exceed a threshold.

In France, in the case of more than one marriage, then the benefit is pro-rated, based on time married to each (CLEISS, 2022a) There are other rules, for instance, related with children, see further details in (l'Assurance Retraite, n.d.) . In Switzerland, the benefit is available to female spouses (widows) as long as they satisfy conditions on the length of marriage, age and/or having children at the time of death of the (ex)spouse. The male spouse (widower) is only eligible if he has at least a child under 18 at the time of death of the (ex)spouse. The amount is a percentage of the old-age pension, see: (AVS/AI Information Centre, 2021a)

With regards to orphan pensions, currently the only country that provides them is Switzerland and is also a percentage of old-age pension. In the UK such benefits used to

be provided under the old rules, but not since 2016, when the new state pension kicked in. France also does not provide them under the basic pension.

5.2 – Pillar II: Occupational Pensions

With regards to occupational pensions and the additional benefits they provide, there are only slight variations. In UK, for example, a person can be nominated to receive the pension in the case of death. Usually, this person is either a spouse or dependant (Department for Work & Pensions, n.d.-j)

In France, the complimentary scheme provides both spouse and orphan pensions and these benefits are not means-tested, as with the state pension. The reversionary amount to which the spouse is entitled to is calculated using the following formula:

$$Reversion\,pension = Total\,points \times point\,purchase\,value \times 60\,\%. \qquad (4)$$

In equation (4), the total points are either those accrued up to the point of death or to the date of retirement, whichever is earlier. Only marriage is counted for this benefit, civil unions or partnerships are not eligible.

The orphan pension is paid only if both parents die; depending on when the last death occurs, the entitlements are different. Appendix, Figure 4, shows the entitlements in more detail. (CLEISS, 2022a)

Switzerland provides additional benefits for spouses (60% of the full invalidity pension) and orphans (20% of the full invalidity pension), these are a percentage of the invalidity pension unlike in Pillar I, which is based on the old-age benefit. These percentages correspond to the minimum, schemes may choose to pay more. For spouse pensions there are certain requirements about age (>45) and marriage length (>5) that need to be met, the exception is having and raising children. If these conditions are not met, then a one-off payment may be received. Divorced spouse benefits may be awarded

if the marriage/partnership lasted more than 10 years and if alimony was paid.(AVS/AI Information Centre, 2021b)

Table 10 provides a quick summary of the additional benefits between the countries from both the state pension and occupational workplace pension schemes.

TABLE 12 – SURVIVORS ENTITLEMENTS

		UK	France	Switzerland
Pillar I	**Survivors Pension**	Under new system: No Old system: Yes	Yes – no more than 54% of deceased spouse pension	Yes – 80% of deceased spouse pension
Pillar I	**Orphan Pension**	Under new system: No Old system: Yes	No – Provided only under complimentary scheme	Yes – 40% of deceased parent pension, cannot exceed 60% from both parents.
Pillar II	**Survivors Pension**	Yes – Can nominate person.	Yes – 60% of deceased spouse pension.	Yes – 60% of Invalidity Pension
Pillar II	**Orphan Pension**	Yes – Can nominate person.	Yes – See Appendix Figure 4	Yes – 20% of Invalidity Pension

6. PENSION SIMULATIONS AND EXAMPLES

Leading on from the explanations of each country's pension systems, the aim of this chapter is to look into some pension simulations and examples. Due to the complex nature of using average salaries, for the purpose of showing how the Pillar I calculations work, a set reference salary will be used along with an assumption of salary increases. This reference salary will allow to see how each system accrues its benefits and will allow to see which one gives a higher benefit at retirement, but this cannot be used as a true comparison until costs of living are accounted for.

6.1. Pillar I Benefit Simulations

For these first simulations, it will be assumed that the individual will be retiring in the year 2022 and will be retiring at the statutory age of each country.

- UK

The UK state pension, as previously mentioned, is not directly linked with salaries, but with the qualifying years a member has accumulated. As the NSP was set in motion from 2016, the way the state pension is calculated is by calculating a starting amount based on NI record prior to (and including) the tax year 2015/16. Then, depending on the amount, the pension may be increased with additional qualifying years post 2016, if there are any. The only requirement that needs to be satisfied to receive any state pension is a minimum of 10 qualifying years.

