Pension financialization and collective risk sharing in Canada and Finland

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Abstract This article contributes to the debate concerning pension financialization and how countries are adapting their pension systems to respond to demographic ageing. We do so by examining the statutory pension systems of Canada and Finland, which diverge interestingly from current international trends. The Canadian and Finnish public pension schemes reflect two tendencies often associated with pension financialization: an increasing reliance on financial markets and an investment policy with a diversified asset allocation. However, unlike in many other countries, this has not resulted in heightened individual risks in old-age income security caused by a shift from defined benefit to defined contribution pensions – an otherwise common trend internationally.

Keywords pension scheme, social security scheme, social security financing, social insurance, privatization, investment policy, Canada, Finland

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Introduction

Since the 1990s, influential international organizations have raised concerns regarding the "old-age crisis", as many public pension systems have faced an unsustainable combination of a growing number of retirees with increasing life expectancy and diminishing workforces. The World Bank (1994), OECD (1998, 2000), and European Commission (1999, 2012) have published reports on the desired policies needed to avert the assumed "crisis". These reports urge lightening the burden of public pay-as-you-go (PAYG) pension schemes¹ and increasing the role of private or public pre-funded retirement saving arrangements. In line with the proposals of these organizations, several countries have sought to reform their pension systems so that their public PAYG pension schemes would account for a smaller share of their citizens' retirement incomes than was previously the case (see, for example, Clark and Whiteside, 2003; Ebbinghaus, 2011).

This development is an important part of a more general phenomenon, referred to as "pension financialization". Pension financialization is often associated with three tendencies (van der Zwan, 2017). First, an increasing role for capital funding in the financing of pensions and, thus, the dependence of pensioners' livelihoods on financial markets, which follows the shift from PAYG financing towards pre-funding. Second, a shift in the investment policy of pension investors away from fixed-income assets (such as government and corporate bonds) that generate predictable and "safe" returns, and a move towards more diverse and higher risk investments including corporate equities and other asset classes with fluctuating returns.

The third tendency is the shift from defined benefit (DB) pensions to defined contribution (DC) pensions. In the latter, the contribution rate is fixed and the value of pension income is variable, as it is substantially determined by the investment returns from financial markets, rather than defined in advance according to a certain accrual formula as in DB pensions. There are two important consequences of this third tendency. First, a transfer of risk from contributors (current employers and employees) to beneficiaries (pensioners). Second, a shift of risk from the collective to the individual, as DC plans are often personal and individualized and may also include the possibility for contributors to make investment decisions. In addition to individual investment risks, DC plans also often increase individual inflation risks, career break risks (for example, if parental leave or unemployment decreases the insured's pension

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^{1.} Public pay-as-you-go (PAYG) pension schemes are financed by contributions from current contributors (often both employers and workers), not by the past contributions of current beneficiaries. In a pure PAYG system, no funds are accumulated.

benefits) and longevity risks (if benefits are paid as a lump sum instead of periodic payments across the remaining life course). By contrast, public DB pension systems typically share the above-mentioned risks collectively, with an emphasis on providing secure pensions for all workers.

These changes in the realm of pensions can be understood as part of a much broader shift from industrial capitalism towards financialized capitalism (van der Zwan, 2014): the shift towards the financialization of everyday life, and a move towards greater individual risk bearing, and dependence on financial markets to meet basic income needs. Previous research has drawn attention to the increasing uncertainty and individualization of risks as an outcome of pension financialization (Berry, 2016; Langley, 2004; Natali, 2018; Wiß, 2019). This move has also been conceptualized as a partial shift from thrift and collective insurance towards individual investment (Langley, 2008) or, from a more general point of view, towards individualization of financial risks and the responsibilization of citizens (Berry, 2015). There has been increasing discussion on how this "risk shift" has created a new kind of economic insecurity (see, for example, Hacker, 2006). However, as van der Zwan (2014) asserts, the emphasis in the literature has often been on developments in the United States of America and the United Kingdom. For this reason, there is a need for research on diversity in relation to financialization internationally.

The present article aims to contribute to the discussion on international diversity concerning approaches to pension financialization by examining two relatively different statutory pension systems in Canada and Finland. The two countries diverge in surprisingly parallel ways from what are deemed to be global trends of individualization and privatization. The article explores how the entwinement of financial markets and social security has occurred in recent developments in Canada and Finland and, importantly, has shaped current arrangements wherein the role of public DB pensions has remained strong, and the significance of private occupational pensions has not increased. The focus of the article is on the consequences of pension financialization, not the politics of pension policy or the triggers for reforms.

