discussion paper

FLEMOSI
Tools for ex ante evaluation of socio-economic policies in Flanders

DISCUSSION PAPER 10

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FLEMOSI DISCUSSION PAPER DP10

ACCRUED PENSION RIGHTS IN BELGIUM: MICROSIMULATION OF REFORM

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Abstract: We simulate different reform scenarios of the Belgian pension system using a micro-simulation approach. Using a rich administrative dataset with extensive information on individual earnings histories, we evaluate the impact of the scenarios for the individuals as well as the system as a whole. Our main metric for these analysis is the notion of accrued to date pension rights, i.e. the pensions rights that would be due if the system were shut down today and all accrued rights under current legislation were honored. Our analysis illustrates that that partial reforms have limited effects, both in distributional and in fiscal terms. To achieve more substantial effects, a more comprehensive approach is needed. Regional differences within the country are mostly due to differences in regional GDP rather than the pension system itself.

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1. INTRODUCTION

Pension systems all across the developed world are under pressure. While some issues are purely crisis-related, others are more structural and overall harder to address (consider the issue of increased longevity combined with early retirement). The Belgian pension system is no exception to this rule, and thus a thorough study of it and possible reforms to it seem more than warranted.

Two strategies are possible. One is to rely on aggregates, and consider a simple overall effect of changing major pension rules. The second one is to focus on the population's real earnings and career history to determine how various reforms affect not only the aggregate economy but also each individual. The present paper follows the second approach. We use an administrative dataset characterized by a large sample size and detailed information regarding the numerous parameters that enter the pension formulae of the various pension systems in Belgium. The data allows a multi-faceted analysis of how various scenarios will impact the pension system in terms of costs, but also in terms of distributional outcomes. We consider two dimensions. First, we explore how various reforms scenarios impact on the average pension entitlements of individuals of different age cohorts. This has immediate consequences for the aggregate (fiscal) cost of the pension system – and we also present estimates of shutdown costs of the current pension systems. Second, we consider the distributional consequences of reforms on the population using a variety of inequality indicators. Our paper is structured as follows. Section 2 outlines the data underlying our study while section 3 describes the Belgian pension system and a series of proposed reforms thereto. Section 4 discusses our estimation results and highlights key findings with respect to the accrued to date pensions of individuals, as well as the fiscal consequences in the longer run. Finally, section 5 concludes.

2. DATA

We use a unique dataset that contains a large array of administrative information including earnings histories. The data were pooled from several Belgian social insurance agencies in the framework of the MIMOSIS project and use 2001 as the reference year.[1] Individuals were randomly selected to represent the Belgian population at large. Out of a total of 305.019 individuals, we focus our attention on those individuals that are in an age range where it is still (possible) to accrue rights in the system. We are thus left with a sample of 164.353 individuals aged from 18 to 64 and not defined as pensioner or dependent children.

TABLE 1A: POPULATION AGE 18-64, EXCLUDING PENSIONERS AND DEPENDENT CHILDREN (IN %) – BELGIUM (1/1/2002)

Gender and labor market situation	Age					Total
	18-24	25-34	35-44	45-54	55-64	
Gender						
Men	52.8	50.4	50.5	50.3	51.3	50.3
Women	47.2	49.6	49.5	49.7	48.7	49.7
Labor market situation						
Wage earners	78.6	60.6	50.9	37.8	16.8	46.9
Self-employed	4.2	8.8	11.9	11.3	11.5	10.4
Civil servants	2.0	5.2	11.7	16.0	9.6	10.1
Sick / Disabled	1.1	1.1	2.2	4.5	6.9	3.1
Unemployed / Pre-retired	14.1	9.5	7.5	9.8	23.6	11.6
Other	0.0	14.7	15.8	20.6	31.5	17.9
Population (x1000)	439.0	1,392.9	1,580	1,399.5	881.0	5,692.5
% of total population	7.7	24.5	27.8	24.6	15.5	100.0

[1] The original dataset was collected in the MIMOSIS project of the Federal Public Service Social Security financed by the Belgian Science Policy Administration (BELSPO Agora Program AG/01/086 and AG/01/116). The sample was randomly selected from the National Register at 1st January 2002 but the administrative information corresponds mainly to year 2001.Quarterly administrative data for the whole population is collected by the Datawarehouse Labor Market and Social Protection. For a detailed presentation of the MIMOSIS project, see Decoster et al (2008).

TABLE 1B: POPULATION AGE 18-64, EXCLUDING PENSIONERS AND DEPENDENT CHILDREN (IN %) – FLANDERS (1/1/2002)

Gender and labor market situation	Age					Total
	18-24	25-34	35-44	45-54	55-64	
Gender						
Men	53.2	50.4	50.5	50.8	51.5	51.0
Women	46.8	49.6	49.5	49.2	48.5	49.0
Labor market situation						
Wage earners	84.7	65.9	55.5	41.1	16.9	50.7
Self-employed	4.2	10.1	12.8	11.3	11.6	11.0
Civil servants	1.8	5.6	11.5	15.5	9.4	9.9
Sick / Disabled	1.2	1.0	1.9	4.2	6.0	2.9
Unemployed / Pre-retired	8.1	6.4	5.1	8.6	24.4	9.5
Other	0.0	11.3	13.2	19.1	31.5	16.0
Population(x1000)	273.1	787.8	940.3	816.3	533.2	3,350.8
% of total population	8.2	23.5	28.1	24.4	15.9	100.0

Applying the population weights to the dataset, table 1a and 1b summarize the characteristics of the corresponding population for Belgium and Flanders. Differences between the Flemish and Belgian data are rather minor, except for the population of wage earners (50.7% in Flanders versus 46.9% for Belgium), and the somewhat higher prevalence of unemployment/pre-retirement in Belgium as compared to Flanders (11.6% versus 9.5%).

For all non-retired individuals in 2001, we use administrative data from various social insurance institutions to reconstruct the most detailed information on workers' careers, which in term will ultimately allow us to model their entitlements with a relative precision.[2] Demographic characteristics of these individuals are drawn from the National Register, while labor force status for those still on the labor market is determined by information from the "Datawarehouse Labor Market and Social Protection", which gathers an array of labor market information for all working schemes.[3] Information includes amongst others the wages earned during each career-year worked as a wage earner enriched by relevant complements regarding the full or part-time nature of the job, as well as any periods of

[2] Clearly, absent a full information set, our modelization of pension entitlements remains an approximation of reality and does not correspond to the exact amount of entitlements of each individual. However, a robustness check comparing the variability of actual pensions in payment in the age range 65 to 69 to the variability of future entitlements we compute for those aged 55 to 59 shows only a moderate under-estimation of the variance (coefficient of variance 77.2 versus 82.7).

[3] This is completed with information from RVA/ONEM for the unemployed, from FAO/FAT, FBZ/FMP and RIZIV/INAMI for occupational disease, industrial accident, disablement and other illness.

time spent on benefit receipt within other social programs. [4] For self-employed, we only have limited information including the current income level and the initial affiliation date as a self-employed. For civil-servants, maybe somewhat surprisingly, the information on wages and other relevant career data is most sparse and limited to information from the last year of observation, forcing us to extrapolate career information from a single annual wage observation in 2001 – obviously subtracting all the years worked as wage earner or self-employed.

This limitation for civil servants has important consequences for the remainder of the paper, but also for policy studies in general. Given the lack of detailed information for civil-servants, our reforms will by and large focus on the two subsets of workers for whom we have better information, namely wage-earners and self-employed. Hence simulated outcomes always have to be interpreted against this backdrop, with any impact on the civil-servant scheme purely coming from the interactions of pension entitlements across schemes – particularly for people with mixed careers or couples with earnings histories in different regimes. This limitation is not specific to our approach, but rather a general problem for reform simulations in Belgium, as researchers have so far not had access to any centralized detailed dataset regarding civil-servants. [5]

[4] For wage earners, we use data from CIMIRe ("Comptes Individuels Multisectoriels/ Multisectoriele Individuele Rekening"). For self-employed, we rely on data from RSVZ-INASTI ("Rijksinstituut voor de Sociale Verzekeringen der Zelfstandigen/Institut National d'Assurances Sociales pour Travailleurs Indépendants").

[5] In theory, a practical workaround would consist in exploiting the panel nature of other administrative datasets to recreate earnings histories of civil servants. Two examples are individual tax files or Datawarehouse information from successive years. On a more structural level, the CAPELO project is currently being implemented to address this issue by creating a historical earnings record for civil servants. (http://www.capelo.be/)

3. THE PENSION SYSTEM AND A DESCRIPTION OF REFORM SCENARIOS

The system

There are three main social insurance regimes, for wage-earners, self-employed and the civil servants respectively. They have in common that benefits are computed based on earnings during periods of affiliation – though specific rules differ quite substantially across systems and across time.