Example 1

Individual born in 1956 and retiring in 2022 at SPA of 66 started working at 20 and builds up 40 qualifying years by 2016. The starting amount will be the highest of:

- OSP: £141.85 $\times \frac{30}{30}$ + (ASP Max = £185.90 excl. state pension top up)
- NSP: £185.15 $\times \frac{35}{35}$ = £185.15

In a situation where the individual has no ASP the NSP will always be higher if the minimum qualifying period is met. As soon as the ASP is considered then the maximum amount one can increase beyond the full NSP amount. The difference will be classed as

a protected payment that comes from the accrual of ASP. For simplicity, it is assumed that the individual does not have any additional state pension. Thus, the highest pension one can get without delaying retirement will be the 185.15 £/week (9,627.80 £/year). Even though the individual has 40 qualifying years, any remaining years post 2016 will no longer increase the benefit. In each case only the maximum years required for full rate are considered, i.e., 30 for OSP and 35 for NSP.

Example 2

If the same individual only had 25 qualifying years prior to 2016, the starting amount would be:

- OSP: £141.85 x (25/30) = £118.21
- NSP: £185.15 x (25/35) = £132.25

The starting amount would be £132.25; in this case qualifying years post 2016 would be counted to increase the pension. If 6 more years were to be added, then the amount would increase by £185.15 x (6/35) = £31.74, giving a total benefit of £163.99 with four missing qualifying years. Each additional year to the NSP adds: £185.15 x (1/35) = 5.29£/week.

Thus, for the UK state pensions, even though NI contributions are required to be paid (or NI credits received) throughout the full working life, as soon as the full rate pension is achieved it no longer increases until SPA. It is a flat rate and does not depend on salaries.

For both France and Switzerland, a reference pre-retirement salary of 50,000 m.u. (monetary units) will be used with an assumption of salary increases at 2% per year.

- France

France calculates its state pension based on 25 best salaries, the rate, and the length of insurance. If an individual retires at the full rate age, the calculation will depend only on the length of insurance accrued *vs*. the required, thus missing quarters will no longer incur a penalty. The following examples will be based on a single individual born in 1955 who will retire at the legal minimum age of 62, with 0 or 4 missing quarters (1 year). Also, at the full rate age of 67 with 0 or 4 missing quarters, to see the differences in calculations.

Here only the results will be presented, cf. Table 13. More in depth calculations can be found in the appendix, Figure 5.

TABLE 13 – FRENCH PILLAR I SIMULATION RESULTS

		Annual (m.u)	Monthly (m.u)
1	Full-rate age, no missing quarters	19,826.76	1,652.23
2	Full-rate age, 4 missing quarters	19,349.01	1,612.42
3	62, no missing quarters	19,826.76	1,652.23
4	62, 4 missing quarters	18,381.56	1,531.80

For the case of this individual the simulations were constructed in a way such that the required number of quarters were only acquired by either 62 or 67 (full-rate age). In this case the pension amounts of examples 1 and 3 are equal. In real life, if an individual were to have the full pension by 62 and carried on working, he/she would receive pension increases.

If the individual were to retire at 62 and have one year of contributions missing, the weekly amount would be reduced by 7.29%, as now there is a penalty for the four missing quarters. If they were to instead retire at 67 with four missing quarters, the amount in this case would only reduce by 2.41%. There is clearly a much higher penalty for retiring at the legal minimum age with missing quarters than retiring at the full-rate age with missing quarters. This acts as an incentive to carry on working until the full rate age.

- Switzerland

With Switzerland, the calculations are far more complex. The main idea of the calculation is that total earned income over the period of contributions is revalued to retirement date by a factor depending on the first year of contributions. See: (OFAS, 2021). Credits for periods of education and or parenting are included, if applicable, and an average annual income is generated. This average is then tested against a range of parameters to

determine a pension benefit. More in depth information about the calculations can be found on (BSV, 2022).

