Survivorship Pensions in the Middle East and North Africa Region: Current Situation and Innovative Options for Reforms

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Preliminary version

The purpose of the survivor's pension is to create rights for young and old age dependants. In the case of developed countries, the system deals essentially with the spouse survival. In the case of MENA countries, the survivor's pensions scheme provides a wider perspective of coverage and is extended to protect children, brothers, sisters, dependant parents and grand-parents according to specific criteria.
Two objectives of survivor's pensions can be distinguished. On the one hand, the survivor's pensions aim at providing a minimum of resources when the widow(er) could not acquire any other sources of income. In this case, the widow survivor's pension is provided to the most modest households in order to help them from plunging in extreme poverty.
This context prevails widely in MENA countries, where poverty is high and the level of dependancy is also prominent.
On the other hand, a second perspective considers the survivor's pensions as a pension right to the widow (er) with the aim of maintaining her/his former standard of living. Developed countries are particularly concerned by this environment.
This paper propose an analysis of the impact of pension reforms, particurlarly, of the survirvorship pensions reforms on the individual situations of retirees.
The analysis focuses on Moroccan pension system and will consider a representative sample of members of the main schemes in Morocco.

The paper is organized as follows. In the first section, we present the current system in MENA countries (coverage, conditions for eligibility and benefits levels)**;** other developed and developing countries are also reviewed. In the next section, we present the costs and the current situation and options for reforms in Morocco.

I. Current systems in MENA and an overview of systems around the world

This section presents an overview of the survivor's pension programs across a sample of MENA countries. A selection of other developing and developed countries is also reviewed to provide some kind of benchmarking or outlook on the type of systems and reforms followed by other countries. The selected MENA countries for this study are

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Algeria, Bahrain, Djibouti, Rep. of Egypt, Iran, Jordan, Libya, Morocco, Syria, Tunisia, and Yemen**.** Other countries reviewed include Argentina, Chile, Colombia, France, Germany, United Kingdom, United States, Sweden, Poland and Hungary.

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On the other hand, a second perspective considers the survivor's pensions as a pension right to the widow (er) with the aim of maintaining her/his former standard of living. Developed countries are particularly concerned by this environment. In general, retirement systems combine these two elements from these two perspectives while different rules are applied in developing and developed countries.

The discussion is organized as follows. In this section, we present the current system in MENA countries (coverage, conditions for eligibility and benefits levels)**;** other developed and developing countries are reviewed in the next section.

1.1 Current systems in MENA countries

Coverage

In MENA countries reviewed, social security systems provide benefits under old age, disability and survivorship programs. Therefore, the calculation on survivor pension is linked to old-age and disability[2] pensions.
All these programs focus on long-term risks for providing pensions and/or lump-sum payments to compensate for loss of income.

Survivor’s pension is provided when the insured workers or pensioners die. The survivor’s pension is accorded to the widow, the widower or other members of the family, when the head of the household (income generator) dies and was an insured worker or pensioner. In most programs in the MENA countries reviewed (i.e. Algeria, Bahrain, Djibouti, Rep. of Egypt, Iran, Tunisia, Lybia, Morocco, Syria, Yemen) the pension is due if the insured was a pensioner or was eligible for a pension (disability

[2] Disability is generally defined as long term total work impairment resulting from a non occupational injury or disease.

and/or old-age) at the time of death. In some of these countries, for survivors to be eligible, the deceased insured should also satisfy the minimum contributions conditions.
In Jordan, the deceased insured should have cumulated 24 months of contributions from which 12 months must be continuous. In Iran, the deceased should have completed one year of contribution in last 10 years. In Morocco, for the workers in the private sector (CNSS) and in the public sector (RCAR), the deceased must have been a pensioner or must have been eligible for a pension; and for the CNSS, should attain 3240 days of contribution.

In general, all employees in the private sectors are covered by the social security program and civil servants have their own systems. However, in some countries, some categories of workers are not entitled to the social security program. In Morocco[3], Iran and Yemen, coverage is not provided for self employed. In the latter and in Bahrain, the social security program does not consider casual workers, domestic's servants, temporary noncitizen and agricultural workers. In Morocco, contractual workers in the public sector are covered (RCAR). In Jordan, public employees are covered under civil or military pension laws and casual workers are not covered. In Algeria, Iran, Lybia and Yemen, the members of the armed forced have their own system.
Contrary to other countries with a social insurance system, Lebanon has a program for employees in industry, trade and agriculture and offers them a lump sum benefit.