The benefit formula for wage earners can be represented as follows:

Benefit =n/N * k * average wage

where n represents the number of years of affiliation with the wage-earner's scheme, N the number of years required for a full career. For our reference year of 2001, N is 45 for men and varies between 42 and 45 for women depending on their year of birth.[6] Similarly, the normal retirement age for women in our sample varies from 60 to 65 depending on their birth cohort while for men it is universally set at 65. k is a replacement rate, which takes on the value of 60% and 75% depending on whether the social security recipient claims benefits as a single or as a married couple.[7] The variable "average wage" corresponds to indexed average wages over the period of affiliation, with indexation on the price index combined with additional discretionary adjustments for the evolution of growth.

A peculiar – and heavily used – feature of the Belgian wage-earners scheme is that periods of the life spent on replacement income (unemployment benefits, disability benefits, workers compensation, etc.) are treated in a fully equivalent way to work periods. In line with a general philosophy that such spells on a replacement income is purely involuntary, imputed wages for these periods are set equal in real terms to the workers' earnings before entering these replacement income programs. Another feature of the system is that minima (and maxima) have progressively increased in practical importance through more generous automatic and discretionary increases of minima as compared to other pensions. In protecting people against bad life outcomes, minima and imputed earnings interact.

The second regime, for self-employed, is closest in design to the wage-earner scheme. Benefits are computed based on a comparable formula, with the exception that average declared wages are substantially lower than those of wage earners. This has led to a situation where minima have for a long time played a predominant role in the determination of benefit levels. Also, normal retirement ages for men and women are similar to the ones prevailing in the wage earner scheme.

[6] For simplicity, our calculations universally apply a full career length of 42 years to the entire sample.

[7] Strictly speaking, the replacement rate for married couples of 75 % is applicable to one-earner married couples. In the presence of two earner-in the married couple, any own pension entitlement of the spouse will be credited against the household supplement.

The civil-servant regime is the most distinct in design and the most generous of the three. Pensions are based on the income earned by an individual during the last 5 years before retirement – thus resembling a final-wage pension scheme rather than the career average philosophy in the other regimes. Benefits are independent of family status, which is yet another distinguishing factor with the other regimes. They are computed according to a rather complicated formula that depends on the rank and career length of an individual but can never exceed 75% of the average wages over the last five years. The benefit formula can be represented as follows:

Benefit = average wage over last five years * min [*fract* ; 0.75**]**

> Where *fract* is a fraction with a numerator consisting of the number of years the person worked in the public service, and the denominator being a benefit accrual factor. This latter benefit accrual factor called "jaarlijks/tantième" depends on the rank the person in the hierarchy – as does the normal age of retirement of the civil servant. In practice, the benefit accrual factor takes on values ranging from 12 to 60, taking the value of 12 for the highest ranking civil servants (provincial governors) during their first 7 years of service and 60 for the lowest ranks.[8]

In addition to the relative limit on pensions of 75% of the average final-career wage, there is also an absolute limit to the amount of a public sector pension, both a ceiling and a floor.

Reform scenarios

Using our dataset, we simulate 5 reforms to the Belgian retirement income landscape – as summarized in Table 2.

The first reform changes the current retirement landscape by eliminating the higher "household" replacement rate of 75% and aligning it on the "single" replacement rate of 60% for both wage-earners and self-employed (Reform 1).

In Reform 2, we simulate a change to the various minima that have progressively been built into the Belgian pension landscape. One distinct advantage of micro-simulation based on the very detailed individual career data is that we can simulate both an increase and a decrease of generosity of the system, while more rudimentary information structures usually limit researchers to study the instantaneous impact of increases in generosity.[9] Reform 2 takes an extreme position in the sense that

[8] Given a lack of information on the applicable numerator, we use a benefit accrual factor of 60 for all civil servants and a retirement age of 65 – a priori leading to an underestimation of pension entitlements.

[9] Increases in generosity can be modeled as gap-filling transfers. Decreases in generosity require detailed information on the counterfactual pension, which in turn requires detailed information on careers.

TABLE 2: KEY CHARACTERISTICS OF REFORMS

Reform 1	Elimination of the more generous "married couple" replacement rates
Reform 2	Elimination of minimum pensions and of minimum earnings by year of work
Reform 3	Imputed wages for periods of inactivity valued at 0 (assimilated days)
Reform 4	Reforms 2 and 3 together
Reform 5	Elimination of minimum earnings by year. Assimilated days not taken into account. Pension benefits computed on the best 35 years of career. Full career: 35 years.

it eliminates the two types of minima in the pension system, namely minima in pensionable earnings and minima in payable pension benefits. More specifically, we remove minimum pension for a worker with a full career, which requires the worker to have a career of at least 2/3 of the full career.[10] The monetary amount of this minimum pension is system-dependent. We also eliminate the minimum that is applied under some conditions to the yearly gross pensionable remuneration. Though the latter minimum is theoretically also applicable to the other scheme, our simulation will focus on wage-earners because of lack of information.[11]

Reform 3 addresses the politically sensitive issue of imputed earnings for periods spent on replacement income receipt that is of particular relevance for the wage earner scheme, but also for the self-employed scheme. The aim of this reform is to document the impact of a reform to the system of this de facto imputation of earnings for periods of inactivity. To crystallize the effect, we focus on the wage-earner scheme and simulate the impact of a reduction of the wage taken into account for these periods to 0 percent of the last wage, as opposed to the 100 percent currently granted by the law. This means that while days on replacement income are still taken into account to determine eligibility criteria based on the number of insured days per year, or insured years per career, they are no longer

[10] In the present context, the word career means either periods of work or periods spent on various forms of replacement income, such as unemployment insurance, etc.

[11] As a result our reform simulation might be biased, with the bias likely small given the strong link between the minimum pension and the minimum pensionable earnings.

taken into account for determining the career average earnings that form the basis of the pension calculation.[12]

Reform 4 explores the interactions between the various parameters of the pension system. We consider the combined effect of the Reforms 2 and 3 being applied simultaneously – to illustrate the cross effects of reforms.

Finally, Reform 5 is the most profound reform of the system. The idea underlying this scenario is that the Belgian way of protecting people against bad life outcomes by means of imputed earnings and minima is only one possible approach among many. The design of this reform is inspired by the system applicable in the U.S. Social Security scheme.[13] Our design proposes two main components of reform. First, the rules on minimum pensionable earnings by year of work are removed while the minimum pensions are maintained. De facto, this means that only the wage earners will be affected by the change. Second, all assimilated days are neutralized in the computation of the average career wage. Finally, pension benefits are computed on the best 35 years of career and the required length for a full career is also reduced to 35 years instead of the currently applicable 40 to 45 years. By shortening the period, negative life events are buffered differently than at present as low or no earnings years drop out to a larger extent. [14] Thus the pension formula for Reform 5 reduces to

Pension rights = N/35 * k * average wage of the best 35 years of career

where N is the number of years of career (limited to 35) of the claimant and k is a replacement rate, which takes on the value of 0.6 and 0.75 depending on whether the social security recipient claims benefits as a single or as a household.

[12] To reflect the situation that vacation periods are qualified as replacement income for blue collar workers, as opposed to white collar workers, we correct for this by allowing a maximum of 20 non-contributory days at the full imputation rate of 100 % for blue-collar workers.

[13] For a summary of the US benefit rules, see http://www.ssa.gov/oact/COLA/Benefits.html.

[14] In practice, these changes lead to a considerable simplification of pension calculations. Instead of detailed accounting of work and inactivity days with the corresponding realized and imputed earnings, the system of Reform 5 relies on realized annual earnings as the key parameter entering the pension formula.

4. RESULTS

We compute the accrued to date (ATD) pensions for each individual in the dataset both for the baseline and the various reform scenarios. To compute entitlements, we assume that individuals will become eligible for pension benefits at the normal retirement age that is applicable to them according to the current law. The benefit calculation program, PENSCALC, was written in FORTRAN programming language using a heavily parameterized architecture to allow simulations of a rich set of reform scenarios.

Our estimations of pension entitlements and simulations of reform reveal a series of interesting results. We structure these results in three steps. First, we describe how ATD pensions in 2001 differ across the various ages and labor market statuses of individual. In a second step, we go beyond this inter-generational aspect by looking at the overall distributional consequences of reform. Finally, we discuss the fiscal consequences of reform.