For this exercise it was assumed for simplicity, as with France and UK, that the member is single and without children. As males and females have different retirement ages both scenarios were accounted for, to see if there is a difference in benefit amount. The examples are like with France to aid comparison: one with a full contribution history and one with one year missing.

In the appendix, Figure 6 shows an example simulation of a female with one year missing from her contribution history. In the excel sheet, the different inputs can be seen as well as formulas used to calculate the required inputs. Here only the results will be presented, see Table 14.

TABLE 14 – SWISS PILLAR I SIMULATION RESULTS

Contribution History	Annual (m.u.)	Monthly (m.u.)
Male (Full 44 Years)	21,048	1,754
Male (43 Years)	20,568	1,714
Female (Full 43 Years)	21,048	1,754
Female (42 Years)	20,568	1,714

Even though males and females have different full contribution lengths, in this scenario where both earn the exact same amounts, the benefit received is equal and does not discriminate against one another.

From these examples, it is evident that given the exact same conditions and assumptions Switzerland gives a higher full pension benefit upon retirement than France, excluding UK from this specific comparison as it is not salary dependant. Of course, this is a simulation and in real life circumstances may be different and the conclusions may change as the way the benefits are calculated are different. The average salaries and occupations also play a significant role in calculating the benefits.

6.2. Comparing Retirement Income to Quality of Life

As previously mentioned, using average salaries to simulate pension benefits is complex, due to variations in salaries between occupations, age, sex, location, etc. For this reason, Section 6.1 was dedicated for the understanding of the calculations of state benefits, more than their comparisons, although (given the same assumptions were used) a comparison could be seen of which system accrues higher benefits. Not necessarily which is the better system. This chapter will provide some statistics of average retirement income, and to the best extent possible try to compare this to expenditure in retirement.

- UK

The average gross retirement income of single retirees in UK is £385 a week, whilst for couples is £784 in 2020/21. This amount includes all income sourced from the state, private and personal pensions and/or earnings. The net incomes before housing costs are accounted for are £332 and £651 per week, for singles and couples respectively. (Department for Work & Pensions, 2022b). On average the NSP is £168.40 per week, of which men receive on average £170.49 and women £165.05 a week. Comparing to the old state pension, women tend to be better off receiving around £18 more under NSP than OSP. Men on the other hand tend to be worse off by around £2 under the new system. (Department for Work & Pensions, 2022c)

Research undertaken by (Padley & Shepherd, 2021) provide retirement living standard details and how much one would need for a minimum, moderate and comfortable lifestyle. 2021 figures show that a pensioner couple that achieves the minimum lifestyle spends around £320 a week, whilst moderate and comfortable lifestyles require a budget of £587 and £953, respectively. The budgets do not include costs related to mortgage or rent expenses, as it is assumed that most retirees own their home and this is not an expense, although could become in the future. So, an average couple that has a net income before housing costs of £651 just about covers the moderate lifestyle, and if rent expenses or mortgage expenses are to be considered then this would reduce the lifestyle more. A single pensioner earning £332 pre-housing costs can expect to be living a minimum lifestyle, which requires around £209 weekly; the moderate lifestyle is £399, which is already over budget, whilst the comfortable is £644 a week…

- France

A study by (CSA, 2021) presented both average pension amounts for retired couples and single individuals, as well as the main monthly expenses that arise from food, home insurance and bills. A single pensioner on average will receive €1,563 whilst a retired couple will receive €2,625 per month. The monthly expenses are approximately €1,188 for a single and €1,756 for a couple. A retiree living alone will spend about 76% of their income on expenses compared to a couple which will spend 10% less, 67% of their income according to the CSA institute.

- Switzerland

Based on a study by (Christen, 2022), the average retirement income for a couple is CHF 74,100 from the two pillars, whilst a single male retiree on average earns CHF 50,500 and a female CHF 38,900, significantly lower. The study presents many aspects of the pension benefits received and whether pensioners are satisfied with what they get. From responses of retirees of how they assess their financial situation in retirement, 68% were able to maintain or improve their previous standard of living, while only 32% experienced a reduction. The results also suggested that couples were able to maintain their lifestyle better than those living alone. Naturally, those who earn more and build up benefits in the 2nd and 3rd pillars are more likely to maintain their previous standards of living.