Eligibility

The survivor's pension is linked to the marital status in the sense that the husband works to provide for the needs of the family and the wife takes care of the children and their education. In this environment, the aim of survivor's pension is generally to protect the dependants of the deceased from poverty after the death of income generator by providing a percentage of the deceased husband's retirement or disability pensions for his widow and children.
Survivor program in most MENA countries takes into account the situation of children, sisters, parents and grand-parents. However, this is not the case in developed countries where the program concerns particularly the widow or widower. Finally, social security laws in MENA countries are based on traditional family structures.

In most MENA countries, the pension is generally attributed regardless of any age conditionality except in the Rep. of Egypt where the widow is entitled to survivor pension at age 51 and Djibouti, where the age condition for the surviving spouse is 45 (if there are no children).

Survivor benefits are paid to widow(er)s who fulfil certain criteria. In most countries, to be entitled to receive a survivor pension, a widow or widower must no be divorced and, in some countries, the wife should not be repudiated. In fact, the wife must be "permanent" in Morocco, Rep. of Iran and Tunisia. Most widows' benefits terminate on

[3] In Morocco, some high-income categories of the self-employed are covered.

remarriage regarless age condition except in Tunisia. In Tunisia, if a widow(er) aged for more than 55 is remarried, the survivor's pension is not suspended.
The program is more flexible in the Rep. of Egypt where benefits are payable to divorcee without source of income for at least 20 years. This situation is also allowed in Jordan where the divorced are entitled. Nevertheless, in Egypt, divorcees who initiate divorce proceedings cannot collect their husbands' pensions. A divorcee is eligible to collect her deceased ex-husband's pension only if the divorce was requested by her husband and against her wish, and if she is not remarried.

In Jordan, Bahrain, Rep. of Egypt, Lebanon[4], Syria and Yemen, to be eligible, a widower must have been financially dependant and either disabled.

The survivor's pension program in most MENA countries considers all the members of the family. In Algeria, Bahrain, Libya, Iran, Jordan, Syria and Yemen widows are not only the persons to be eligible. The survivor's program takes into account orphans (daughters with no age limit if unmarried), dependant parents and grand-parents. The private sector scheme in Morocco and Djibouti and the contractual workers in the public sector in Morocco, endows eligibility only for widow(er) and orphans. Nonetheless, in Morocco, dependant parents are also eligible under civil servants scheme.

More commonly, young children or disabled are covered. Most children benefits terminate when they reach a certain age. In general, countries have a higher age limit for orphan attending school or are on apprentice.
In the Rep. of Egypt, the system pays benefits to other surviving dependants such as brothers, sisters, parents and grand-parents. Dependent sons and brothers under age 21[5], sisters and dependent parents are covered only if the spouse did not reach a specified age condition (51 years old).

In Jordan, the pension is payable to the widow, an unborn child and parents. Yet, sons, brothers (under age 18) and sisters are entitled in the absence of the above entitled dependants. Yet again in Bahrain, brothers, sisters and dependent parents receive a pension in the absence of widow(s) and orphan(s). In Yemen, all the members of the family are eligible, even dependant nephews and nieces and the pension is divided equally among them. In Iran, if the insured person female has no dependent husband, children or parents, her survivors would not receive pension.
In Algeria, Morocco (in RCAR), Rep. of Egypt and Jordan, daughters can collect their father's pensions only until marriage.

Benefits level

Most systems provide periodic benefits for survivors of covered persons or pensioners (old age or disability) although some pay lump-sum benefits.

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[4] In Lebanon, a widower is entitled at age 60.
[5] 26 years old if students and no age limit if disabled.

In most developed countries, the survivor pension is calculated from the retirement and contributions of the husband (wife) and depends on the age of the widow(er). Generally, in MENA countries, the calculation of the survivor's pension is linked to old-age disability pensions and, in most of them, the pension is attributed regardless of the age condition.
In the case of developed countries, the survivor pension allows maintaining the standard of living of a wife who did not practice any income-generating profession. In the case of young widows(ers), the survivor's pension represents an insurance against an early widowhood and is maintained in the social protection logic.
In MENA countries, the survivor pension is not only a way to support widow (er) but also a way to guarantee a standard of living of all the members of the family (children, daughters, parents and grand-parents, brothers and sisters, nephews and nieces).