Figure 1 plots the average ATD pension for (non-dependent and non-retired) individuals of the different age cohorts in our administrative data sample. This figure highlights two interesting findings. On the one hand, the age pattern of ATD pensions is not linearly increasing in age – neither for the baseline nor for any of the reform scenarios. While the observed drop at age 60 might surprise at first – given the general earnings and thus career and age-dependency of entitlements – there is a perfectly rational explanation. To help understand, two extra figures are useful. Figure 2 plots the Baseline ATD pension profiles for different categories of non-retired people as described in Table 1. It shows that ATD pensions for self-employed and "others" are (substantially) lower than for other categories. Figure 2 also shows that within most labor market categories, the age-ATD pension profile is less spectacular, with no strong drop at age 60. Figures 3a and 3b complement the picture as they summarize the share of the total population by its labor market status, for men and women respectively.

Figures 2 and 3 combined clearly document that the drop in the aggregate ATD pensions at age 60 occurs because the cohorts have a substantially different decomposition in terms of their activity status. A disproportionately larger departure into retirement by wage-earners and civil servants at 60 leads to an overall larger weight of low-ATD pension groups.

Figure 1 also reveals a second pattern, namely that reforms do not affect the inter-cohort distribution of ATD pensions in a linear way, with one reform even leading to lower entitlements for older cohorts and higher entitlements for younger cohorts.

Figure 1: Average ATD pension by age cohort – sample (2001 EUR)

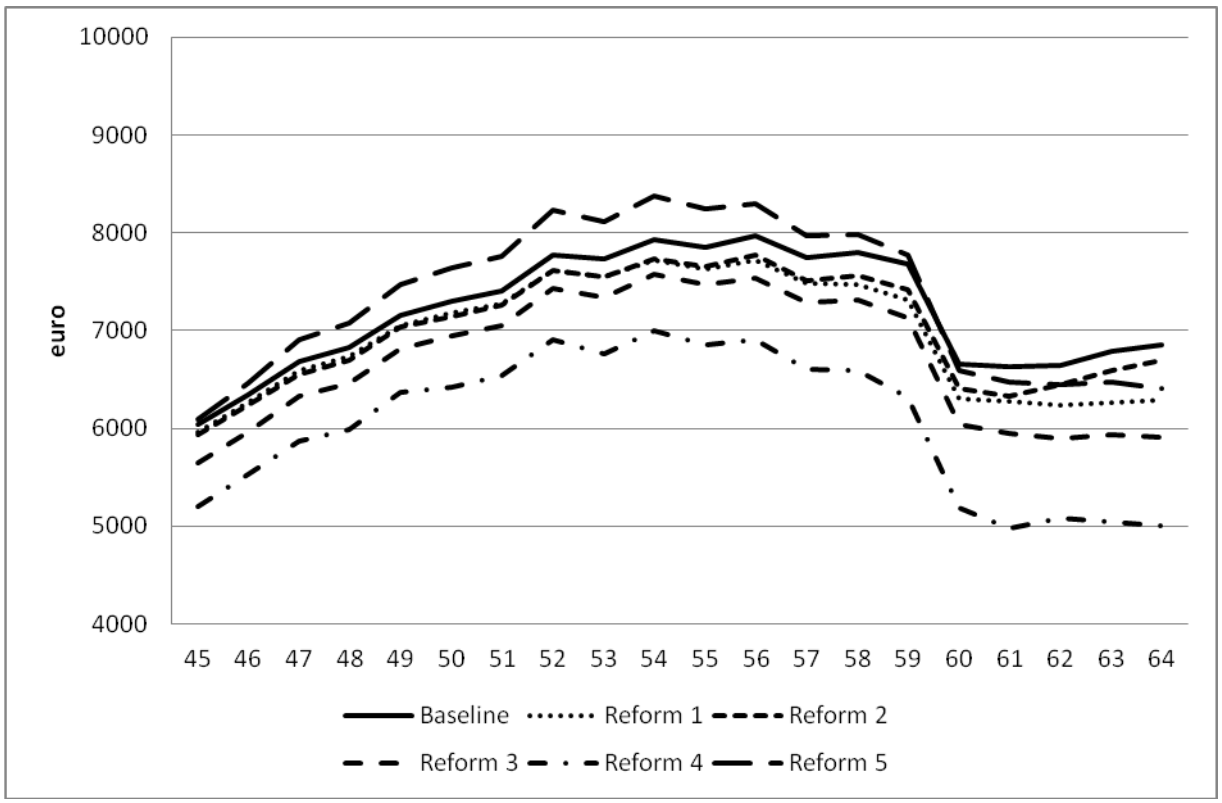


Figure 2: Average ATD pension by status: baseline scenario – sample (2001 EUR)

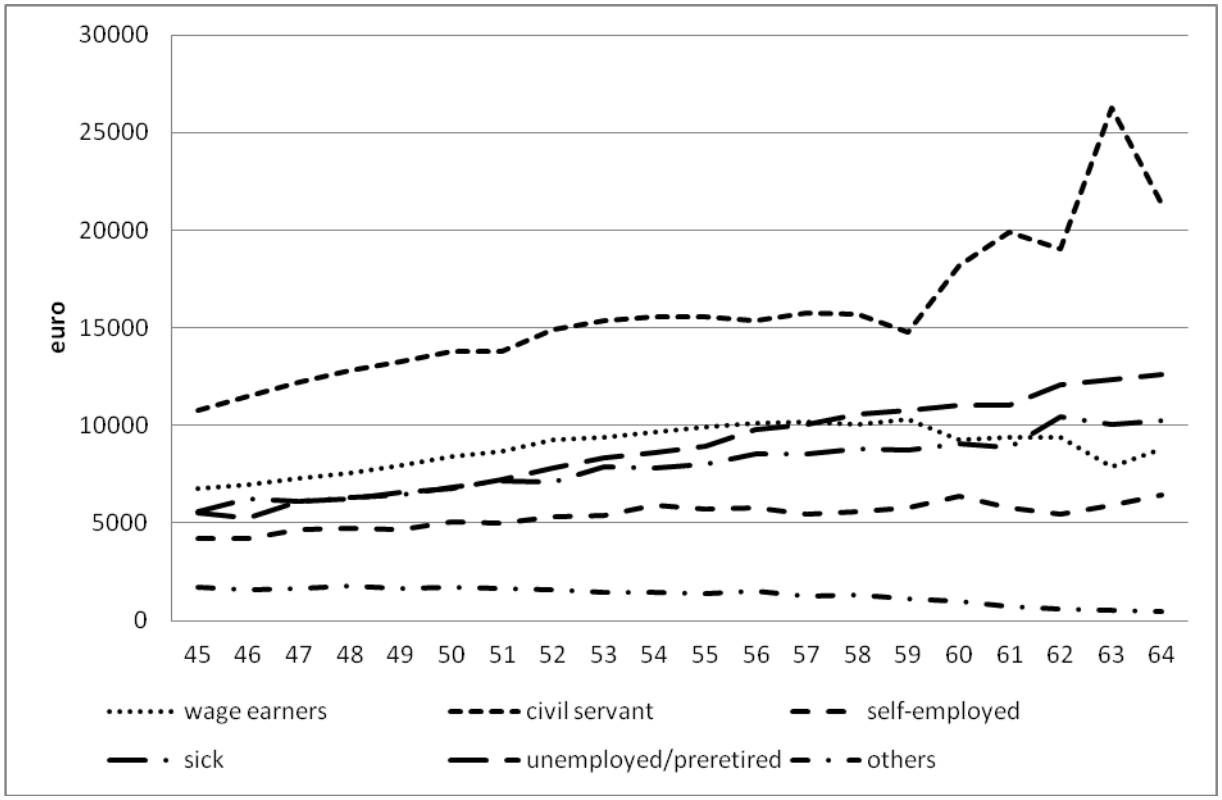


Figure 3a: Population structure – Men aged 55 to 64 years old (2001)