Looking at the statistics from these three countries, even though the study is not very in depth and not looking at very fine details it seems already that in all these situations single pensioners are worse off in retirement compared to couples, this in turn is a very probable cause of old-age poverty that may occur if single pensioners are not earning as much yet the expenses for housing for example are still an obligation. The other observation is that females earn less than men even in retirement, of course this makes sense as women are more likely to have career breaks due to caring responsibilities, here it depends on how well the system is built to support carers. This will especially be important for systems that are salary based such as France and Switzerland.

7. CONCLUSION

To conclude, the systems of all three countries are quite different and each has its own way of accruing benefits. Given certain limitations of data retrieval for Switzerland and France, with regards to standards of living and expenses in retirement. the task of understanding adequacy of pensions was much more difficult than expected. Nonetheless, certain conclusions can still be made.

Switzerland appears to be a system that is well thought through and in retirement can provide the retirees with enough income to sustain and maintain a standard of living that was achieved prior to retirement. Given the high satisfaction levels of the Swiss as per (Christen, 2022), it remains a curiosity as to why the old-age poverty rate is quite high, 18.8% as per (OECD, 2022). (Everon, n.d.) suggests the lack of education, single parenting as well as single households increase this rate. Which comes as no surprise that this is a reason for old-age poverty if the single pensioners are not able to maintain their lifestyle as well as couples.

France was the country with which most difficulty was experienced to understand and gather information about the adequacy of their retirement income. Even though certain statistics were available on some expenditures, it is hard to draw a concrete conclusion of whether the retirement income is sufficient. The one thing that is more evident is that France relies mainly on the state and mandatory supplementary schemes for the retirement benefits and not on any personal or private savings. This contrasts with Switzerland which has a higher participation in all three pillars, see (Harker, 2022) for a breakdown of income sources by country.

Finally, in the UK, the state pension is completely different from benefits in the other two countries, as it is not salary related and gives the pensioner a flat rate irrelevant of the salary earned in the career. This especially brings more need for individuals to participate in occupational schemes as relying solely on the state will not be enough to sustain even a minimum lifestyle. Considering also that the occupational schemes follow an ‘opt-out’ system, chances are low-income individuals will wish to opt-out and/or will not be eligible for automatic enrolment in the first place. If this is the case then the reliance on

the state grows increasing the probability of old-age poverty, which is quite high in the UK (15.5%). (OECD, 2022)

Overall, it was interesting to learn about the different pension systems and where and how each country provides retirement income, and this was the goal of the paper. Even if certain difficulties did arise the goal was met.

Given the limitations of certain data collections for some of the countries, (potentially due to language barriers), further in-depth research would be interesting, to really try to understand the setbacks faced by pensioners upon entering retirement under the different systems, as well as to analyse deeper the factors causing old-age poverty.

The internship at WTW has proved to be a very interesting journey, building much curiosity about not just my immediate work with the UK, but also to the other countries. The access to information and knowledge from senior colleagues of the relevant departments really aided my research and helped me to expand my expertise.

REFERENCES

Agirc-Arrco. (n.d.-a). *Conditions d'ouverture de mes droits*. Retrieved 15 July 2022, from https://www.agirc-arrco.fr/ma-retraite/demander-ma-retraite/conditions-douverture-de-mes-droits/#c1073

Agirc-Arrco. (n.d.-b). *Points de retraite : comment sont-ils obtenus ?* Retrieved 21 September 2022, from https://www.agirc-arrco.fr/ma-retraite/comprendre-ma-retraite/points-de-retraite-comment-sont-ils-obtenus/

Agirc-Arrco. (2022). *Le livret du salarié*. https://fr.calameo.com/read/0027117299a47a1562a52

Athow, J. (2021, July 15). *Far from average: How COVID-19 has impacted the Average Weekly Earnings data*. https://blog.ons.gov.uk/2021/07/15/far-from-average-how-covid-19-has-impacted-the-average-weekly-earnings-data/

AVS/AI Information Centre. (2021a). *OASI survivors' pensions*. https://www.ahv-iv.ch/p/3.03.e

AVS/AI Information Centre. (2021b). *Social security in Switzerland*. https://www.ahv-iv.ch/p/890.e#:~:text=The%20OASI%20is%20the%20main,due%20to%20retirement%20or%20death.&text=%E2%96%BA%20The%20OASI%20compensation%20offices,age%20and%20survivors%27%20insurance%20benefits.