In all MENA countries reviewed, survivor program provides regular benefits and in some of them also a lump sum benefit except in Lebanon where entitled receive only a lump sum benefit. Benefits are payable to the spouse and other family members of insured workers or pensioners. If there are more than one widow, the pension is divided equally amoung them. In most countries, the survivorship pension cannot be higher than the amount of the old age or invalidity pension of the deceased.

There is a mimimum and maximum level of pension, and the percentage of pension depends on the status of family members.
The minimum pension for North African countries is between 33 percent and 75 percent for widow(er) and between 25 percent and 100 percent for orphans. The maximum total benefit is usually between 67 percent and 100 percent of the pension of the deceased.
In other countries, the minimun benefit is betwen 25 percent and 50 percent for spouses, 10 percent and 87.5 percent for children and between 10 percent and 20 percent for dependent parents.
The maximum total benefit to be divided among survivors is usually between 60 percent and 100 percent.

Table n° : Minimum/maximum survivor's pension

	Min	Max
Algeria	**Widow (er) :** 75 percent **-** with one or more children : 50 percent - with dependent parents : 50 percent **Orphan or dependant parents** : 30 percent - more than one eligible survivor : 40 percent **if no surviving spouse** : - orphan : 45 percent - dependent parents : 30 percent	90 percent
Bahrain	**Widow(er) :** 50 percent **-** with one or more children : 37.5 percent **Orphan** : 62.5 percent (if no surviving except the widow) - more than one orphan : 50 percent - full orphan : 87.5 percent **Dependent parents, brothers, sisters** :12.5 percent	88 percent
Djibouti	**Widow(er)** : 50 percent **Orphan** :10 percent - more than one eligible survivor : 30 percent	80 percent
Rep. of Egypt	**Widow(er) :** 50 percent - with one or more children : 50 percent - with parents : 66 percent **-** with children and parents : 33 percent - with sisters and brothers : 75 percent **Orphan** : 67 percent - with widow(er) : 50 percent - with widow(er) and parents : 50 percent - more than one child and parents : 83 percent **Dependant parents** : 50 percent - with widow(er) : 33 percent - with widow(er), children : 17 percent - with brothers and sisters : 50 percent **Sisters and brothers** : 50 percent - with widow(er) : 25 percent - with parents : 25 percent	75 percent 67 percent
Rep. of Iran	**Widow(er)**: 50 percent **Orphan**:25 percent - Full orphan : 50 percent	100 percent

	Dependant parents : 20 percent	
Lebanon	**Widow(er) :** 25 percent **-** orphan : 75 percent **Dependent parents** : 10 percent - Widow and children : 90 percent **if no widow and no children** - dependent parents :50 percent - brothers and sisters : 50 percent	
Libya	**Widow(er) :** 30 percent **Orphan – single son** : 40 percent **Dependent parents** : 15 percent **Brothers and sisters** : 15 percent	75 percent 75 percent 60 percent 60 percent
Morocco	**CNSS[6] :** **Widow(er)** : 50 percent **orphan** : 25 percent **RCAR[7] :** **Widow(er)** :100 percent **-** with one or more children : 50 percent **Orphan** : 50 percent - full orphan : 100 percent	100 percent 100 percent
Syria	**Widow(er) :**37.5 percent **Orphan** : 25 percent - second orphan : 12.5 percent - full orphan : 37.5 percent **Dependent parents** : 12.5 percent	75 percent
Tunisia	**Widow(er) :75 percent (non agricultural insured)** **-** with one children :70 percent - two or more children : 50 percent **Orphan** : 30 percent **Widow(er) : 50 percent (agricultural)** **Orphan** : 20 percent - full orphan : 30 percent	100 percent
Yemen	**The pension is divided equally among :** Widow(er), sons, daughters, parents, brothers Sisters, dependent nephews and nieces.	