The recent developments in the Canadian and Finnish public pension schemes offer clear examples of the first two mentioned tendencies associated with pension financialization; that is, an increasing reliance on financial markets and diversified asset allocation, including proliferating investments placed in equities. However, as we will discuss, Canada and Finland both depart from the third, apparently international, tendency: in both countries, recently introduced forms of financialization have not resulted in the utilization of mandatory or quasi-mandatory DC pensions or a significant increase in occupational DC plans. In other words, a greater burden of risk has not been transferred to individuals.

The literature on pension financialization has largely focused on the increasing role of pre-funded private pensions, with the emphasis placed on the ongoing shift from DB pensions to DC plans (see, for example, Hassel, Naczyk and Wiß, 2019; Bridgen and Meyer, 2005; Langley, 2004; Schmähl, 2007). However, as this article will show, a study of financialization as regards public DB pensions provides a more diverse view of the phenomenon. Utilizing the illustrative cases of Canada and Finland, the article engages with the debate about the possibilities of the notions of collective risk sharing and solidarity articulating with some forms of financialization (see van der Zwan, 2014). Several studies have highlighted the possibilities of combining financialization, social protection and collective risk sharing by regulating private pre-funded occupational pensions (see Anderson, 2019; Bridgen, 2019a; Frericks, 2013; Pavolini and Seeleib-Kaiser, 2018; Van der Zwan, 2017). Nevertheless, Canada and Finland represent a different kind of interaction between financial markets and collective risk sharing than these other cases, partly because the interaction is taking place within public pension schemes and with only partial pre-funding. In general, the processes described in this article can be situated as part of a broader trend towards the financialization of the State, usually referring to the change in the management of public debt and assets. The trend towards the financialization of the State requires further investigation, especially because it is not a mere technical matter, but might have significant political and distributive consequences (see Schwan, Trampusch Fastenrath, 2021).

By exploring the situation in Canada and Finland, the article shows how increasing reliance on financial markets to provide for pensioners' income security is not necessarily connected to privatization or the individualization of risks; instead, financializing public pension systems can be combined with, and may even help to consolidate, comprehensive statutory risk sharing, nationwide social insurance and solidarity. At the same time, however, collective risks might increase significantly. The main contribution of the article is to help better understand the relationship between pension financialization and the scope of possibilities that exist for statutory collective risk sharing. The analysis is based on academic, governmental, and other expert literature – including actuarial reports and long-term projections – on the Canadian and Finnish pension schemes.

The structure of the article is as follows. In the next section, we present the most important characteristics of public pension schemes and the history of partial pre-funding in Canada and Finland. We then elaborate on the extent to which the three common tendencies associated with pension financialization apply to these two countries by examining the increasing role of pre-funding, the shift in investment policies, and the resilience of the statutory DB pension schemes and collective risk sharing in the context of financialization.

The main differences between the schemes in Canada and Finland relate to the contribution and benefit levels (see Table 1), especially for those with higher incomes. The Finnish pension system is almost completely based on first pillar public pensions, the replacement rates⁴ are similar at all wage levels (OECD, 2021), and there is no ceiling for the level of the statutory pension. Therefore, the significance of supplementary pensions has remained marginal, with only about 10 per cent of employees covered by private occupational pensions (Vidlund et al., 2016). By contrast, in the Canadian two pillar system, the importance of second pillar occupational plans has been crucial due to the rather modest replacement rates of public pensions, especially among persons with higher income. The CPP operates with a pension ceiling. However, the percentage of Canadian employees with a traditional occupational pension plan (Registered Pension Plan – RPP), has been decreasing since the end of the 1970s, especially

- 2. The earnings-related pension system in Finland consists of two main schemes: the statutory schemes for private-sector and public-sector employees. The benefits of these schemes are very similar. However, there are differences in the share and technique of pre-funding in financing the pensions in different sectors (private, municipal, state). The pensions for self-employed workers are not partially pre-funded, and the principles of financing and benefits differ from the employees' pension schemes. This article focuses on the statutory pension schemes for private- and public-sector employees, unless otherwise stated.
- 3. Career average DB pensions are based on an average of the insured's salary throughout the working career, not on final salary before retirement.
- 4. We use here, and in Table 1, theoretical future net pension replacement rates. This concept is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking into account personal income taxes and social security contributions paid by workers and pensioners. The concept assumes a full career in the private sector starting at age 22 in 2020 until reaching the country-specific retirement age. The replacement rates are often calculated for a low (0.5 of average), average (1) and high-wage (2) earners (OECD, 2021).

the CPP.