AVS/AI Information Centre. (2022). *Flexible retirement*. https://www.ahv-iv.ch/p/3.04.e

BSV. (2022, January 1). *Berechnungsvorschriften der AHV/IV-Renten*. https://sozialversicherungen.admin.ch/de/d/18438/download

Burel, S. (2022, August 24). *ASPA 2022 : Un minimum vieillesse pour les personnes n'ayant pas ou peu cotisé à la retraite*. https://www.aide-sociale.fr/minimum-retraite-aspa/

Christen, A. (2022). *Que peut-on se permettre à la retraite?* https://www.swisslife.ch/content/dam/ch/dokumente/fr/private/studien/etude_swiss_life_que_peut_on_se_permettre_a_la_retraite_f.pdf

CLEISS. (2022a). *The French Social Security System - III - Retirement*. https://www.cleiss.fr/docs/regimes/regime_france/an_3.html

CLEISS. (2022b, January 1). *Social Security and unemployment contribution rates*. https://www.cleiss.fr/docs/regimes/regime_france/an_a2.html

CSA. (2021). *Les retraités français sont-ils riches?* https://www.silveralliance.com/wp-content/uploads/2021/04/CP-20210413-Etude-Silver-Alliance-et-CSA-Les-retraites-francais-sont-ils-riches.pdf

Department for Work & Pensions. (n.d.-a). *Additional State Pension*. Retrieved 13 June 2022, from https://www.gov.uk/additional-state-pension/eligibility

Department for Work & Pensions. (n.d.-b). *Delay (defer) your State Pension*. Retrieved 12 June 2022, from https://www.gov.uk/deferring-state-pension/extra-state-pension-and-lump-sum-payments

Department for Work & Pensions. (n.d.-c). *Income Tax rates and Personal Allowances*. Retrieved 12 June 2022, from https://www.gov.uk/income-tax-rates

Department for Work & Pensions. (n.d.-d). *Pension Credit*. Retrieved 27 July 2022, from https://www.gov.uk/pension-credit/what-youll-get

Department for Work & Pensions. (n.d.-e). *Tax on your private pension contributions*. Retrieved 5 July 2022, from https://www.gov.uk/tax-on-your-private-pension/pension-tax-relief

Department for Work & Pensions. (n.d.-f). *Tax when you get a pension*. Retrieved 5 July 2022, from https://www.gov.uk/tax-on-pension/tax-free

Department for Work & Pensions. (n.d.-g). *The basic State Pension*. Retrieved 13 June 2022, from https://www.gov.uk/state-pension/increase-the-amount-youll-get

Department for Work & Pensions. (n.d.-h). *The new State Pension*. Retrieved 11 June 2022, from https://www.gov.uk/new-state-pension/how-its-calculated

Department for Work & Pensions. (n.d.-i). *Types of private pensions*. Retrieved 5 July 2022, from https://www.gov.uk/pension-types

Department for Work & Pensions. (n.d.-j). *Workplace pensions*. Retrieved 4 July 2022, from https://www.gov.uk/workplace-pensions/joining-a-workplace-pension

Department for Work & Pensions. (n.d.-k). *Workplace pensions - Protection for your pension*. Retrieved 4 July 2022, from https://www.gov.uk/workplace-pensions/protection-for-your-pension

Department for Work & Pensions. (2013). *The single-tier pension: a simple foundation for saving*. https://webarchive.nationalarchives.gov.uk/ukgwa/20130402152647/http:/www.dwp.gov.uk/docs/single-tier-pension.pdf

Department for Work & Pensions. (2014, May 15). *State Pension age timetable*. https://www.gov.uk/government/publications/state-pension-age-timetable/state-pension-age-timetable