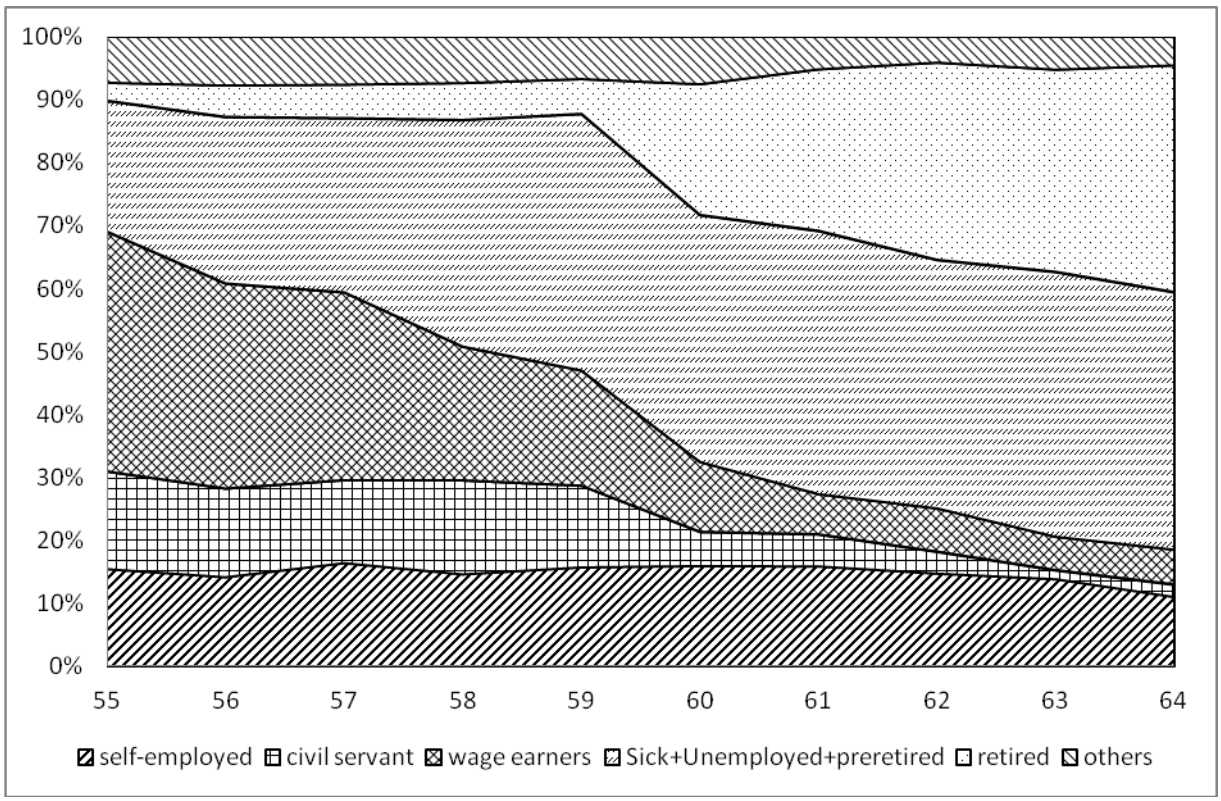


Figure 3b: Population structure – Women aged 55 to 64 years old (2001)

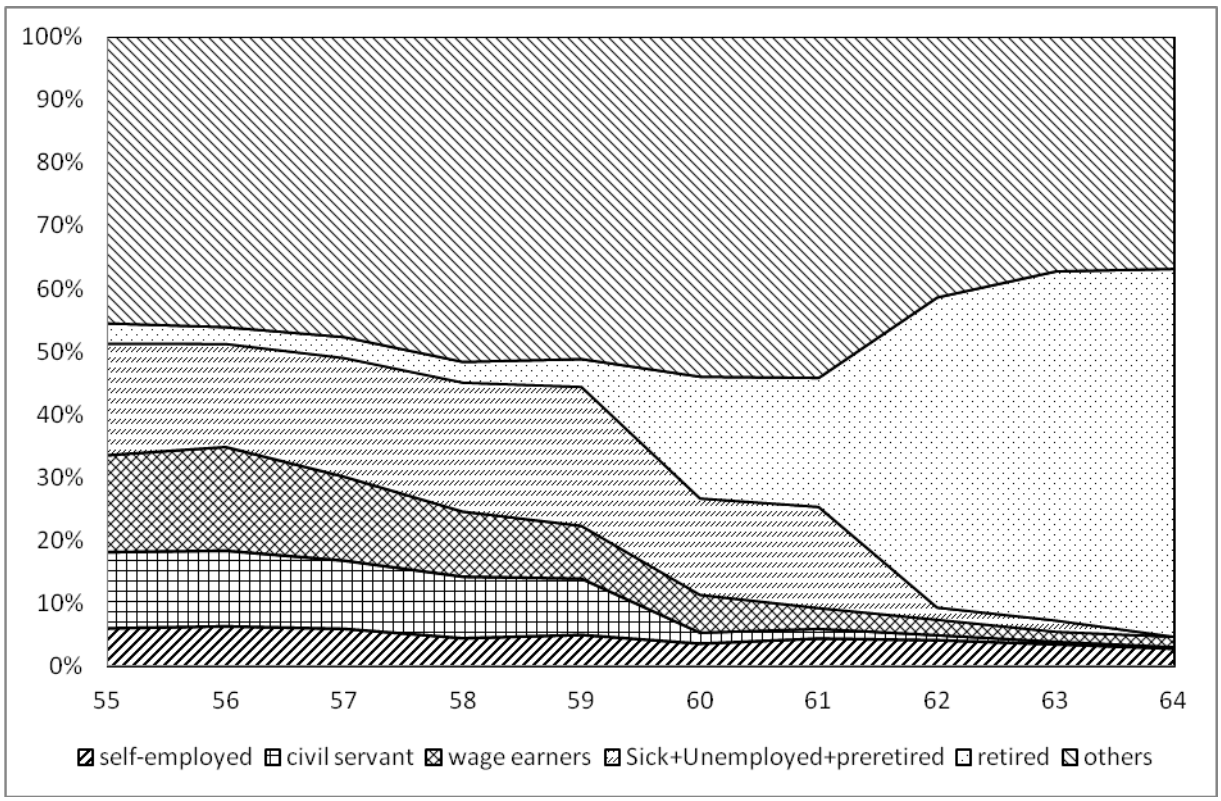
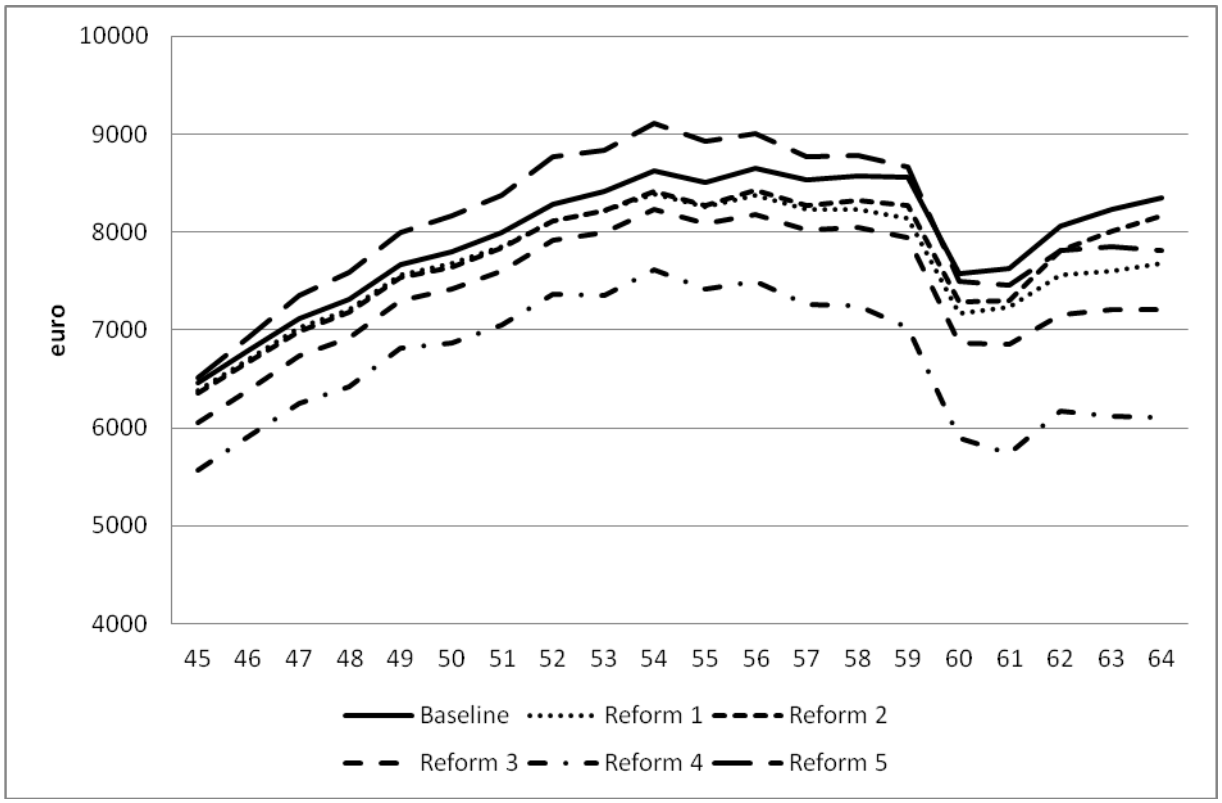


Figure 4 plots the same statistic as Figure 1, but this time limited to the sample of people with strictly positive ATD pensions. While the general pattern is unchanged as compared to the complete sample, the age profile is somewhat affected by the fact that having a calculated ATD of 0 is not a uniform process across ages. People have no entitlements because they have not worked at all and not accrued any other rights to pensions, and hence their influence on average statistics in the overall sample depends heavily on their relative weight in each age cohort as compared to those that have positive entitlements.