	Canada	Finland	
Public pension schemes	Residence-based minimum (OAS and GIS) and earnings-related (CPP/QPP) pension schemes	Residence-based minimum (national and guarantee) and earnings-related pension schemes	
Benefits in all public pension schemes	Old-age, disability, and survivors' pensions	Old-age, disability, and survivors' pensions	
Coverage of the public earnings-related schemes	Virtually all adult employees and self-employed persons	Virtually all adult employees and self-employed persons	
Benefit type and calculation (earnings-related)	Career-average DB pensions	Career-average DB pensions	
Projected theoretical net replacement rate for an <i>average-wage earner</i> in 2063/2066 (% of individual net earnings)	46.4 (2063 at age 65)	63.2 (2066 at age 68)	
Projected theoretical net replacement rate for a <i>low-wage earner</i> (0.5 of average) in 2063/2066 (% of individual net earnings)	62.0 (2063 at age 65)	63.8 (2066 at age 68)	
Pension ceiling	Maximum pensionable earnings based on average salary	No ceiling to contributions, pensionable earnings, or benefits	
Financing of the public earnings-related schemes	Mostly PAYG, partial pre-funding, financed mainly by employers, employees and self-employed as well as investments	Mostly PAYG, partial pre-funding, financed by employers, employees and self-employed as well as investments	
Public pension spending in 2020, % of GDP	4.8	11.8	
Contribution rate in 2023	11.9	24.8	
Assets in the public pension system in 2020, $\%$ of GDP	25.8	94.4	
Projected funding ratio* in 2025 and 2075, %	25.5 and 31.3 in base CPP and at least 100 in additional CPP	30.6 and 36.4 (in the statutory scheme for private-sector employees)	
Management of pension funds	CPP Investment Board	Pension insurers	
Pension policy making	Federal government and ten provincial and three territorial governments	Central employer and employee organizations and the government	

Note: *Funding ratio is the ratio of assets and liabilities that in a partially pre-funded scheme illustrates the significance of pre-funding in relation to PAYG financing.

Sources: OSFI (2019); Finnish Centre for Pensions (2023); OECD (2021); Office of the Chief Actuary (2007); Tikanmäki et al. (2019).

in the private sector. RPP coverage is currently about 37 per cent among all employees and about 22 per cent for private-sector employees (Drolet and Morissette, 2014; Statistics Canada, 2021).

Whereas most statutory first pillar schemes are completely PAYG financed, sometimes including a small reserve fund, the Canadian and Finnish schemes are exceptional in that the earnings-related statutory schemes are partially prefunded. As we show in the next section (see also Table 1), the pre-funded part is significant in both countries. There are only a few other countries where public pension systems have significant funds set aside to support their financing, such as Sweden and Norway, but an essential difference compared to Canada and Finland is that these public schemes are no longer DB schemes. Canadian and Finnish schemes also differ significantly from publicly managed national provident funds or state regulated private funds that often seek to provide mandatory "retirement savings" on a DC basis rather than providing DB "pensions".

The policy-making process concerning earnings-related pensions is institutionally different in Canada and Finland, but in both countries an importance is accorded to seeking consensus. In Canada's federal system, a consensus must be found between its ten provincial and three territorial governments and the Canadian federal government (Little, 2008). In the Finnish case, the statutory earnings-related scheme is governed, and reforms are mainly planned, by central employee and employer organizations, instead of parliamentary politicians. There is a strong requirement to build consensus between the country's labour market organizations (Kangas, 2006; Kangas, Lundberg and Ploug, 2010).

These characteristics of national pension policy making appear to have had important effects on the significant role of pre-funding in the Canadian and Finnish public pension systems. In Finland, the decision to create a partially pre-funded scheme⁵ in the 1960s was based on the imitation of private pension insurance financing models, as this was seen as a reasonable option among experts and offered a means of compromise between employee and employer organizations. An important factor behind the agreement, which would see employers financing the scheme, was the ruling that permits employers to borrow back two-thirds of pre-funded contributions as cheap long-term "premium loans". This alleviated the employers' burden of payment. It also became an important part of corporate finance as well as of pension insurers' investment policy in Finland until the beginning of the 1990s – prior to the liberalization of the capital markets in the early 1990s, a source of long-term financial capital had been lacking (McCarthy, Sorsa and van der Zwan, 2016; Dixon and Sorsa, 2009). In Canada, the idea of pre-funding was attractive for the Canadian provinces, as the funds could be used to boost the provincial economies (Little, 2008). Starting from the late 1960s, the assets from the QPP fund came to be invested in equities and real estate to

^{5.} The statutory scheme for private-sector employees was based on partial pre-funding from the outset, but the schemes for public-sector (municipal and state) employees began to accumulate funds much later, in the 1980s (Kangas, 2006).