Department for Work & Pensions. (2022a). *Your State Pension explained*. https://www.gov.uk/government/publications/your-new-state-pension-explained/your-state-pension-explained

Department for Work & Pensions. (2022b). *Pensioners' Incomes Series: financial year 2020 to 2021 Table 2.1*. https://www.gov.uk/government/statistics/pensioners-incomes-series-financial-year-2020-to-2021

Department for Work & Pensions. (2022c, August 19). *DWP benefits statistics*. https://www.gov.uk/government/statistics/dwp-benefits-statistics-august-2022/dwp-benefits-statistics-august-2022#pensions

Direction de l'information légale et administrative. (2020, August 13). *Travailler après 67 ans : quelles conséquences pour la retraite du salarié ?* https://www.service-public.fr/particuliers/vosdroits/F32128

Direction de l'information légale et administrative. (2022a, January 1). *Retraite complémentaire dans le privé : Agirc-Arrco*. https://www.service-public.fr/particuliers/vosdroits/F15396

Direction de l'information légale et administrative. (2022b, August 22). *Pensions de retraite : + 4 % avec effet rétroactif au 1er juillet 2022*. https://www.service-public.fr/particuliers/actualites/A15325

Everon. (n.d.). *Old-age poverty in Switzerland: situation, causes & prevention* . Retrieved 14 October 2022, from https://everon.swiss/en/old-age-poverty-in-switzerland/

Federal Chancellery. (n.d.-a). *2nd pillar*. Retrieved 18 July 2022, from https://www.ch.ch/en/retirement/old-age-pension/the-2nd-pillar/

Federal Chancellery. (n.d.-b). *3rd pillar*. Retrieved 20 July 2022, from https://www.ch.ch/en/retirement/old-age-pension/the-3rd-pillar/

Federal Chancellery. (n.d.-c). *Paying OASI contributions in Switzerland*. Retrieved 16 June 2022, from https://www.ch.ch/en/work/old-age-pension/oasi/oasi-contributions/

Federal Social Insurance Office FSIO. (2021). *Switzerland's old-age insurance system.* https://www.bsv.admin.ch/bsv/en/home/publications-and-services/broschueren.html

Harker, R. (2022). *Pensions: international comparisons*. https://researchbriefings.files.parliament.uk/documents/SN00290/SN00290.pdf

la retraite en clair. (2022, June 17). *Quels impôts sur ma retraite ?* https://www.la-retraite-en-clair.fr/organiser-depart-retraite/comprendre-pension-retraite/impots-retraite

l'Assurance Retraite. (n.d.). *Les enfants*. Retrieved 25 September 2022, from https://www.lassuranceretraite.fr/portail-info/home/actif/salarie/droits-situation-perso/enfants.html#paragraphe-0f0dcc78-02a1-4de1-8d85-817475875839

Mercer. (2021). *Mercer CFA Institute Global Pension Index.* http://www.mercer.com/globalpensionindex

OECD. (2021). *Pensions at a Glance 2021: OECD and G20 Indicators*. OECD Publishing. https://doi.org/10.1787/ca401ebd-en

OECD. (2022). *Poverty rate (indicator)*. https://doi.org/10.1787/0fe1315d-en

OFAS. (2021, October 20). *Aufwertungsfaktoren 2022*. https://www.ahv-iv.ch/Portals/0/adam/AHV-IV/NR6_PTVCZ0SvYe14sb8Wlg/Document/Aufwertungsfaktoren%202022%2016.pdf

ONS. (2022). *Employee workplace pensions in the UK 2021 provisional and 2020 final results*. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/workplacepensions/bulletins/annualsurveyofhoursandearningspensiontables/2021provisionaland2020finalresults

Padley, M., & Shepherd, C. (2021). *Retirement living standards in the UK in 2021*. https://www.retirementlivingstandards.org.uk/Retirement-living-standards-in-the-UK-in-2021.pdf

Pierry, D. (2022, August 25). *Minimum contributif retraite : Quels sont les montants et comment s'applique la majoration ?*

Swissstaffing BVG-LPP. (n.d.). *What is a coordination deduction?* Retrieved 24 September 2022, from https://www.swissstaffing-bvg.ch/en/members/faq/general/what_coordination_deduction.php

Thurley, D. (2021). *The new State Pension – transitional issues*. https://researchbriefings.files.parliament.uk/documents/CBP-7414/CBP-7414.pdf

Thurley, D., & McInnes, R. (2021). *State Pension triple lock*. https://researchbriefings.files.parliament.uk/documents/CBP-7812/CBP-7812.pdf

Vita Joint Foundations. (2021). *Occupational pension plan explained*.

