

# Shifting pensions

*Philippe Gougeon*

In planning for retirement, Canadians rely on a system that has three components: public plans (the universal Old Age Security, the Guaranteed Income Supplement and the Canada/Quebec Pension Plans for paid workers); employer-sponsored plans (registered pension plans [RPPs], deferred profit-sharing plans and group registered retirement savings plans [group RRSPs]); and personal savings—including registered retirement savings plans (RRSPs). From 1992 to 2006, the importance of private pension plans (self-sponsored or employer-sponsored) in the composition of the average retirement income of Canadians 65 and over grew from 23% to 32% of their total income.<sup>1</sup> Fluctuations in the world economic situation can affect income from private pension plans, depending on their characteristics. With the prevailing situation in Canada and many other countries since fall 2008, the financial situation of current and future retirees could be affected depending on the type of plan and investment.

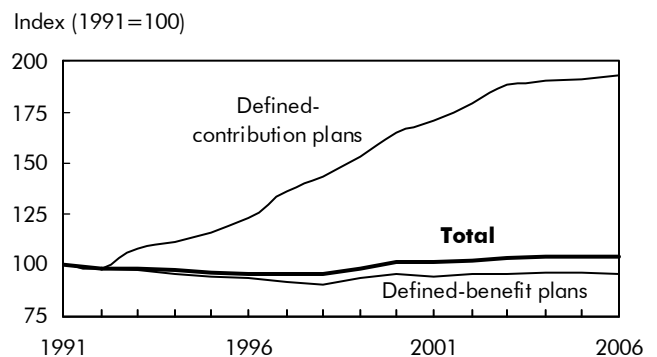
Registered pension plans comprise defined-benefit (DB), money-purchase or defined-contribution (DC) and hybrid/mixed (H/M) plans.<sup>2</sup> These plans covered 30%, 6% and 1%, respectively, of employees in 2006.<sup>3</sup> Over the last 30 years, a gradual transition away from DB plans (see *Data source and definitions*) has taken place in several countries, especially in the United Kingdom and the United States (Broadbent et al. 2006), and to some extent in Canada.

A change in the prevalence of these plans would imply a modification in the distribution of risk between employers and employees, which could have an impact on the standard of living of future Canadian retirees, whose numbers are growing rapidly.

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*Philippe Gougeon is with the Labour and Household Surveys Analysis Division. He can be reached at 613-951-6546 or [perspectives@statcan.gc.ca](mailto:perspectives@statcan.gc.ca).*

**Chart A The number of defined-contribution plan participants almost doubled between 1991 and 2006**



Source: Statistics Canada, Pension Plans in Canada Survey.

For employees, DB plans provide some security because benefits are predefined, and the investment risk rests mainly with employers. However, transfers of benefits are more complicated with a job change.<sup>4</sup> For employers, DB plans carry financial obligations to maintain solvency and conduct the actuarial valuations required by pension authorities.

On the other hand, the investment risk with DC plans is assumed mainly by contributing members because their retirement benefits are entirely dependent on contributions and plan performance. This characteristic is an advantage in periods of economic growth, as at the end of the 1990s and in the mid-2000s, but it may prove less advantageous in a more uncertain context like the one since the fall of 2008. Such plans, however, have the advantage of being more easily portable to a new employer.

## Data source and definitions

The **Pension Plans in Canada Survey** is an annual census of all registered pension plans in Canada. RPPs are retirement benefit programs that employers or unions establish for employees. The plans are registered with the Canada Revenue Agency for tax purposes, and, in most cases, with a provincial or federal jurisdiction. Plans are registered in the jurisdiction with the most active members.

**New plan/plan opening:** A plan opened between 1991 and 2006 and still open in 2006 was considered new. The opening date refers to the date on which the employer implemented the plan. Such a plan could be created following an amalgamation of companies or collective bargaining.