While both schemes have remained predominantly PAYG, the operational significance of pre-funding, international financial markets, and investment returns have increased since the 1990s and will continue to increase. In the following sections we explore the unique combination of financialization and social security within the statutory pensions systems of Canada and Finland, by elaborating on the actualization in both countries of the three discussed tendencies related to pension financialization.

Pension financialization and the resilience of statutory DB pensions in Canada

Increasing reliance on partial pre-funding

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In the early 1990s, the Canada Pension Plan (CPP) faced a financing crisis with actuarial projections suggesting that its revenues would prove insufficient to pay all pension benefits (Béland, 2006). As the existing fund was small, increasing the pre-funded element emerged as one of the major instruments to avoid an otherwise inevitable and steep increase in the contribution rate, an outcome made likely by the opposition of Quebec in particular, as well as two other provinces, to large benefit cuts (Myles and Pierson, 2001, p. 320). Thus, the federal and provincial governments solved the problems of financial sustainability by opting to increase pre-funding (Little, 2008). From the end of the 1980s and during the 1990s, the total contribution rate started to rise gradually from the original 3.6 per cent. To alleviate the future financing challenge, in the late 1990s and early 2000s, the combined total contributions of Canadian workers and their employers to the CPP increased from 5.85 per cent to 9.9 per cent (Béland and Weaver, 2019). The purpose of this pre-emptive rise in contributions was to make the scheme financially sustainable in the long term and promote intergenerational equity so that contributions would not grow much more steeply for future younger generations.

However, the biggest step was taken in 2016, when federal, provincial, and territorial politicians reached an agreement to significantly enhance the future benefit levels provided by the CPP by utilizing full pre-funding for the, so called, "additional CPP". In other words, under this system, all enhancements to earnings-related public pensions should be fully pre-funded so that every generation pays their own additional CPP benefits collectively. Henceforth, total

CPP pensions would consist of a partially pre-funded base CPP and a fully pre-funded additional CPP.

In Canada, the public first pillar (CPP) pension assets equated to 26 per cent of GDP in 2020 (Finnish Centre for Pensions, 2023; see Table 1). However, in the coming decades, CPP funds will grow much faster than previously, especially because the new additional CPP is fully pre-funded. All CPP assets are projected to increase more than tenfold in the next three decades (OSFI, 2019, pp. 34–36 and pp. 51–52).

The funding ratio (the ratio of assets and liabilities) of the base CPP has been increasing since 1997, when it was below 10 per cent, and is projected to rise to over 25 per cent by 2025 and to 31 per cent by 2075 (Office of the Chief Actuary, 2007, pp. 21–24; see Table 1). In the additional CPP, the funding ratio is at least 100 per cent (OSFI, 2019, p. 179). Furthermore, the share of investment income from total revenues (contributions and investment income) will grow significantly (Office of the Chief Actuary, 2021, p. 13). In the base CPP, the ratio of net investment income and contributions is expected to be 45 per cent in 2025 and 67 per cent in 2065 (see OSFI, 2019, p. 39). To sum up, the increasing significance of pre-funding may be understood as the first expression of the financialization of Canada's statutory pension scheme.

The shift in the investment policy: Towards new kinds of asset classes

In Canada, a major financing reform was enacted in 1997 that made a more yield-seeking and riskier investment policy and a new kind of asset allocation possible for the CPP. Following the reform, the Canadian public pension system has actively started to invest in corporate equities with the aim to secure the sustainability of the scheme through higher investment returns.

An essential part of the 1997 reform was the establishment of an independent Canada Pension Plan Investment Board (CPPIB), which started to manage professionally the investments, at arm's length from the government. The CPPIB followed the example of the QPP's investment board, which has invested in equities since the late 1960s (Béland, 2006). The change in the asset allocation was rapid. In 1997, 100 per cent of CPP funds were invested in fixed-income government bonds. In 2007, the share of equities had risen to 65 per cent, while the share of fixed-income assets had dropped to 25 per cent. Following the 2008 financial crisis, the share of CPP funds invested in equities has decreased slightly, sitting at 53 per cent in 2020, while the share placed in real estate (11.3 per cent) and infrastructure (8.6) per cent has increased (CPP Investments, 2020a;

All in all, this development in investment policy in Canada provides the second expression of the increasing financialization of the statutory pension scheme. The key take-home point is that Canada has increasingly utilized collective risk taking in the financial markets, without increasing the individual risks faced by beneficiaries. Simultaneously, this has apparently enabled a somewhat exceptional enhancement of public pension benefits. Next, we elaborate on the resilience of DB pensions and collective risk sharing in the context of financialization. In turn, we highlight collective uncertainty related to, first, increased collective risk taking and, second, current actuarial calculations.