FIGURE A1 – EARLY RETIREMENT

Year	Women			Men		
	DOB	Early Pension	Reduction	DOB	Early Pension	Reduction
2022	1/12/1958 – 30/11/1959	1 year	6.8%	1/12/1957 – 30/11/1958	1 year	6.8%
	1/12/1959 – 30/11/1960	2 years	13.6%	1/12/1958 – 30/11/1959	2 years	13.6%

Source: (AVS/AI Information Centre, 2022)

FIGURE A2 – LATE RETIREMENT

Years	Percentage Increase after deferral period of years and months			
	0-2 (months)	3-5 (months)	6-8 (months)	9-11 (months)
1	5.2	6.6	8.0	9.4
2	10.8	12.3	13.9	15.5
3	17.1	18.8	20.5	22.2
4	24.0	25.8	27.7	29.6
5	31.5			

Source: (AVS/AI Information Centre, 2022)

FIGURE A3 – FAMILY RELATED TOP-UPS

	Supplement for dependent children	Supplement for children born or raised		
Arrco	5% increase per dependent child on the rights for the entire career	**Post 2012 career**: 10% - 3+ children	**1999 – 2011** 5% - 3+ children	**Pre 1999** Old Pension Fund regulations
Agirc	5% increase per dependent child on the rights for the entire career	**Post 2012 career:** 10%, 3+ children		**Pre 2012 career:** 8% - 3 children 12% - 4 children 16% - 5 children 20% - 6 children 24% - 7+ children

Source: (Agirc-Arrco, n.d.-a)

FIGURE A4 – ORPHAN PENSION ENTITLEMENTS

Date of Second Death	Entitlements
Prior to 01/01/2019	Arrco: 50% of entitlements of each parent
	Agirc: 30% of entitlements of each parent
After 01/01/2019	Agirc-Arrco: 50% of accrued entitlements of each parent

Source: (CLEISS, 2022a)

FIGURE A5 – FRENCH PILLAR I EXAMPLES

	A	B
1	DOB	Quarters
2	1955	166
3	1956	166
4	1957	166
5	1958	167
6	1959	167
7	1960	167
8	1961	168
9	1962	168
10	1963	168
11	1964	169
12	1965	169
13	1966	169
14	1967	170
15	1968	170
16	1969	170
17	1970	171
18	1971	171
19	1972	171
20	1973	172
21		
22	Missing Quarters	Rate
23	0	50.000%
24	1	49.375%
25	2	48.750%
26	3	48.125%
27	4	47.500%
28	5	46.875%
29	6	46.250%
30	7	45.625%
31	8	45.000%
32	9	44.375%
33	10	43.750%

D	E	F
	Year	Average Annual Salary
25	2022	50,000.00
24	2021	49,400.00
23	2020	48,807.20
22	2019	48,221.51
21	2018	47,642.86
20	2017	47,071.14
19	2016	46,506.29
18	2015	45,948.21
17	2014	45,396.83
16	2013	44,852.07
15	2012	44,313.85
14	2011	43,782.08
13	2010	43,256.70
12	2009	42,737.62
11	2008	42,224.76
10	2007	41,718.07
9	2006	41,217.45
8	2005	40,722.84
7	2004	40,234.17
6	2003	39,751.36
5	2002	39,274.34
4	2001	38,803.05
3	2000	38,337.41
2	1999	37,877.36
1	1998	37,422.83

$$Basic\ Pension = RAM \times Rate \times \frac{Total\ length\ of\ Insurance}{Max\ No\ Quarters,\ depending\ on\ DOB} \quad (1)$$

Salary increase Rate 2.00% Maximum Pension Amount 20568 (50% of social security ceiling 2022)