[6] CNSS, *Caisse Nationale de Sécurité Sociale*, covers workers in the private sector.
[7] RCAR, Régime Collectif d'Allocation de retraite, covers contractual workers in the public sector.

Source : Authors (various issues).

1.2 Other Countries

In developed countries, the survivor’s pensions have been introduced in a particular demographic context. Firstly, the life expectancy of women was (and remains) above than the life expectancy of men. Secondly, married couples had, a traditional status in the sense that the husband works to finance the family. As in MENA countries, the wife is at home and takes care of the children’s education. In this context, the aim of survivor’s pension is to protect widows stayed at home in providing a percentage of the deceased husband’s retirement pension.

All the countries reviewed (Argentina, Chile, Colombia, France, Germany, Hungary, Poland, Sweden, United Kingdom, United States) provide surviving spouses’ and children’s benefits. Contrary to the MENA countries, the other family members are not always covered in the countries reviewed except in Hungary (disabled or aged parents and grand-parents are covered), Poland and Colombia (disabled parents, brothers and sisters under age conditions), in Chile and the United states (parents).

Like in MENA countries, eligibility for survivor’s pension is based on sets of criteria.
For survivors to qualify for benefits, most programs require that the deceased worker had reached a retirement age, or had completed a minimum period of covered employment and/or contributions. The surviving spouse and orphans must also often meet certain conditions, such as age requirements. For example, in Sweden only a surviving spouse under the age 65 years is entitled. In the United States, Benefits are payable between 50 and 64 age and at any age if a widow or widower takes care of the deceased's child under age 16 or disabled. In the United Kingdom, the amount of the bereavement allowance varies and is paid between 45 and 54 age, and at age 55 or older.
In France**,** before the reform of 2003, different conditions coexisted according to the sector and the financing scheme: no age condition in the public sector, condition of 55 years old in the private sector. The law of August 21, 2003 has significantly changed the survivor’s pension’s rules. Starting from January 2005, the minimum age (55) is to be gradually lowered and totally removed in 2009, to offer a better protection of early widowhood. Other conditions such as the length of the marriage (two years) and non-remarriage have also been eliminated. On the other hand, the direct insurance widowhood was removed.

Survivors benefits are generally a percentage of the benefits paid to the deceased at death, or the benefit to which the insured would have been entitled if the insured had attained the pensionable age or become disabled at that time.
Survivor’s benefits range from 15 percent to 100 percent of the average monthly earnings of the deceased.
In France, the amount spouses may receive in the form of survivor’s pension has not been changed. It stands, in France, at 54 percent of the pension of the deceased.
In Sweden, Germany and Hungary, for the earnings-related survivor pension, the benefit is quite similar. It amounts 55 percent of the insured’s accrued pension rights under the old-age pension system in Sweden and Germany, and 50 percent in Hungary.

In Poland, the amount is between 85 percent (for one survivor) and 95 percent (for three or more survivors). In Colombia, is between 45 percent (survivorship for the pensioner) and 100 percent (survivorship for the contributor). In Argentina, the pension varies between 20 percent (for each child) and 70 percent for the widow(er)). In Chile, the amount varies between 15 percent (for each child) and 60 percent for the spouse.

In the United States, children receive higher survivor’s benefits than in other countries (75 percent of the insured’s pension for each child under age 18). As in Chile, not only the natural children are entitled to survivor’s pension but also the adopted one. For the spouse, 100 percent of insured's pension is paid at full retirement age or older and about 71-94 percent at age 60 to 64. A reduced pension is paid if the insured was disabled at age 50 to 59.

In the United Kingdom, the amount of the bereavement allowance varies with age at widowhood or when widowed parent’s allowance ends; a percentage of full rate is paid between 45 and 54 age; at age 55 or older, £72.50 a week is paid.

A few countries offer benefits for co-habitants and partners. In Sweden, a co-habitant of at least five years or who is living with a child under age 12 qualifies for the survivors benefits. In the United Kingdom, civil partners (same sex couples) have the same right on survivor pensions as married couple. Partners in Argentina and Colombia are also entitled under certain conditions. In Hungary, co-habited for at least 10 years, divorcees and persons separated from their spouse for more than one year are eligible for temporary widow’s pension[8]. Generally, the widow’s pension is terminated if the widow(er) and children marries.