**Registered pension plan (RPP):** A plan the employer establishes to provide a pension to retiring employees. Regular employer contributions finance retirement benefits, and, in many cases, so do employee contributions and investment income resulting from these contributions. The two major types are defined benefit and defined contribution.

**Defined benefit plan (DB plan):** An RPP under which benefits correspond to a set amount or are determined with a formula providing a pension unit for each year of service. Employees may or may not be required to contribute. The employer pays the balance required to finance plan benefits. The law requires that an actuarial valuation be conducted at least once every three years in order to determine the contributions required to guarantee plan solvency. Best-average earnings plans were the most frequent in 2006.

**Defined contribution plan (DC plan):** An RPP in which the value of accumulated contributions is applied upon employee retirement to provide pension income. Employees may or may not be required to contribute. As opposed to DB plans, the amount of contributions is known, but the amount of benefits is only known when employees retire.

Employee benefits depend on investment profits and pension accrual rate. Profit-sharing plans are included in this category, but what differentiates them is that company profitability affects employer contributions.

**Hybrid/mixed plans (H/M plans):** Hybrid plans provide the better of a defined-benefit and a defined-contribution option. Mixed plans provide income from both defined-benefit and defined-contribution portions. These two have been grouped because each has a DB and a DC component, albeit combined in different manners. Furthermore, in both cases, some risk is shared between the employer and employees.

**Defined benefit/defined contribution plan (DB/DC plan):** A plan in which some employees are covered by a DB plan and others are covered by a DC plan. This can apply to different categories of employees, and/or current employees get one of two types of plans, and new employees, the other.

**Plan size: small** (3 to 99 active members); **medium** (100 to 999 active members); **large** (1,000 to 9,999 active members); **very large** (10,000 or more active members).

**Public-sector plan:** The main employer is a municipal, provincial or federal government, a crown corporation, or any other organization considered public.

**Private-sector plan:** The main employer is an incorporated or unincorporated business (company or sole owner), a cooperative, a professional association or labour union, or a religious, charitable or non-profit organization.

**Closed/terminated plan:** A plan closed between 1991 and 2006. Reasons for termination include replacement by a new plan, merger with another plan, bankruptcy, no participants, disapproval by the Canada Revenue Agency, company dissolution, financial or administrative considerations, conversion to RRSP, and legal non-compliance. Plans that have re-opened are excluded from this category.

## Defined contribution increases, defined benefit stagnates

In 2006, DB plans covered 81% of workers participating in a registered pension plan, while DC plans covered 16%. From 1991 to 2006, the number of DC plan participants almost doubled, from 466,000 to 899,000 (Chart A). Although DB plans still cover most RPP members (4.6 million members in 2006), they lost 192,000 members over the same period, primarily between 1991 and 1997 (Table 1). And while the number of women covered by DB plans has increased, that growth has been weak.

The decrease in DB plan membership is even more significant considering that employment increased 29% over the same period. In 1991, 41% of Canadian employees were covered by a DB plan. Fifteen years later, that proportion was down to 30%.

For DC plans, the proportional increase in members outstripped overall employment growth so their coverage rate rose from 4% to 6%.<sup>5</sup>

## Private-sector defined benefit decreasing

In Canada, DB plans still cover most private-sector pension plan participants, but they have lost membership in recent years (Table 2). In 2006, they covered 73% of private-sector plan members compared with 86% in 1991, representing a decrease of 279,000 members. At the same time, the number of private-sector employees increased by 34%. Therefore, despite the growth in employment, they still lost 12% of their members.

DC plan membership in the private sector nearly doubled over the same period, increasing the coverage rate from 14% to 27% (Chart B).