Figure 4: Average ATD pension by age cohort (ATD>0) – sample (2001 EUR)



Considering the impact of the various reforms, several patterns are noteworthy. Reform 4 has the strongest effect on pension rights. The combined elimination of wage crediting for inactivity periods and of minimum benefits jointly operate to substantially reduce the entitlements. This might be is somewhat surprising. Reforms 1-3 however have rather moderate effects, because of only affecting a very limited subset of people among the wage-earners – and in a way that is usually partially buffered by other provisions of the pension systems. For example, Reform 1 is buffered by the fact that two-earner couples are only partially affected by the reform insofar as the second earner has a substantially lower benefit than the first earner. Similarly, minimum benefits and fictive wages are two somewhat competing ways of protecting people with incomplete careers and thus limit each other's impact.

Reforms 1-4 display a pattern of losses of ATD that are increasing with age in absolute terms – at least up to age 60 where the above-mentioned re-composition effects become dominant. This finding is

rather intuitive given that increased age is correlated with an increased likelihood of having benefited from these favourable replacement income schemes. This relation is strongest for Reforms 1 and 2, where the loss as a percentage of total ATD pensions is even strictly increasing with age in the same range. Reform 5 introduces the biggest change to the system and displays a rather moderate impact in terms of average statistics. However, its distributional impact is rather large as there are substantial numbers of winners and losers, and also substantial magnitudes to losses and gains to the system.

We now turn to the second step of our analysis, namely distributional results from the reform simulations. Table 3 presents the fraction of losers and winners in the population 45-64, the average gain and loss as well as the biggest gain and biggest loss. The results show that reforms do not only differ substantially in terms of their average effect, but also have wildly different distributional consequences in terms of the share of the population affected, as well as the distribution of gains and losses in the population. Similar (unreported) results can be derived for the overall population of all ages, in which case the basic pattern is maintained: the number of losers is largest for Reforms 3 and 4, while the average loss is the biggest for Reforms 4 and 5.

The Gini coefficients associated with the different scenarios are reported at the bottom of Table 3. Compared to the Baseline, Reforms 1 and 2 have a rather moderate effect on ATD inequality – with Reform 1 even lowering inequality – a finding that would indicate that household supplements play a regressive role. In line with expectations, Reforms 3, 4 and 5 increase inequality noticeably, particularly Reform 4.

TABLE 3: DISTRIBUTION OF GAINS AND LOSSES OF ANNUAL ATD PENSIONS: AGES 45-64 – SAMPLE (2001 EUR)

	Reform 1	Reform 2	Reform 3	Reform 4	Reform 5
% of losers	11.7	28.5	64.8	70.4	26.0
of which women	*0.4*	*16.2*	*29.8*	*33.4*	*14.6*
% of neutrals	88.3	71.0	32.9	27.4	13.8
% of winners	0.0	0.5	2.3	2.2	60.2
mean loss (EUR)	-1,621	-596	-670	-1,447	-1,341
mean gain (EUR)	0	594	264	516	940
biggest loss (EUR)	-4,386	-6,620	-9,139	-13,727	-11,310
biggest gain(EUR)	0	2,441	2,227	3;029	7,956
Gini coefficients			Baseline = 0.520		
	0.517	0.525	0.541	0.567	0.553

Table 3 also reveals that women seem to be less affected by the reforms. Our analysis reveals that they benefit the least from the current generous household benefits, the minimum pensions and assimilated days regimes, and thus reforms thereof affect them the least. Figures 5a and 5b confirm this observation as baseline ATD pensions vary substantially according to the sex, and reforms affect both sexes in very different way.

Figure 5a : Average ATD pension rights: Men ages 45-64 – sample (2001 EUR)

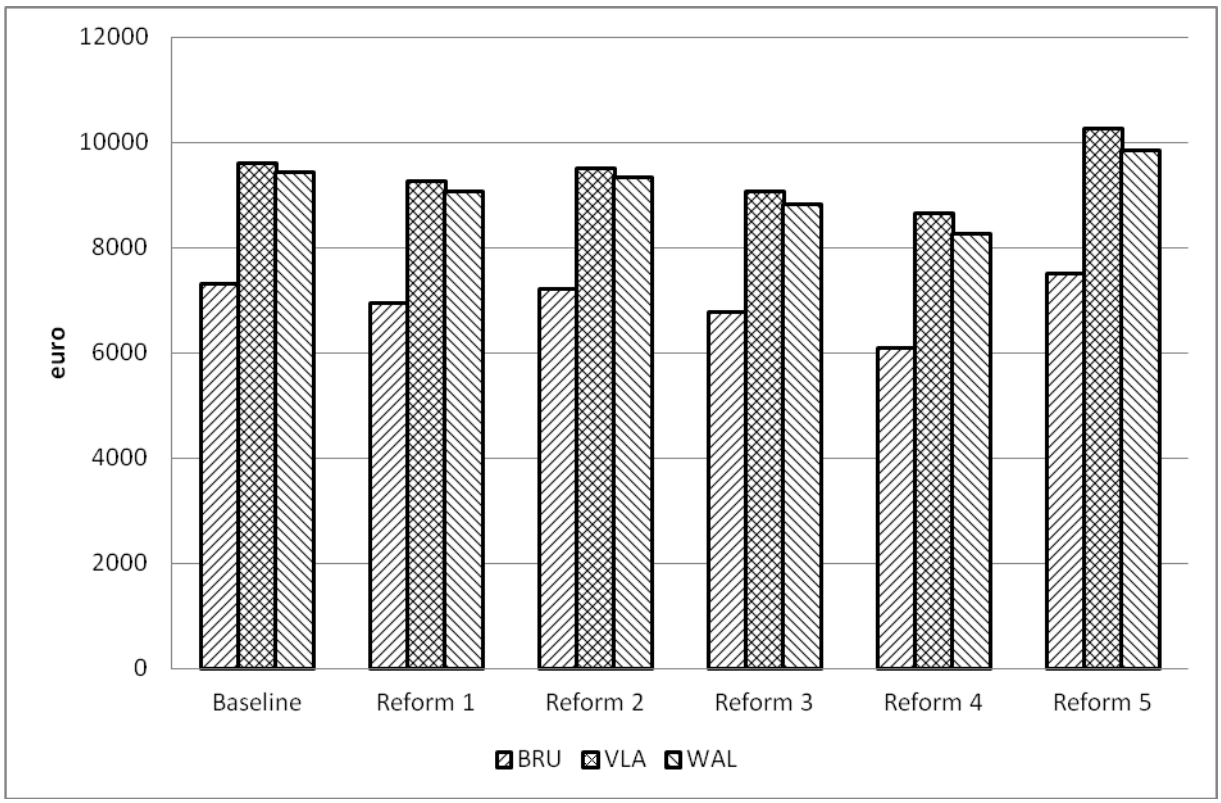
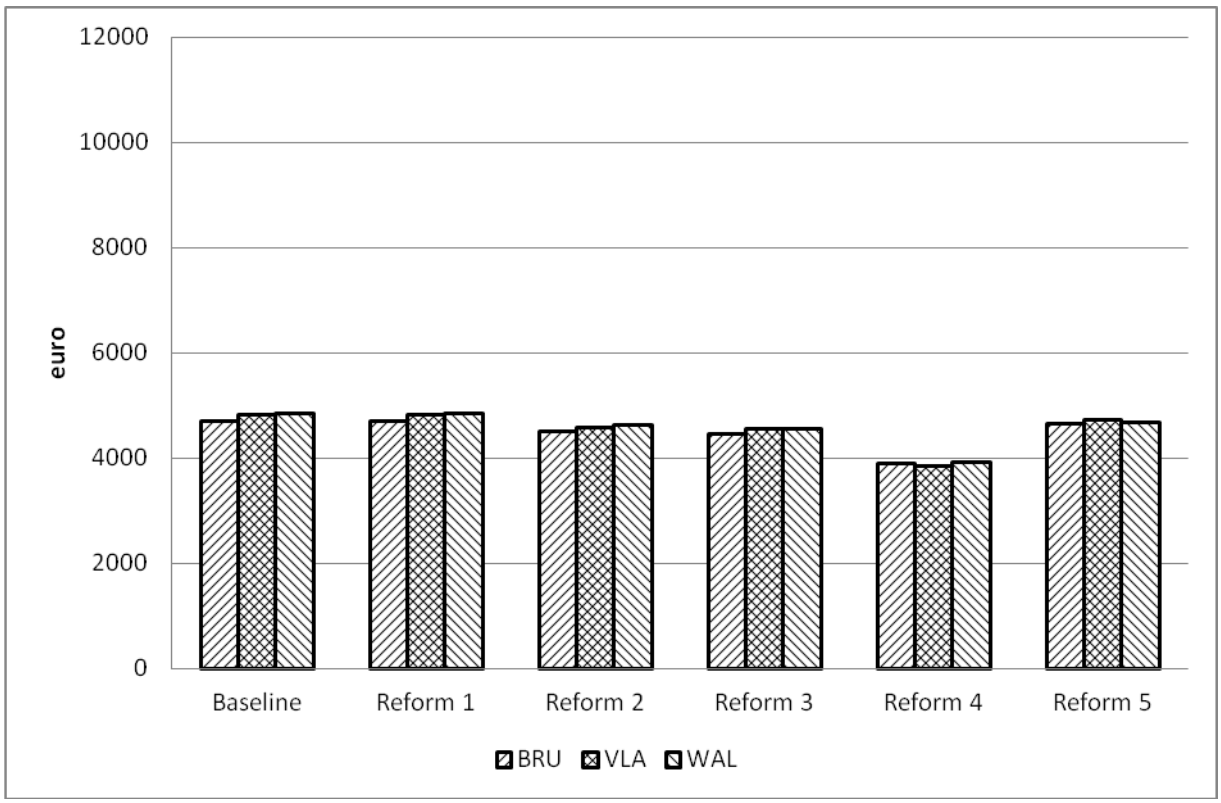