[8] A temporary widow’s pension in Hungary is paid for 12 months.

II - Pension schemes in Morocco: Cost, current situation and perspectives

Pension schemes in Morocco are far from being homogeneous blocks. Their diversification inclines them, in principle, to be more flexible than uniform schemes and to provide more options for adaptability. They remain, however, a little less diversified than those of other countries as they do not have a standard "safety net" scheme.
Governance systems of major pension schemes are characterized by the heterogeneity of the implemented structures and by the extent of the powers given to managers.
But the real issues at stake are mainly related to the predictable financial imbalances for all pension schemes.
The explanatory factors for future trends have been sufficiently clarified: demographic evolution, important implicit debt, lack of coverage and the importance of the informal economy.

All of which amply justify the need for reform of pension systems in Morocco.
Launched in 1997 by international financial organizations, the process of pension reform in Morocco helped to clarify the terms of the debate on reform. First, by the diffusion of several reports, then, thanks to the involvement of social partners within a formal framework (National and Technical Committees), and finally through the achievement of a “consensus” on terms of reference that has to orientate the planned reform.
Meanwhile, several schemes have undertaken reforms. Reforms whose scope has been limited. No significant improvement in the long-term financial viability of these schemes has been noted.
Such reforms have mainly focused on the decline of the technical return of schemes and the increase of resources by a gradual increase in contribution rates. The debate on pension reform has necessarily focused on the long-term financial balance of the schemes, relegating to the second division aspects related to the active / retired parity , to the intra-and intergenerational equity and to the consideration of precarious careers. Most evaluations performed and diagnoses are unable to provide answers to many questions, including those related to the consequences of the planned or undergone reforms on the redistributive aspects of pension schemes.

Prior to assessing the impact of reforms, the search for typical profiles representing professional paths actually observed per generation, enabled us to develop six typical profiles. Profiles whose development comes within the framework of recent modeling work on typical careers, built from representative samples using methods of data analysis.

The evaluation of the impact of the reforms was carried out using a holistic approach incorporating the conditions under which the financial balance of the schemes is achieved from one generation to another. The analysis of the financial viability of major pension schemes in the event of the planned or achieved reforms reveals several lessons.

In the case of CNSS, the planned or achieved reforms raised at least two issues: Should the integration of the salaries of the last 96 months in the calculation of the pension be on the basis of adjusted wages or not? What arbitration can be made between the increase of

contribution rates and the evolution of the declared ceiling wages for the financial balance of the insured scheme not to favor high-wage insured to the detriment of those with low wages?
The three reforms initiated by CIMR have drastically lowered the level of pensions. In 2040, the average pension would only be about 5.6% of the average wage of contributors.
The analysis of the financial balance of the RCAR scheme involves two aspects. On the one hand, the interactions between the various reserve funds are in contradiction with the fundamental principles of the distribution and capitalization used in the joint financing of the scheme. On the other hand, the effects of the integration of internal pension funds have been strongly felt in the short term.

The analysis of the consequences of reforms on individual situations highlights several findings.
It must be noted that the levels of internal rate of return obtained by CNSS members are generally high in absolute terms. A first analysis of the evolution of distributions of the internal rates of return as the initiation of reforms or adjustments shows that there would be winners and losers in terms of profitability of the retirement operation. In any case, the conclusion is instructive: the reforms undertaken by CNSS are likely to exacerbate the growing inequalities between retirees!

The reforms of the CIMR scheme slightly accentuate the inequalities (between retirees) observed in income as soon as wages evolve at lower rate than the reference wage, which rate of change is set annually by the scheme. The assessment of cumulative effects of the three reforms in an intergenerational perspective reveals a very sharp decline in the actuarial rate of return for future generations.

In the absence of parametric reforms, simulations of options to reform the RCAR scheme show that the lack of adjustment of annual wages used in determining the amount of the pension penalize more affiliates having precarious careers. Ultimately, the RCAR scheme reduces for retirees the inequalities observed at the level of income.

Methodology

The approaches generally used by the actuarial valuations are based on an aggregation of data related to members, which generates an average profile per generation.

