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Pension fund conversion rate – the "pension theft" seen from a different angle

Dear Sir or Madam,

The reform of the pension scheme 2020 is currently going through the legislative process, and in the meantime both chambers of parliament have agreed to lower the minimum pension fund conversion rate from 6.8% to 6.0%. As always when the calculation basis of occupational retirement provisions are discussed, it is in particular those on the left that scream "pension theft" at the top of their voices, even if, with this "theft" under close scrutiny, it remains rather unclear who might be the thief. However, there is a thoroughly clear and obvious pension theft in a different place, namely when the conversion rates are either lowered too late or not at all – as this will lead to increasing transfers of the contributions and capital gains from current employees to pensioners, rather than going into their own retirement benefits.

Below we would like to shed some light on the operating principle of the pension fund conversion rate and, by using some figures as examples, highlight some of the issues.

What is the conversion rate?
The Occupational Pensions Act (OPA) operates under the funded scheme method, which – to put it simply – means saving up retirement savings capital which will be converted into a life-long pension after retirement age has been reached.

The conversion rate actually stands for the rate of the annual pension in relation to the accrued savings capital. Thus a conversion rate of 6.8% means that with an accrued retirement savings capital of CHF 100'00 you will receive a life-long pension of CHF 6'800 per year or CHF 567 per month. This principle can equally be applied from the reverse angle: those who (on top of social security) would like to receive a retirement of CHF 30'000 per year or CHF 2'500 per month must then have accrued a retirement savings capital of CHF 441'176 before reaching retirement age.

How is this rate calculated and what does it depend on?
The specifications of the conversion rates within the law and the many ensuing political arguments have many times given rise to the false impression that the conversion rate is a figure that can arbitrarily be set to virtually any   value, comparable for example to a speed limit to which reality simply needs to adjust. However, in reality the conversion rate can be calculated very precisely with the use of the so-called annuity formula. The very same – and admittedly rather complex – mathematical correlation is

also applied to calculate leasing rates or consumer loans, as they equally convert a capital sum into regular payments including an interest rate.

The pension fund conversion rate only depends on two factors: the average remaining life expectancy after you have reached your retirement age and the achievable interest or investment return during that particular period. Thus to get an idea of what the conversion rate really is we first have to look at both of these factors.

Life expectancy and its development
Currently the life expectancy (after birth) in Switzerland is 80.7 years for men and 84.9 years for women. However, on their own these figures are much too vague to use them as a basis to perform meaningful calculations for a pension scheme. One reason is that a person's life expectancy is increasing during his or her life span (anyone who is still alive at 65 will no longer run the risk of dying beforehand), and life expectancy, on the other hand, is dependent on the year of birth, and also increases in line with, among other factors, improvements in medical care. Thus, it would be desirable to know the remaining life expectancy from the age of 65 (respectively still 64 for women) applicable at the time of retirement.

The Federal Statistical Office makes these figures available, in form of so-called mortality tables, and not just for each year reached and separately for men and women, but also going back over the years until 1981. As these figures are based on all births and deaths in Switzerland the data base is very solid. According to these tables a 65-year-old man nowadays has a remaining life expectancy of 19.2 years and thus can expect to reach an age of 84.2 years. A now 65-year-old woman has a remaining life expectancy of 22.2 year and thus can expect to an age of 87.2 years (to avoid further complications, for our calculations we are using the age of 65 for both sexes). When OPA was introduced in 1985 the remaining life expectancies from age 65 old were 14.9 (men) and 19.0 (women) years.

An exact analysis of these mortality tables shows a largely linear increase in the remaining life expectancy over the years. Based on the figures from 1981 to 2015 they can reliably be extrapolated into the future, which allows estimating the remaining life expectancy of future retirees. This gives us the following figures:

Retirement in year	Age today (year 2016)	Remaining life expectancy after 65 (in years)	
		Men	Women
1985		14.9	19.0
2015		19.2	22.2
2031	50	22.0	24.6
2041	40	23.6	25.8
2051	30	25.2	27.0

So when a man at age 30 today reaches retirement at 65, then his pension fund needs to pay his pension ten years longer than would have been the case when the occupational pension system was introduced. The total sum of pension payments (without interest) will be 69% higher than then. It should be evident that these old calculations have been distancing themselves from reality over the years.

Investment return – what is the target?

While we have a very solid database for remaining life expectancy and thus can quite well forecast the future, it is considerably more difficult to grasp the situation around the second factor that is relevant for the conversion rate, the investment return or interest. Relevant here is not the return that can currently be achieved (this figure, in form of the minimum interest rate, is also important in the pension system and an equally hot topic for discussion), but the return that can be achieved on average over the entire remaining life expectancy.

To allow a better grasp of this factor, it is worthwhile to tackle the topic in reverse: We do know two of the three factors – the conversion rates that are currently discussed and the remaining life expectancy – and the exact correlation between these two. Thus we can ask ourselves what return is required for a certain conversion rate.