Figure 5b : Average ATD pension rights: Women ages 45-64 - sample (2001 EUR)



Another way of representing the distributional consequences of the reforms is to position individuals according to income deciles.[15] Figures 6a and 6b show how the various reforms affect the population of Belgium and Flanders when looking at their position as compared to the baseline income deciles. The figures show that the bottom decile is only marginally affected, with the predominant part of the action happening in the middle and upper income deciles. Figures 6a and 6b illustrate that Reform 2 mostly affects the middle of the distribution, with low and high groups are largely unaffected because of either insufficient careers or substantially larger entitlements. Reform 3 on the other hand, affects people of all income levels, thus also higher income individuals – with the ensuing substantial shift down the income deciles of a more substantial mass of the population.

Reform 5 is the only one that significantly increases the number of people with higher pensions, illustrating that people with higher pension rights would be the major gainers of this reform as their wage profiles are steeper and usually less complete. On the other end of the spectrum, lower income people would have lower pensions because the imputed earnings would no longer play in the same generous way. Both trends combine to make the system less progressive. All other reform scenarios lead to a generally lower pension right and thus a downward movement of individuals.

A comparison between Figures 6a and 6b also gives a regional perspective to this distributional analysis. Reforms 2-4 have a substantially stronger effect on low income earners in Belgium than in Flanders, notably because of lower incomes and employment in Wallonia, while Reform 5 benefits Flemish high income earners most for the same reasons.

[15] ATD deciles are drawn within each 5-year age cohort, e.g. 55-59 years old.

Figure 6a: Distribution of individuals according to the ATD of pension rights, Baseline deciles – Population Belgium 2001

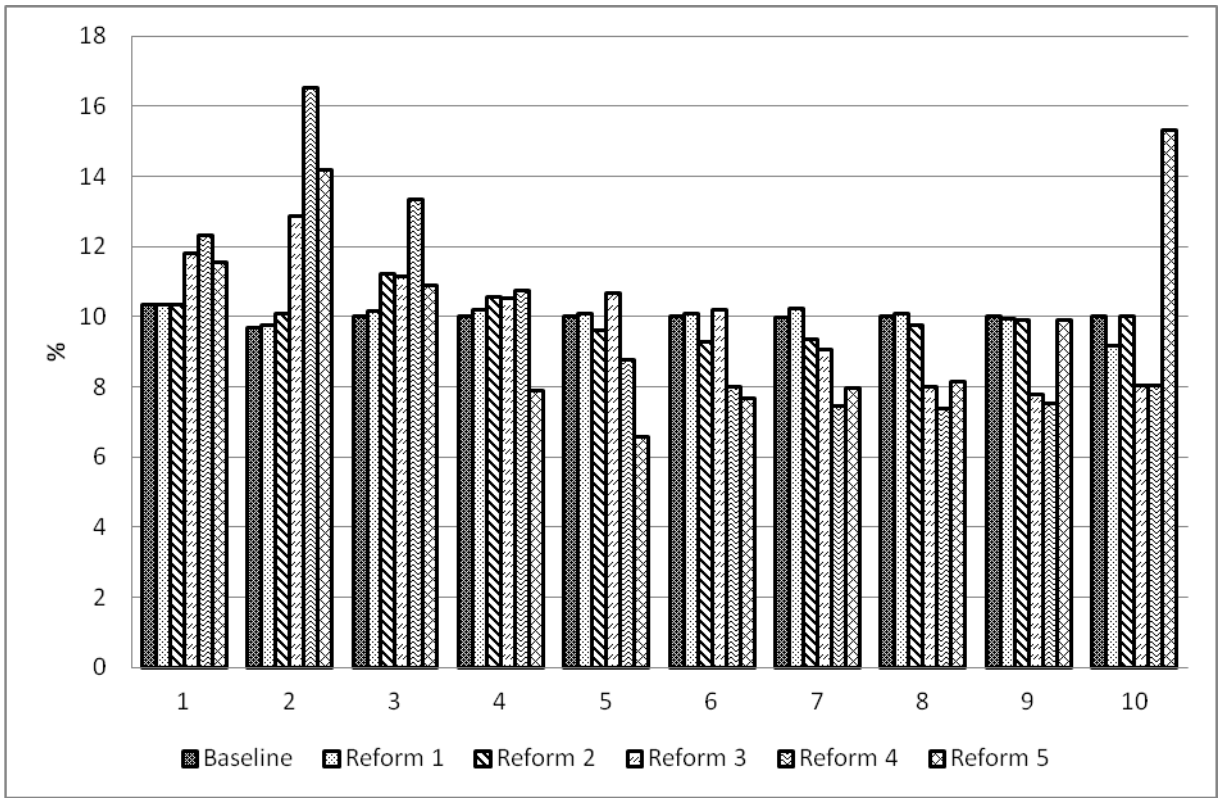
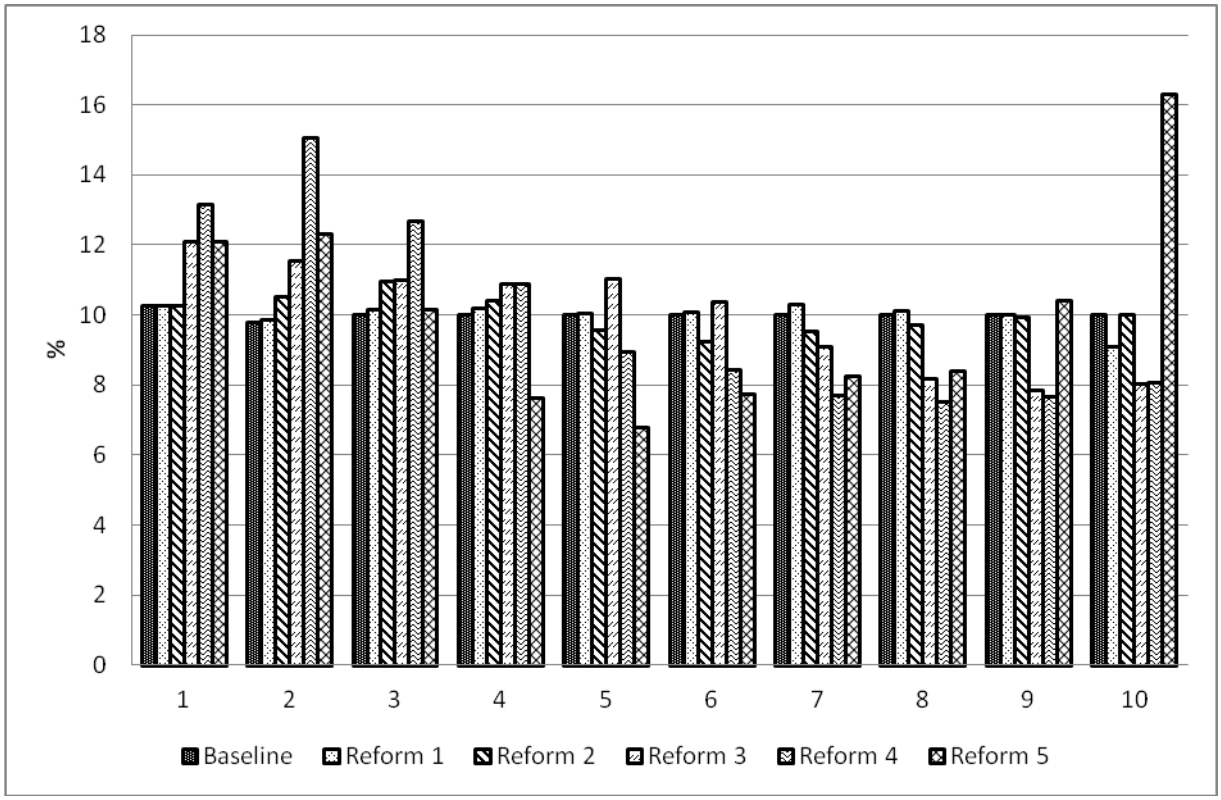
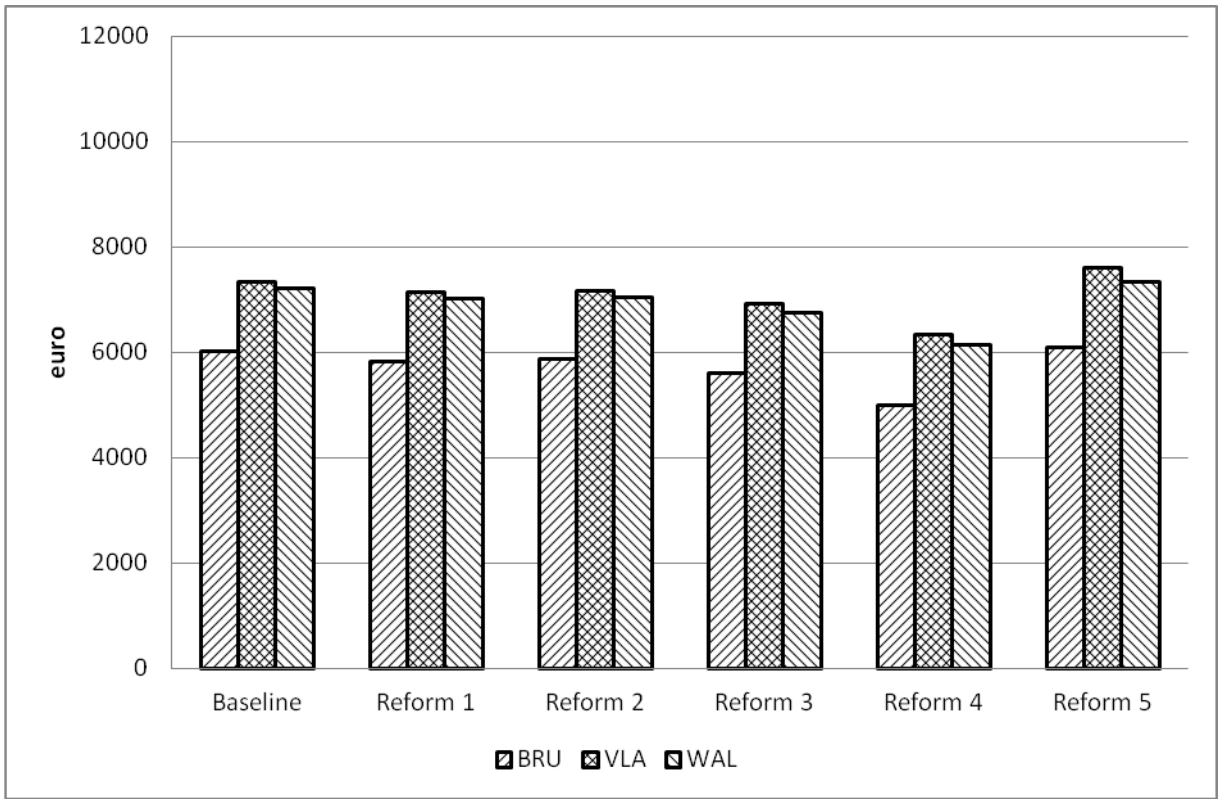