In doing so, they have the major drawback of ignoring the diversity of career paths within a single generation. In contrast, approaches based on typical profiles, typically used to grasp the effects of reforms on individual situations, are based on wage careers built in a "conventional" manner from a reference wage (minimum wage or ceiling salary), on sub-periods that are defined in an approximated or arbitrary manner.

The conclusions to which they lead are often disputed because of their deficiency to estimate the costs of the scheme, with the representativeness of typical cases thus built no being highlighted. (Aubert, 1999 ; Assous et al, 2001).

The methodology used in this research is an approach by means of typical cases, using representative samples of employees affiliated to the four main schemes. The evaluation of the effects of reforms will be based on typical profiles of representing the career paths actually observed per generation. Profiles whose development comes within the framework of recent model-building by means of typical careers built from representative samples using methods of data analysis(Raynaud, 2004 ; Briard, 2005 ; Koubi, 2005 - 2006).

What such an approach provides, more than the work cited, is the fact that typical profiles (or homogeneous classes) of wage careers have not been reduced to average profiles. The diversity of career paths that makes them, serves as a basis for the analysis of distribution of the actuarial rate of return (of the retirement transaction) for each generation.

Formed randomly, the samples used in this research are derived from databases of the CNSS, RCAR and CMR schemes. Representing private sector employees, the first sample covers the range of years 1961 to 2005. The career paths of CNSS policyholders result from a sampling at 1/13th of the original data, namely 120,000 policyholders.
This sample will also serve as a basis for assessing the impact of reforms undertaken by CIMR, complementary (or supplementary) scheme, in which membership is optional. Wage careers affiliated to RCAR come from a sample representing 1/8th of the original data ,namely some 25,000 members. The CMR databases (450 000 active employees and 123 000 main retirees as of December 31, 2005) do not integrate wage careers. However, statistical analysis of these databases aptly illuminates the redistributive aspects of the civil pension scheme.

From the modeling of the four pension schemes, we build and use the model ASTROLABE CT (Analysis, Simulation and treatment of pensions based on options for reform using an actuarial benchmarked software for evaluation using typical cases) based on the approach using typical cases. The model incorporates the background of the evolutions of laws governing the four schemes as well as a variant of legislations corresponding to options for reform. It provides, for a given legislation, projections of wage career and pensions, taking into account the life income risk.
We have adopted a financial approach by opting for the actuarial return of the pension plan operation (The actuarial rate of return is calculated using an insurance-oriented logic taking into account the pension for life risk *ex ante*) and other indicators of other retirees' standards of living. The use of Lorenz curves allows us to understand the unequal income distributions over time.

The analysis focuses on a representative sample of members of the four main schemes. These samples provide individual wage career actually observed for many generations. The effects of the reforms will be considered at three levels:

- *Individual*- The projection of individual wage careers and the simulation of various changes in legislation can allow us to grasp the impact of reforms –at the level of each member- in terms of level of pension, replacement rate of the final salary and actuarial return of the pension operation;

- *Intra-generational*- The evaluation allows us to analyze the distribution of replacement rate of the final salary and the actuarial rate of return for members of the same generation, divided into homogeneous groups using a classification analysis that takes into account the characteristics of their wage careers. Lorenz curves are designed for wages and pensions, per studied generation;

- *Inter-generational*- The evaluation of the impact of reforms comes within a forward-looking approach considering future generations of retirees.

A first evaluation of the consequences of the pension reforms undertaken or projected by the four major pension schemes on the survivorship pensions

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Caractéristiques des classes