Enhancement of public pensions instead of coverage extension by occupational plans

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In Canada, the public pension scheme has been relatively resilient over the decades (Béland, 2006; Béland and Myles, 2005; Lain, Vickerstaff and Loretto, 2013). However, the decision in 2016 to extensively enhance the CPP by using full pre-funding in the additional CPP was an exceptional development. Contributions increased gradually from 9.9 per cent to 11.9 per cent between 2019 and 2023. The theoretical net replacement rate of the public schemes (including the CPP and OAS) for a full career average-wage earner is projected to increase significantly to over 46 per cent (and to 62 per cent for a full career low-wage earner) by the 2060s (OECD, 2021; see Table 1). In several publications, the Government of Canada (2021, 2022) unambiguously promises that the CPP replacement rate will increase, due to the additional CPP, from 25 per cent to 33 per cent of average work earnings received after 2019, which in most cases is topped up by the OAS. In addition, the ceiling for pensionable earnings will rise above the level of average earnings by 14 per cent by 2025, leading to higher maximum pensions. As the additional CPP is fully pre-funded, the realization of the enhancement due to this new element will take time to materialize and will have little effect on current benefits.

Although reversals of public pension retrenchment in liberal welfare states may occur (see Bridgen, 2019b), in general, the development of pension policy in Canada has not followed the long-term trend seen in other liberal welfare states – i.e., a diminishing reliance on public earnings-related pensions and the increasing importance of private occupational arrangements. Despite the decreasing coverage of occupational pensions in Canada, the government has

not made private occupational pensions more encompassing by regulation. Instead, Canada has significantly enhanced public statutory pensions by means of financialization.

By contrast, Australia, Ireland, New Zealand and the United Kingdom, as well as some states in the United States of America, have all introduced the regulatory extension of private pension coverage (Gelepithis, 2018; Moss, 2019). In 2012, the United Kingdom introduced "auto-enrolment" (with a possibility to opt out) to widen the coverage of occupational pensions and, in 2016, the United Kingdom statutory earnings-related pension system was completely abolished and transformed into a flat-rate basic pension scheme. In the United States of America, there is no federal level auto-enrolment regulation, but some states are using auto-enrolment in their retirement plans, which are offered to workers who are not covered by company schemes (Cometto, 2019).

There are important differences between the enhancement of the DB federal CPP compared to the mandatory extension of private pensions, although both approaches utilize pre-funding and financialization. These differences are significant in terms of solidarity and risk sharing: who bears the risks and how? Internationally, occupational pre-funded pensions are increasingly DC plans, which shift investment risks, inflation risks, career break risks, and often also longevity risks to individuals. This is not the case for the Canadian public pension scheme.

Yet even though the risks are not individualized, the Canadian system cannot avoid the collective uncertainty related to investment risks, economic and demographic development, and actuarial projections. For this reason, specific regulations exist for situations when the system may be faced with a financially unsustainable position (Government of Canada, 2021). If the base CPP is anticipated to be in a deficit position according to long-term actuarial projections, the regulated adjustment options aim to share the risk between contributors and beneficiaries by increasing the contribution rate and weakening the price indexation of current pensions. In the case of the fully pre-funded additional CPP, there are automatic adjustments defined in the legislation to be used when finance ministers cannot reach agreement on the response. If the additional CPP is shown to be in a deficit position, adjustments will be shared sequentially between beneficiaries and contributors by first weakening the indexation of current and future benefits and reducing the value of future new benefits within a certain limit (max. 5 per cent). If such measures are insufficient to restore the financial sustainability of the additional CPP, the last possible option is to increase contribution rates.