Figure 6b: Distribution of individuals according to the ATD of pension rights, Baseline deciles – Population Flanders 2001



These regional differences at the decile level also hold up at the more aggregate level. Figure 6 shows the impact of the various reforms on the average ATD pensions. Overall, differences in ATD pensions between Flanders and Belgium as a whole are somewhat smoother in aggregate than when broken down by decile.[16] The same holds true when comparing Figure 7 to Figures 5a and 5b – which shows that the fluctuations for males and females separately are stronger than for the population as a whole.

Figure 7: Average ATD pension rights by region - sample (45-64 years old – 2001 EUR)



Last but not least, it is useful to consider the fiscal impact of the proposed reform scenarios. We calculate the present discounted value of pension entitlements an individual would be eligible to claim if the system were shut down today and all accrued rights were honored according to today's rules. This way, we can put an absolute Euro figure on the intertemporal cost of the current system. In our calculations, we assume that pension annuities are paid starting at the age of 65 and apply a 3% real annual discount rate as well as gender and regions-specific life tables.

Figure 8 show that Reforms 1, 2 and 5 have a moderate fiscal effect as compared to the baseline. All stay within a 5% range of the baseline shutdown cost of approximately 116% of GDP or approximately 300 Billion EUR. This means that even though Reform 5 had the strongest

[16] The result is robust to the choice of the age range, e.g. 18-64.

distributional consequences, its overall fiscal cost is moderate. In fiscal terms, Reform 4 is the most promising, with a substantial cut of 48.7 Billion EUR, or 18.75% of GDP.

The first bar of figure 8 also illustrates that the largest part of the fiscal cost of Belgian pension system does not relate to current pensioners, but rather to the population that is still active on the labor market.

Figure 8: Present discounted value of pension rights as % of GDP – Belgium, 2001 (grey, non pensioners, black current pensioners)

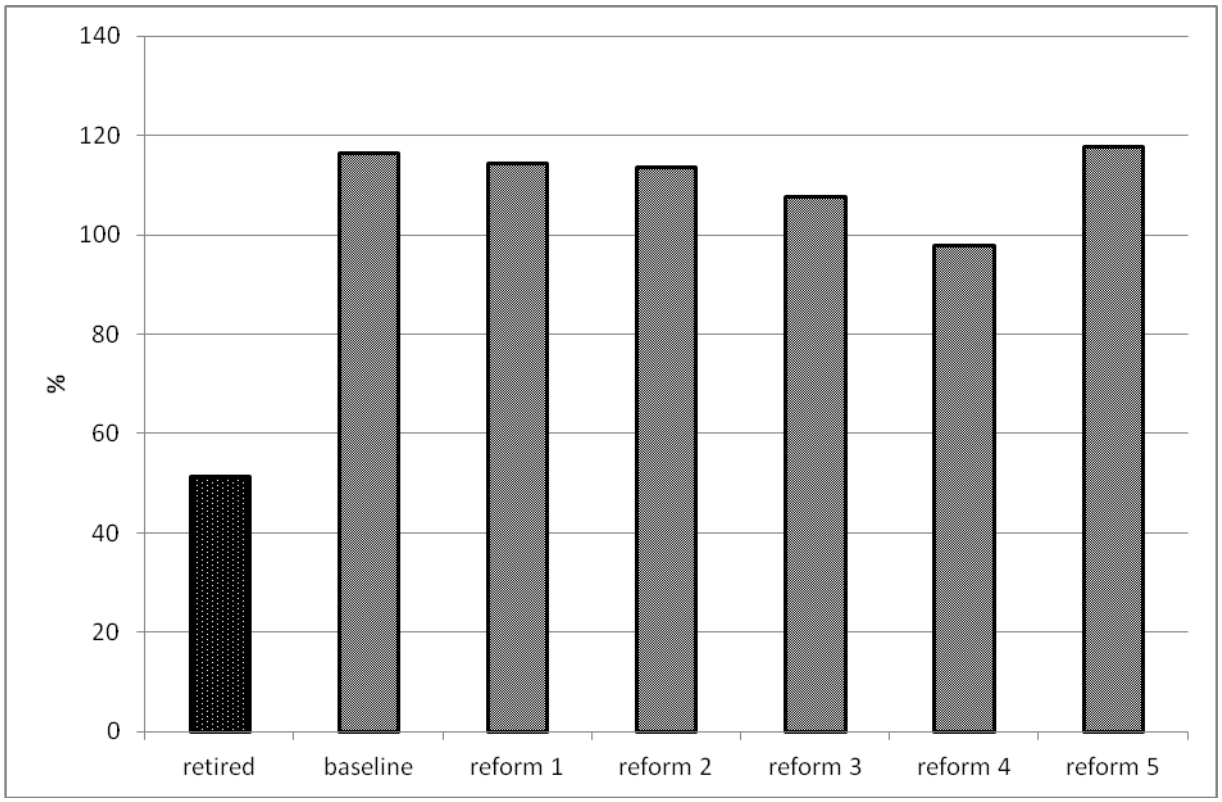
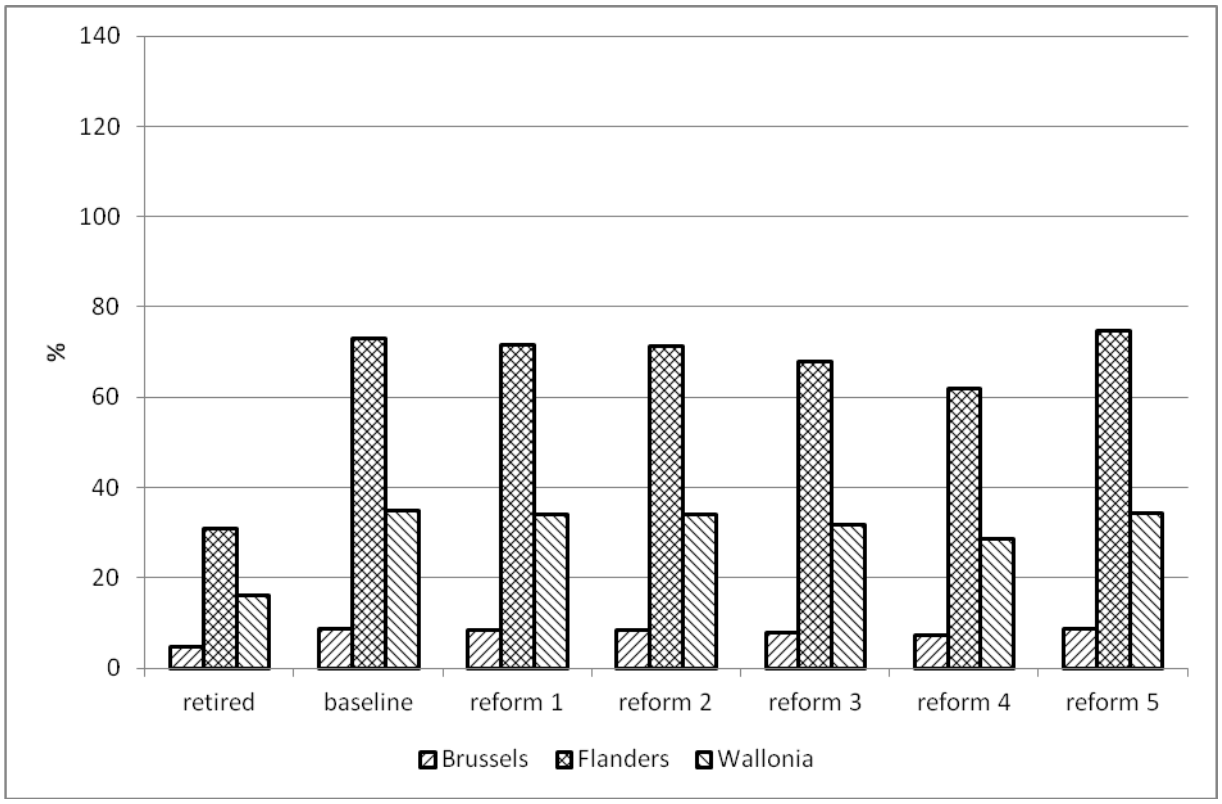