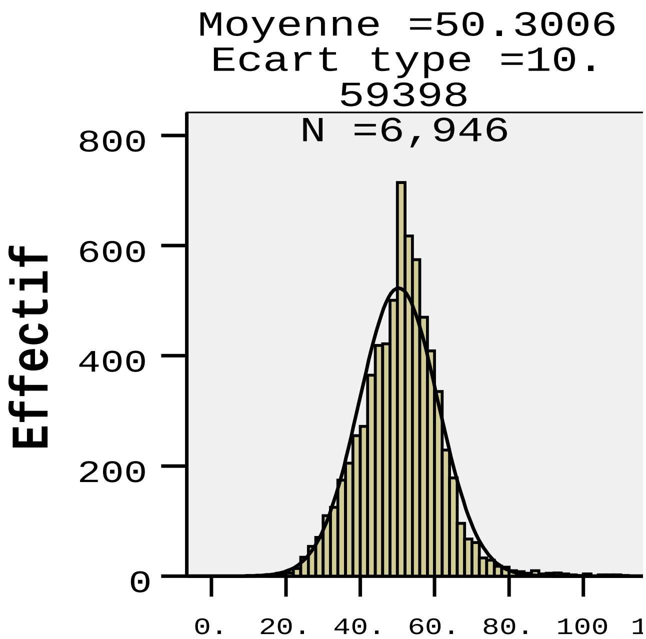
R_Sup_Sp	R_int_Smig_Sp	R_Inf_Smig	Densité	N_A_Déclarées	Classe
0.910	0.000	0.090	10.360	11.000	1
1.000	0.000	0.000	10.330	6.000	2
0.600	0.400	0.000	6.000	5.000	3
0.750	0.130	0.130	7.880	8.000	4

I. *Analyse des distributions des pensions de réversion_ Analyse globale de l'échantillon CNSS (Secteur privé)*

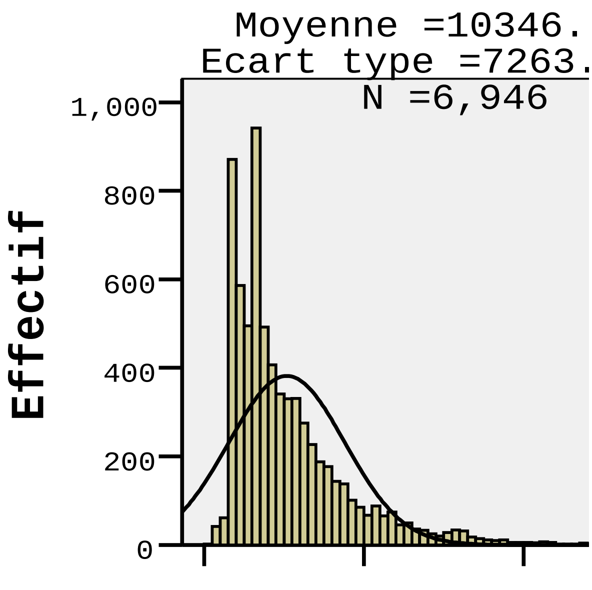
Par sexe

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1	159	2.3	2.3	2.3
	2	6787	97.7	97.7	100.0
	Total	6946	100.0	100.0	

Par Age du conjoint survivant



Par niveau de la pension de réversion

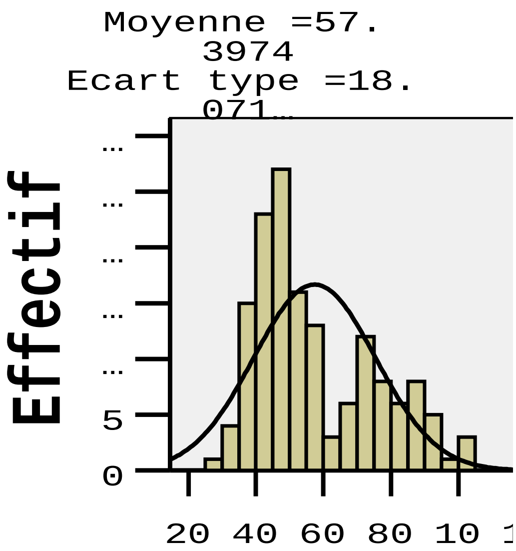


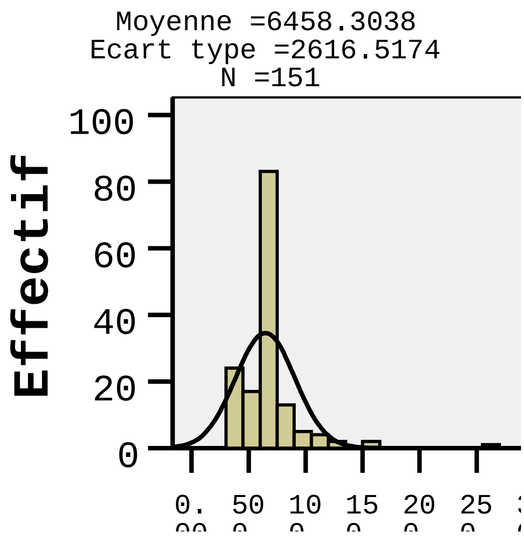
II. Analyse des distributions des pensions de réversion par classe (Cas type)