The details of these adjustments are important for the resilience of collective DB pensions in Canada. First, the nominal value of the current benefits cannot be

Pension financialization and the resilience of statutory DB pensions in Finland

Increasing reliance on partial pre-funding

In Finland, there has not been such a rapid shift towards the importance of pre-funding as in Canada. This is because the role of pre-funding was already significant from the outset, following the introduction of the statutory scheme for private-sector employees.⁶ The pension funds have grown steadily since the 1960s and the value of their assets represented about 20 per cent of GDP by the end of the 1980s. At the turn of the 1990s, the value of pension funds expanded further because the statutory earnings-related schemes for public-sector employees, which were initially financed completely on a PAYG basis, started to accumulate substantial assets (Kangas, 2006). Among countries with notable public pension funds, Finland has the highest share of public first pillar pension assets in relation to GDP (94 per cent in 2020) that cannot be used for other public expenditures (Finnish Centre for Pensions, 2023; see Table 1).

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The funding ratio (the ratio of assets and liabilities) in Finland was over 30 per cent across the period 2000–2020 and is projected to remain relatively stable until the 2040s but to grow to 36 per cent by 2075 (Tikanmäki et al., 2019, p. 66; see also Table 1). As in Canada, the share of investment income from total revenues (contributions and investment income) will increase significantly in the coming decades (Tikanmäki et al., 2019, p. 65). In the Finnish public pension scheme for private-sector employees, the ratio of investment income and contributions is expected to be 34 per cent in 2025 and 47 per cent in 2065 (see Tikanmäki et al., 2019, p. 65).

^{6.} In the 1960s, a majority of total contributions were pre-funded. After that, the share of pre-funding gradually stabilized at the present level, which is equal to about a fifth of contributions. The total contribution rate was about 5 per cent during the 1960s and increased to 12 per cent by 1977 and to about 24 per cent by the end of the 1990s.

The shift in the investment policy: Towards new kinds of asset classes

As was the case in Canada, a major financing reform also took place in Finland in 1997 that made an investment policy with a higher risk profile and new kinds of asset allocation possible for pension insurers. The reform became possible after a gradual normative shift in the ways of thinking concerning public pension funds' investment policies (Dixon and Sorsa, 2009). In Finland, this shift had already commenced at the end of the 1980s when credit markets were liberalized and the traditional investment policy of pension insurers began to attract criticism for low investment returns (Kangas, 2006). During the first decades of the scheme's operation, Finnish pension insurers' investment policy had been stipulated to prioritize investment in the national economy, but by the end of the 1990s the investment policy had shifted because of a move towards independent and professional management.

The development in Finland has some unique features, but the trend is relatively similar to that seen in Canada. In Finland in the mid-1990s, the share of equities was not zero as it was for the CPP, but around 10 per cent (Kangas, 2006). At that time, government bonds were the most important investment instruments in the public pension scheme. Then, similarly to the CPP's investment practices, after the reform in 1997, the share of equities started to increase as the pension insurers began following international portfolio management paradigms which saw them transform into professional global investors (Dixon and Sorsa, 2009; Koivurinne and Vaittinen, 2020, p. 54). Despite the financial crisis in 2008, the growth of the share of equities in investment portfolios in Finland has continued. In 2020, the share of equities in the private-sector employees' statutory scheme was 42 per cent and slightly below 50 per cent for the public-sector employees' statutory scheme (Tela, 2020).

Maintenance of public pensions instead of coverage extension by occupational plans

Similar to the Canadian case, the statutory earnings-related pension scheme in Finland has remained relatively stable and economically sustainable with the help of increasing contribution rates and partial pre-funding as well as the shift in the asset mix of pension funds. Although there has been gradual retrenchment since the 1990s and some of the key characteristics of the system have changed (see Kangas, Lundberg and Ploug, 2010), the theoretical net replacement rate is projected to remain quite stable and near the average level for Organisation for Economic Co-operation and Development (OECD) Member countries for full-career average-wage earners (above 63 per cent) (OECD, 2021; see Table 1). The pension model in Finland remains different to those of other Nordic and most North-western European countries, in which the role of second pillar occupational pensions is significant. The development in Finland has also avoided the "risk shifts" from the collective to the individual that have taken place, for example, in Germany and the United Kingdom (Ebbinghaus, 2019; Pavolini and Seeleib-Kaiser, 2018; Wiß, 2019). In the 2000s and at the beginning of the 2010s, there were some indications of the growing importance of private occupational and personal pension solutions in Finland (Kangas and Luna, 2011). Currently, however, the tendency toward the multipillarization, privatization and individualization of pension security, as witnessed in many other countries, is not discernible in Finland. The number of new occupational pension policies grew until 2012 but has since fallen in almost every year (Finance Finland, 2019; Financial Supervisory Authority, 2018). All in all, the importance of private pensions, whether occupational or personal, has remained limited.