Figure 9 decomposes the total burden of the pension system by region. It reveals that Flanders is associated with the largest individual share of the pension burden. Somewhat surprisingly, when expressing the cost as a share of the total pension burden in the country, all regions bear a burden that is roughly in line with their population structure.

Regional differences do however matter when relating these regional burdens to regional GDP's rather than the national one. The main advantage of this approach is that regional GDP represents an indicator of each regions's ability to generate the resources needed to finance its own pension system, if it were to be split. The main disadvantage of relating pension expenditures to this indicator is that pensions (and GDP) is generally workplace related, whereas ATD pensions are allocated on a residence principle to individuals and thus to regions – purely because of lack of information on the

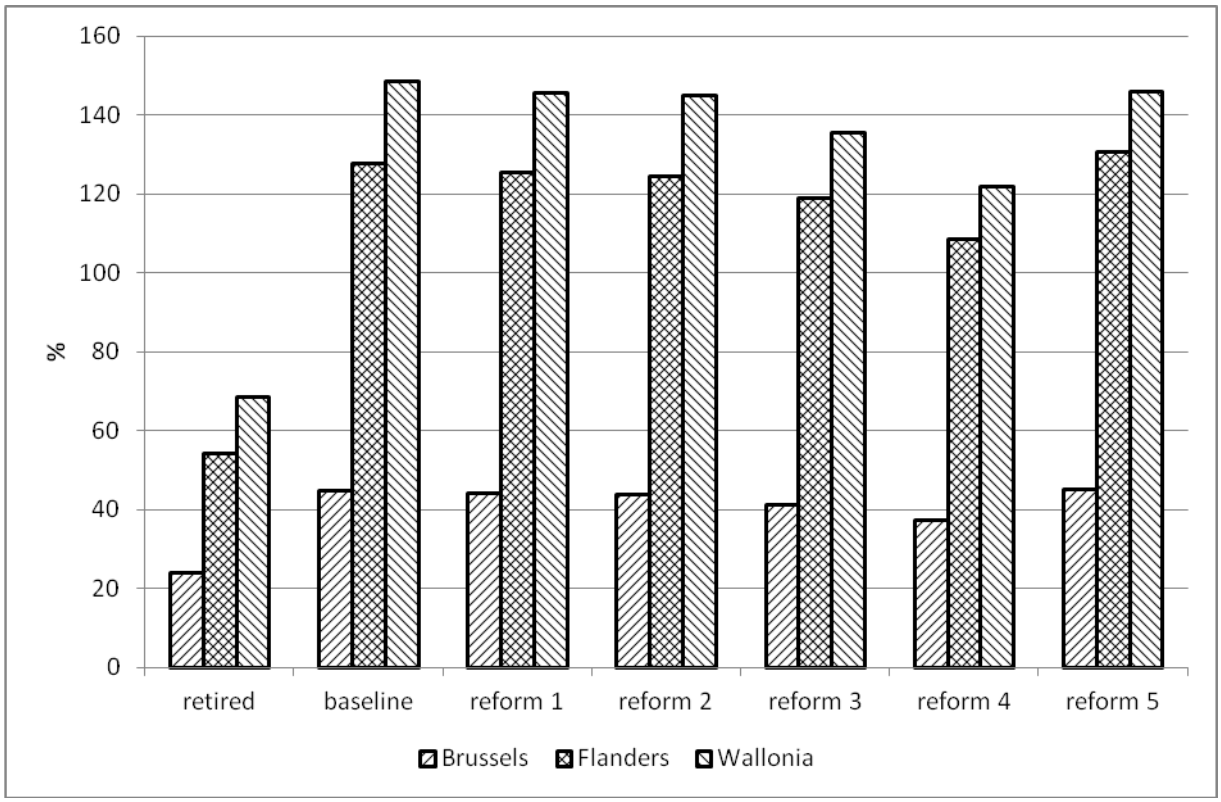
place of work.[17] Figure 10 summarizes the result of this regional analysis. Brussels disporportionately benefits from such a comparison because of the combined effect of a large inward commuting workforce combined with its role as headquarters of larger companies.– with Wallonia substantially lagging behind the other two regions mostly because of lower regional GDP.

Figure 9: Present discounted value of pension rights as % of GDP (18-64 years old, pensioners excluded) – Regional decomposition , 2001



[17] Dury et al (2008) already noted the importance of the choice of a residence versus a workplace allocation across regions.

Figure 10: Present discounted value of pension rights as % of regional GDP (18-64 years old, pensioners excluded) – Regional decomposition , 2001



5. CONCLUSIONS

In this paper we report the results of accrual to date (ATD) pension estimations for the non-retired Belgian population aged less than 65 years old. Using a large administrative data file containing detailed information on professional careers we were able to compute both individual-level pension rights and aggregate system indicators. Starting from the current-law baseline situation, we simulated five potential reforms in pension rules.

Our results indicate that only deep reforms have strong effects on pension entitlements. Some frequently discussed reforms such as a change in the rules regarding the accrual of pension rights by means of imputed wages or even changes to the minimum pensions have little effect when introduced individually. Though this finding might surprise at first, it is simply the result of the largely complex interaction of the numerous pension parameters playing a role in the Belgian retirement systems. As such, the effects of partial reforms are likely to be buffered by other correlated variables that also enter the pension computation formula. We find that a comprehensive approach involving several parametric changes is likely to generate the largest effects, both at the individual level and the aggregate fiscal level. Specificities heavily depend on the policy choices, with some reforms more heavily affecting the fiscal side, while others have a significantly stronger effect in terms of distribution.

A second set of results relates to the regional dimension within the country. Our simulations reveal that the pension system itself has very little effects on the regional distribution – as the split of the ATD pensions across regions roughly corresponds to each region's population share. Large differences in regional GDP could however lead to very different burdens between Flanders, Wallonia and Brussels if the system were shut down and the costs would have to be borne by the three regions individually.

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