Example 1 (Full-rate age, no missing quarters)

DOB	17/02/1955	RAM	39,653.53		=AVERAGE(Salaries[Average Annual Salary])
SRA	67	Rate	50%		=IF(I6=67,50%,VLOOKUP(I10,Miss_Quarters[#All],2,FALSE))
SRD	17/02/2022	Length of Insurance / Required Quarters	1		=MIN(1,I9/I8)
Required quarters	166				
Quarters accrued	166	Basic Pension	19,826.76	p/year	=MIN(N3,RAM*Rate*ins)
Missing Quarters	0		1,652.23	p/month	=M9/12
			381.28	p/week	=M9/52

Example 2 (Full-rate age, missing quarters)

DOB	17/02/1955	RAM	39,653.53	
SRA	67	Rate	50%	
SRD	17/02/2022	Length of Insurance / Required Quarters	0.975903614	
Required quarters	166			
Quarters accrued	162	Basic Pension	19,349.01	p/year
Missing Quarters	4 (1 year missing)		1,612.42	p/month
			372.10	p/week

Example 3 (62, no missing quarters)

DOB	17/02/1955	RAM	39,653.53	
SRA	62	Rate	50%	
SRD	17/02/2017	Length of Insurance / Required Quarters	1	
Required quarters	166			
Quarters accrued	166	Basic Pension	19,826.76	p/year
Missing Quarters	0		1,652.23	p/month
			381.28	p/week

Example 4 (62, missing quarters)

DOB	17/02/1955	RAM	39,653.53	
SRA	62	Rate	47.50%	
SRD	17/02/2017	Length of Insurance / Required Quarters	0.975903614	
Required quarters	166			
Quarters accrued	162	Basic Pension	18,381.56	p/year
Missing Quarters	4 (1 year missing)		1,531.80	p/month
			353.49	p/week

FIGURE A5.A)– SWITZERLAND PILLAR I (FEMALE 1 YEAR MISSING)

	A	B	C
1	Sex	F	
2	DOB	17/04/1958	
3	Retirement Date	17/04/2022	
4	Children	0	
5	Marital Status	Single	
6			
7	Input Parameters		
8	Eligible income amount	ES	1,597,683
9	Career supplement for survivors	Z	0
10	Reval factor	AF	1.04
11	Eligible term in months	BD	504
12	Education credits	EGS	0
13	Care credits	BGS	0
14	Monthly min pension (2022)	R_0	1195
15	Pension type (1 = old-age)	a	1
16	Required Contribution years	J1	43
17	Accrued contribution years	V1	42
18	Withdrawal years men	n	0

D	E	F	G	I
20th birthday		17/04/1978		
First contribution year		1979		
Last contribution year		2022		
	Average ES	ØES	39,562	=ROUNDDOWN(((ES*(1+(Z/100))*AF*12)/BD) + 0.5,0)
	Average EGS	ØEGS	0	=ROUNDDOWN((EGS*12)/BD + 0.5,0)
	Average BGS	ØBGS	0	=ROUNDDOWN((BGS*12)/BD + 0.5,0)
		E_0	28	=ROUNDDOWN((oES+oEGS+oBGS)/(1.2*R0) + 0.9999,0)
	Average Income	E	40,152	=E0*1.2*R0
		i	43	=ROUNDDOWN(IF(n=0,((44*V)/J) + 0.9999,(44*V)/J + 0.5),0)
		S_i	0.9773	=ROUNDDOWN((i/44) + 0.00005,4)

FIGURE A6.B)– SWITZERLAND PILLAR I (FEMALE 1 YEAR MISSING)

Steps		Yes	No				
$E \le 36*R_0$	43,020.00	X				Yes	No
If Yes				If No			
$E \le 12*R_0$	14,340.00		X	$E < 72*R_0$	86,040.00		
r(E)	1,754.20			r(E)			
$r=s_i*a*r(E)$	1,714.30						
$r>s_i*2*R_0$	2,335.75		X				
If Yes				If No			
$r=s_i*2*R_0$	2,335.70			R	1,714.00		
R							
Monthly Pension amount	1,714.00						