In the following table we compare the situation at the introduction of OPA (then still calculated with a conversion rate of 7.2% and a retirement age of 62 for women), the current situation and the one in 2041, when those 40 years old today will have reached 65. For this we use both the current figures (white) and the adjustments currently debated in parliament (blue). In the last column we assume that the same number of men and women will reach retirement age in model pension fund and consequently calculate the required return with the average remaining life expectancy after the retirement age of both sexes.

Retired in	Men			Women			ØM/F
	Retire-ment age	Conver-sion rate	Required return	Retire-ment age	Conver-sion rate	Required return	**Required return**
1985	65	7.2 %	0.96 %	62	7.2 %	4.49 %	**3.15 %**
2015	65	6.8 %	2.95 %	64	6.8 %	4.33 %	**3.72 %**
	65	6.0 %	1.51 %	65	6.0 %	2.75 %	**2.19 %**
2041	65	6.8 %	4.47 %	64	6.8 %	5.13 %	**4.83 %**
	65	6.0 %	3.18 %	65	6.0 %	3.73 %	**3.48 %**

At the time the OPA was introduced, the pension fund in our example, with an equal number of men and women (with a then higher conversion rate and a much lower retirement age for women), would have needed to achieve an investment return of 3.15%. As there were a lot less women working at that time than today, the return could have been even lower. Without any corrective measures, this figure would have risen to 3.72% by today, and for those who are 40 today, it will be 4.83%. Should parliament decide to lower the conversion rate to 6.0% and also adjust the retirement age for women to 65, then it would be necessary to achieve an annual investment return of 2.19% today and of 3.48% for those aged 40 to provide the benefits promised by law.

Effectively achievable returns – an estimation

A pension fund is required to invest its funds in such a manner that "the security of fulfilling the pension purposes is assured" (Art. 50 OPO2). So, let us begin our considerations about an achievable return with an extremely safe investment by placing the entire capital in 10-year bonds from the Swiss Federation. These investments, which are deemed without risk, gave a return of 4.63% in 1985, and until the mid-nineties their return had always been around 4% or higher. Not only did this allow our model pension fund to fulfil its statutory obligations without any risk, it was also able to realise considerable surpluses each year. Unfortunately such times are a thing of the

past: currently 10-year federal bonds are noted with an interest rate of minus 0.51%. Our pension fund is even required to pay for investing its funds risk-free, at a time when it needs to achieve more return than in old times. However, investing only in risk-free federal bonds is neither realistic nor necessary.

By virtue of the long-term investment view, pension funds are by all means able to take justifiable risks and thereby realise surpluses for their insured members. As a consequence, most of the pension funds are investing in bonds (not just in federal bonds), shares, property and, to a lesser degree, in alternative investments. For this purpose let us first look a little more thoroughly into returns on investments in shares and bonds:

The Pictet Bank have surveyed long-term returns of Swiss shares and bonds going back all the way to 1925, and observed that shares on average had a return of 7.81% per year, and bonds of 4.40% per year. At first glance this suggests that shares are the solution for our pension fund issues. However, the higher returns from shares go hand in hand with the risk of considerably higher fluctuations. Since OPA was introduced, shares in their worst year (2008) made a loss of 34%, and there were two consecutive bad years (2001-2002) in which shares overall dropped by 42%. As there had been good years in-between (the best was 1985 just after OPA introduction, with a 61% profit) theoretically, the losses could be sat out with a long-term investment duration. Although the investment horizon of an individual employee stretches over 40 years (the OPA savings process starts at age 25 and ends with retirement), the pension fund must take into account that due to a job change it has to pay out the vested termination benefit at any time. The legislator therefore stipulates that a pension fund needs to remain solvent (Art. 52 OPO2) and, among other investment regulations, limits the maximum amount invested in shares to 50% (Art. 55 OPO2). However, pension funds still have a long-term horizon with their financial investments, so when it comes to what returns can be realized, we can look at the average returns over ten years. The BVG-2000 indices, which are also published by the Pictet Bank, simulate typical investment strategies of pension funds, once conservatively with a 25% share investment and once slightly riskier with a 40% share investment. The rest is invested in Swiss and foreign bonds. This leads to the following annual returns:

Period	Swiss shares	Swiss bonds	BVG-2000 Index 25% shares	BVG-2000 Index 40% shares
Ø 1926-2015 (90 years)	+ 7.81 %	+ 4.40 %		
Ø 1985-2015 (OPA)	+ 9.35 %	+ 4.45 %	+ 5.49 %	+ 6.02 %
Best year (since 1985)	+61.36 %	+12.98 %	+12.53 %	+16.87 %
Worst year	- 34.05 %	- 3.99 %	- 9.88 %	- 17.28 %
Ø 1986-1995 (10 years)	+ 8.73 %	+ 5.60 %	+ 6.57 %	+ 6.95 %
Ø 1991-2000	+20.17 %	+ 6.36 %	+ 9.47 %	+11.05 %
Ø 1996-2005	+10.46 %	+ 4.38 %	+ 6.19 %	+ 7.07 %
Ø 2001-2010	+ 0.30 %	+ 3.98 %	+ 2.58 %	+ 1.94 %
Ø 2006-2015	+ 4.70 %	+ 3.26 %	+ 3.01 %	+ 3.10 %