**Table 1 Pension plan membership**

	1991	2006	Change
	'000		%
<b>Both sexes</b>			
Employees	11,672	15,043	29
Pension coverage	5,239	5,480	5
DB plan	4,773	4,581	-4
DC plan	466	899	93
Coverage rate (%)	45	36	-19
DB plan	41	30	-26
DC plan	4	6	50
<b>Men</b>			
Employees	6,327	7,889	25
Pension coverage	3,076	2,810	-9
DB plan	2,790	2,276	-18
DC plan	286	534	87
Coverage rate (%)	49	36	-27
DB plan	44	29	-35
DC plan	5	7	50
<b>Women</b>			
Employees	5,345	7,154	34
Pension coverage	2,163	2,670	23
DB plan	1,984	2,305	16
DC plan	180	365	103
Coverage rate (%)	40	37	-8
DB plan	37	32	-13
DC plan	3	5	52

Note: Plans with fewer than three members, inactive plans and hybrid/mixed plans were withdrawn from the sample. Coverage rates exclude members from the territories since they are not part of the Labour Force Survey.

Source: Statistics Canada, Pension Plans in Canada Survey.

**Other employer-sponsored pension plans**

Hybrid/mixed plans are a middle ground between DB and DC plans. H/M plans have characteristics of both, providing the security of DBs and the advantages of DCs. Since 2000, the number of people covered by such plans has nearly tripled. Before that, their number had been relatively stable. Nevertheless, given their relatively low weight (barely 1% of employees), they are not considered in this article. The recent increase in their membership may augur an increase in their future importance in Canada. In the United States, membership in such plans has been increasing for several years (Clark and Schieber 2000, and Coronado and Copeland 2003).

In 2001, group registered retirement savings plans (group RRSPs)<sup>6</sup> covered approximately 1.6 million employees (Morissette and Zhang 2004). Although they are very similar to DC plans, group RRSPs have more members. Together, DC plans and group RRSPs covered more than 2 million employees (17%) in 2001, almost half the DB membership. According to a recent study, these two plans now cover 50% of private-sector employees (Baldwin 2008). In the United States, 401(k) plans are similar to group RRSPs in several ways (Frenken 1996). However, because group RRSPs are not part of the database used for this analysis, they cannot be included in the definition of DC plans.

**Table 2 Pension plan coverage by sector**

	1991	2006
	'000	
<b>Public sector</b>		
Employees	2,855.3	3,261.6
DB plan members	2,463.7	2,550.8
DC plan members	80.9	132.1
<b>Private sector</b>		
Employees	8,814.6	11,781.4
DB plan members	2,309.7	2,030.5
DC plan members	384.9	766.8

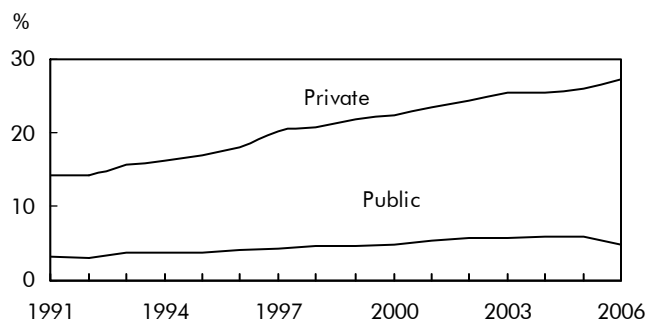
Source: Statistics Canada, Pension Plans in Canada Survey.

However, the situation is very different in the public sector. DC plan membership has certainly increased, but they remain a small minority in this sector.

Whether private or public sector, DB or DC, the fluctuations have been similar for both men and women. Furthermore, for both men and women, DC plan coverage has changed almost exclusively in the private sector.

These trends are somewhat similar to those in the United States, where private-sector DC plan membership, which had previously been lower than DB plan membership, is now nearly double. In 1975, 26% of private-sector pension plan members were in DC plans. In 2005, the proportion was 64% (U.S. Depart-

**Chart B Private sector the main source of change in DC plan coverage**

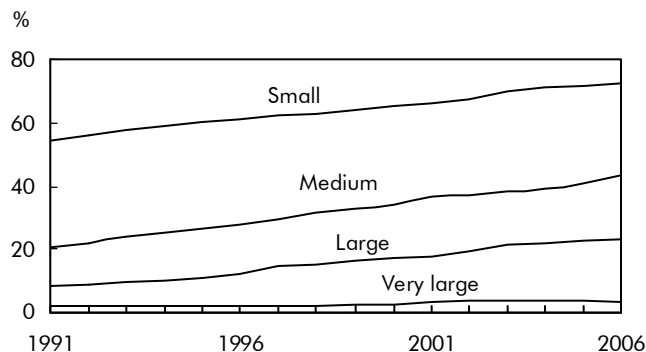


Source: Statistics Canada, Pension Plans in Canada Survey.