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Collective quasi-mandatory occupational schemes negotiated between trade unions and employer organizations, especially in Denmark, Sweden and the Netherlands, have been able to combine social interests with private pre-funded pensions and better limit the shift towards individual risk bearing than in Germany or the Anglophone countries (Anderson, 2019; Hassel, Naczyk and Wiß, 2019; Pavolini and Seeleib-Kaiser, 2018). There are, nevertheless, two important differences between the earnings-related scheme in Finland, which is based on one public pillar, and the above-mentioned collectively bargained occupational pensions in two pillar systems. The first difference relates to the coverage and limits of insurance solidarity (Lehtonen and Liukko, 2015). The quasi-mandatory occupational schemes in most countries cover most employees (often over 90 per cent), but a small minority of employees as well as entrepreneurs are excluded, unlike in the public scheme in Finland. Second, pre-funded occupational pensions, common in the Nordic countries other than Finland, include more individual risks than the Finnish partially pre-funded public scheme, and these risks are increasing due to the gradual shift toward DC plans with individual investment choice (Anderson, 2015, 2019).

As in Canada, in Finland the uncertainty related to population ageing, economic development and investment returns is being managed collectively without increasing individual risks. This collective uncertainty is managed by automatic adjustment mechanisms and separate decisions. Whereas in Canada the adjustments will be deployed only if the actuarial projections show that

the schemes will be in deficit, in the Finnish case increasing longevity is already taken into account in two ways. The first is the automatic linkage of retirement age and life expectancy. The second way is a benefit reduction, if the insured person does not work long enough, according to the "life expectancy coefficient", which is calculated for each age cohort (currently, a maximum 5.34 per cent for a person born in 1960) (Andersen, 2021). In the case of financial unsustainability due to low birth rates, employment rates and investment returns, it is only possible to increase contributions, weaken the indexation of benefits, and reduce not-yet-accrued future benefits by a separate decision.

In sum, from the point of view of the DB character of the public pension scheme, there are three features in Finland which are quite similar to those in Canada: first, the nominal benefits of current pensioners cannot decrease; second, the possible reductions of benefits are limited and defined in advance (except for possible indexation changes in Finland); and third, increasing the contribution rate is not ruled out as an option in the event of financial challenges. In other words, although both the financial market and demographic risks have increased, these risks are collectively shared and, to some extent, adjustment mechanisms are predefined in legislation.

Conclusion: Financial markets supporting statutory risk sharing

In this article, we have examined recent developments in the Canadian and Finnish public pension schemes in relation to three tendencies that are commonly associated with pension financialization (see van der Zwan, 2017, Table 2). The increasing significance of partial pre-funding in the Canadian and Finnish pension schemes clearly reflects the first tendency as it has increased the schemes' reliance on financial markets, even though they remain mainly PAYG financed. Second, financialization has been strengthened as more funds have been invested in diverse asset classes with a strong emphasis on riskier corporate equities instead of more predictable fixed-income assets. As a result, the

Table 2. Three main trends of pension financialization, Canada and Finland

Pension financialization trends	Canada	Finland
Increasing reliance on pre-funding	Yes	Yes
Shift in the asset allocation toward equities	Yes	Yes
Individualization of risks	No	No

Source: Authors' elaboration.

However, these traits of financialization in the Canadian and Finnish public pension schemes have not been followed by a shift from a DB to a DC pension system. Instead, by making the financial situation of the schemes more stable, the utilization of financial markets has supported the maintenance of statutory collective risk sharing through career average DB pension schemes. The main advantage of partial pre-funding in public pension systems compared to pure PAYG systems is the fact that the utilization of financial markets and investment returns can make the system more sustainable, both financially and socially. This makes higher benefit income and/or lower contributions possible in the long term, even though investment risks do increase forms of uncertainty at the collective level.

The key issue here is that there is no transfer of risk from the collective to the individual in these countries. This is so even in Canada, where the share of individual DC plans is slowly increasing in the context of a declining role for workplace pensions. Instead, we have shown that the increasing role of pre-funding and higher risk investments at the collective level within public schemes can help to sustain risk sharing without individual investment risk, inflation risk, longevity risk, or risks related to labour market position (e.g., job changes, unemployment, or lack of workplace pensions). This is often not the case in private occupational schemes that increasingly engender these forms of individual risk.