The first thing that stands out is that, in none of the ten-year periods featured, did any losses occur. This shows that a long investment horizon does pay off. However, in the last two ten-year-periods, i.e. since the turn of the millennium, shares had extraordinarily bad returns. The bond yields have been lower than in the previous ten year-periods, but at first glance still look rather acceptable. However, it has to be noted that these profits are exclusively based on bond price increases due to massively falling

interest rates, and consequently, will not be sustainable in the future. Sooner or later, when interest rates revert to normal levels, bonds will unavoidably experience a massive slump in prices.

Above all our analysis shows that returns can fluctuate even over long periods of time. The most important question in any discussion about the conversion rate – whether investment returns to be realised in the future can be compared with those in the past, or whether they will be sustainably higher or lower – can unfortunately not be answered and thus, to a certain degree, remains a matter of faith. Thus, a completely objective calculation of the correct conversion rate is not possible. However, it would be utterly devastating for the security of our occupational pensions if the system is fixed by simply "deciding" increasing return expectations.

Consequences of a conversion rate too high – the real pension theft
We have seen that it would be possible to exactly calculate the correct conversion rate; however, the one vitally necessary factor – the actually realizable returns – is only known many decades too late. As a consequence there remains nothing else but working with more or less realistic assumptions at time of retirement. Anybody just shy of retirement will certainly be interested in a conversion rate that is too high, whereas the insurers and also the contributors (employers and younger employees) would wish for a conversion rate too low or at least a correct one.

If the conversion rate is set too high, the consequence is that that the capital accrued by pensioners and its returns, will not be sufficient to finance the pensions they had been promised. This will then implicitly lead to a subsidising of pensioners by those still actively working who will then be deprived of a part of the returns on their own retirement savings capital – or in a worst-case scenario, even of a part of their contributions – to pay for current pensions. Thus the capital-funded principle of OPA is gradually broken down, and increasingly displaced by a pay-as-you-go scheme similar the one used in social security.

This redistribution is not evident at first glance, and the public hardly sees this as a problem. Due to the compound interest effect, there will soon be a huge amount of money involved – money that the currently active employees will later miss. An assessment of the extent of this redistribution is not easy, due to the variety of pension plans and pension funds available. However, the media regularly quote figures in the range of CHF 1'500 per employee and year. If this amount is then extrapolated with just 1% interest rate over 40 years (age 25 to 65), the then pensioner will be CHF 76'318 short of retirement savings capital which, with the current conversion rate of 6.8%, corresponds to an annual pension shortfall of CHF 5'190 or CHF 432 per month. In order to compensate for this, future active employees will have to cross-subsidise even more, while having less retirement capital, and will thus need to be even more cross-subsidised. In the long term conversion rates that are too high will lead to pension funds increasingly saying farewell to the capital-funded principle and eventually become plain pay-as-you-go systems. Thus here, hidden discreetly behind the complicated annuity formula, the real pension theft is taking place!

Conclusion
On the basis of a strongly rising life expectancy, a lowering of the pension fund conversion rate to 6.0% will be unavoidable. Whether this will be a sufficient measure or whether a future lowering is be required depends to a great extent on what

investment returns can be realised in the future (those of the last 90 years or those of the rather meagre last 15 years) and thus cannot be assessed conclusively.

To just incorporate a figure of 6.0% firmly into law and leave it untouched for the next 20 years, until maybe a consensus can be reached for another reform, does not seem to be advisable at all. As our life expectancy will continue to steadily rise, the legislator once more would implicitly "decide" that each year, increased investment returns have to be realised. A complete objectification of the conversion rate is not possible either, due to the unpredictability of returns.

In order to strike a meaningful balance it would be possible to objectify what can objectively be assessed: that is to say, the life expectancy. Instead of a fixed conversion rate, the calculation formula could be incorporated into the law and be based on the remaining life expectancy according to the mortality tables of the Federal Statistics Office at the time of retirement. The political debate would then be reduced to the expectations of realizable returns that, on the one hand, are easier to grasp than the current "black box" and on the other hand, are to some extent indeed a question of faith which can only be answered politically.

This method would have the advantage that it would lead to a dynamic adjustment of the conversion rate: the steadily rising life expectancy leads to an equally steady reduction of the conversion rate and thus to a reflection of reality. It would not be necessary to tell employees over decades (via their annual pension certificate) that they would receive 6.8%, only to tell them from one day to the next and for the next decades that they would only receive 6.0%. The occupational pension plan would thus become tangible and easier to plan.

Kind regards
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