Classe 1

sexe

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1	46	30.5	30.5	30.5
	2	105	69.5	69.5	100.0
	Total	151	100.0	100.0	



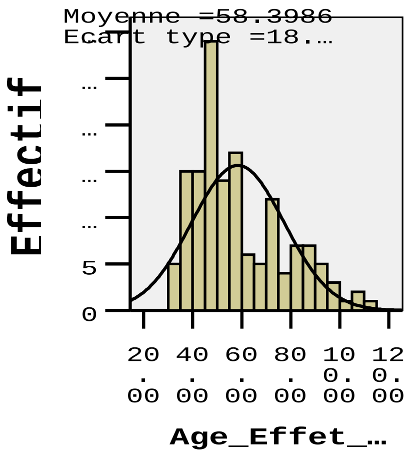


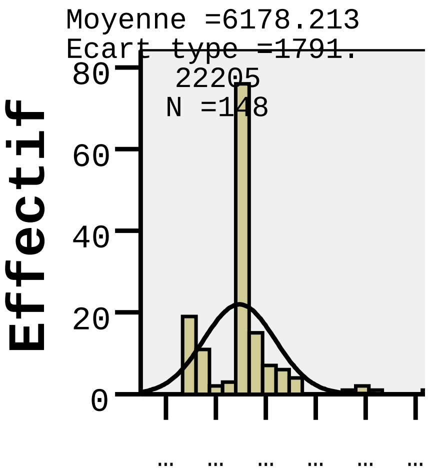
III. Analyse des distributions des pensions de réversion par classe (Cas type)

Classe 2

sexe

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1	49	33.1	33.1	33.1
	2	99	66.9	66.9	100.0
	Total	148	100.0	100.0	



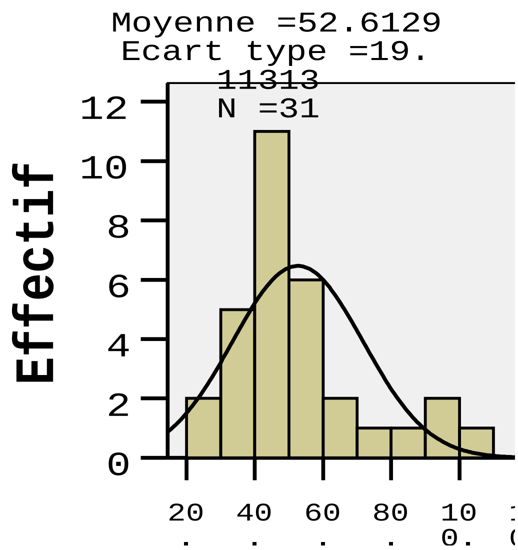


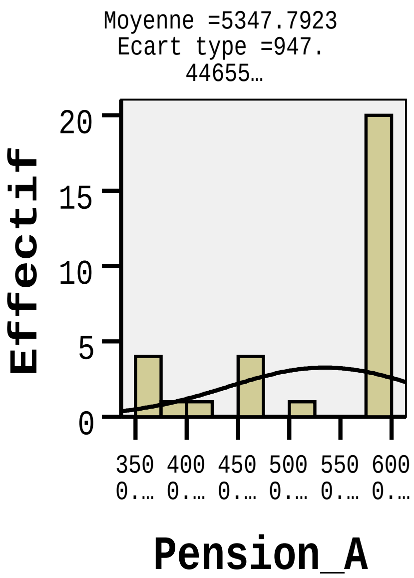
IV. *Analyse des distributions des pensions de réversion par classe (Cas type)*

Classe 3

sexe

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1	8	25.8	25.8	25.8
	2	23	74.2	74.2	100.0
	Total	31	100.0	100.0	





V. *Analyse des distributions des pensions de réversion par classe (Cas type)*

Classe 4

sexe

		Effectifs	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	1	4	21.1	21.1	21.1
	2	15	78.9	78.9	100.0
	Total	19	100.0	100.0