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It is important to note that the literature on pension financialization suggests that the increasing individualization of risk as a third tendency does not necessarily happen in tandem or at the same pace as the other two tendencies. However, the aim of the article is not to claim that the developments in Canada and Finland are completely unforeseen. Instead, the objective is to offer a critical appraisal of superficial interpretations of pension financialization, often based on United States of America and United Kingdom examples, in which these tendencies are intertwined. The aim of the article is to strengthen understanding of the varieties of pension financialization through the unique examples of Canada and Finland and to illustrate the varying possibilities for solidarity and collective risk sharing within pension financialization.

The absence of heightened individual risk in the Canadian and Finnish public pension schemes cannot be attributed to the fact that the schemes are only partially pre-funded and mainly PAYG. Risks could be individualized in the pre-funded part of the scheme if it were decided to do so. This is the case in Sweden, for example, where a small part of the insured's statutory DC pension permits individual investment risk. Moreover, although the pension schemes are predominantly PAYG in Canada and Finland, they are not underwritten by the State in the event of financial problems. This holds true for the CPP in Canada

and the statutory earnings-related pension scheme for private-sector employees in Finland. If other adjustment mechanisms are insufficient to secure the financing of pensions, the only option is to increase the contributions paid by employers and employees.

Related to the above-mentioned tendencies, pension financialization is often associated with the privatization of old-age pension systems. However, the privatization of pensions is not a significant trend in Canada and Finland: the role of private workplace plans is decreasing in Canada and remains marginal in Finland. Instead, the utilization of financial markets has supported the economic sustainability of the public schemes, which are clearly more inclusive than voluntary or quasi-mandatory private occupational schemes. This makes the Canadian case different from other liberal political economies, where the emphasis has recently been placed on trying to increase the coverage of private DC occupational pensions through auto-enrolment regulations. As regards the nearest reference group for Finland, the Finnish case is different from all other Nordic and most North-western European countries, where the role of occupational pensions is significant. Moreover, in many of these countries the significance of individual or collective DC pensions is currently increasing or will be increasing in the future, as in the case of the Netherlands (Sorsa and van der Zwan, 2022).

Possible reasons behind the unique developments in Canada and Finland seem to be related to the specific institutional legacies of the pension policy-making system and the financing of schemes. First, as Kangas, Lundberg and Ploug (2010) and Béland and Weaver (2019) have shown, institutional legacies, particularly the need to achieve consensus between those who participate in pension policy making, were important in the incremental reforms that maintained the financial and social sustainability of public pension systems in Canada and Finland during the 1990s. The same institutional feature might have been an important factor behind the latest reforms in the 2010s as well. Second, the historical legacy of partial pre-funding, combined with the professionalization of pension investment (see also Gelepithis, 2019; Golka and van der Zwan, 2022), might have made it easier to increasingly utilize financial markets in public pension financing to generate better returns, which then made the enhancement or maintenance of collective DB pensions financially possible.

Finally, it is important to underline that even though individual risks are not increasing in the Canadian and Finnish systems, there is collective uncertainty about future pension provision related to population ageing, economic development and investment returns as well as actuarial long-term projections, which are all crucial elements of partially pre-funded pension systems. There may also be potential negative consequences related to the uncertainty of financial markets in the long term, which are difficult to anticipate and make provisions for in actuarial calculations. The Canadian and Finnish systems

appear to be relatively sustainable in the long run due to their shift to financialization. However, their intertwinement with financial markets increases certain kinds of risks as well as alters the spectrum of risks that confront the schemes. Importantly, despite the collective approach in both cases, the financial market risks they face are different in nature to the risks related to population ageing and employment faced by PAYG systems.

To sum up, in contrast to the common developments highlighted in the literature on pension financialization, we have shown that the increasing role of financial markets in providing old-age income security does not necessarily have to lead to the privatization of pensions or shift the allocation of risk from the collective towards the individual. More generally, we have emphasized that the recent developments in Canada and Finland can be understood as constituting a particular form of interaction between financialization and statutory insurance and solidarity. This type of interaction has not been discussed to any great extent in the literature on social security.

From country to country, the article supports the conclusion (see e.g., Hassel, Naczyk and Wiß, 2019; van der Zwan, 2017) that there is a great deal of variation in these processes. However, in contrast to previous research that has largely focused on private arrangements, we have highlighted the entwinement of financial markets with public DB pensions. In such schemes, old-age income increasingly relies on financial markets, but does so only at the collective level. The article stresses that even though there are risks related to financial markets, financialization is not necessarily a threat to comprehensive collective pension security. However, the long-term effects and possible benefits and challenges of pension financialization need further study.

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