**Table 3 Pension coverage by plan size**

	1991		2006	
	'000	%	'000	%
<b>Small plans</b>	269.3	100.0	219.3	100.0
Defined benefit	122.9	45.6	60.4	27.5
Defined contribution	146.4	54.4	158.9	72.5
<b>Medium plans</b>	794.9	100.0	818.9	100.0
Defined benefit	630.4	79.3	461.5	56.4
Defined contribution	164.5	20.7	357.4	43.6
<b>Large plans</b>	1,186.6	100.0	1,259.6	100.0
Defined benefit	1,092.1	92.0	968.3	76.9
Defined contribution	94.5	8.0	291.3	23.1
<b>Very large plans</b>	2,988.4	100.0	3,182.5	100.0
Defined benefit	2,928.0	98.0	3,091.2	97.1
Defined contribution	60.4	2.0	91.3	2.9

Note: See *Data source and definitions* for description of plan sizes.  
Source: Statistics Canada, Pension Plans in Canada Survey.

**Chart C Defined-contribution plans of all sizes gained ground**

Note: See *Data source and definitions* for description of plan sizes.  
Source: Statistics Canada, Pension Plans in Canada Survey.

ment of Labor 2008). As in several other countries, the public sector has seen very little movement toward such plans (Broadbent et al. 2006).

### DC plan size on the increase

In 2006, as in 1991, DC plans were more common among small employers. During the period from 1991 to 2006, however, they gained ground in all size groups (Table 3). On the other hand, DB plan membership dropped, sometimes significantly, in all size groups except very large ones, the great majority of which remain DB plans.

The growth of DC plans among plans of almost all sizes has been constant over time (Chart C). However, very large plans experienced a slight setback, mainly between 2001 and 2006.

### Sources of change

The trends observed in membership may be attributable to three factors: plan conversions (DB to DC, for example), plan openings and closures, and variation in the number of members in active plans.

Conversion to other types of plans explains 78% of the 192.1 thousand loss of DB plan members (Table 4). Most then joined hybrid/mixed plans. Such conversions may mean that employers are trying to provide workers with pension plans providing the advantages of two plan types while offsetting their disadvantages (Clark and Schieber 2000). Despite the significant addition of members, H/M plans cover few employees. In 2006, they had just 152,000 members, or approximately one-sixth that of DC plans.

**Table 4 Sources of change in plan membership**

	Defined benefit		Defined contribution	
	'000	%	'000	%
<b>Membership variation</b>	<b>-192.1</b>	<b>100.0</b>	<b>433.2</b>	<b>100.0</b>
Plan conversions	-149.4	77.8	56.4	13.0
Plan openings and closures	-14.2	7.4	98.7	22.8
Change in membership	-28.5	14.9	278.1	64.2

Source: Statistics Canada, Pension Plans in Canada Survey, 1991 to 2006.

Plan openings and closures explain less than 10% of lost DB plan membership, while the variation in active plan membership accounts for 15%. Plan openings and closures may be related because of indirect plan conversions or a fusion of two or more plans.<sup>7</sup>

Of the additional 433,000 DC plan members, 64% came from increased membership in active plans. Openings and closures accounted for 23% of the growth in DC plans, mainly in the private sector. Plan conversions accounted for 13% of the increased membership. In total, 90% of all membership movement between 1991 and 2006 took place in the private sector.

### Growth of DC plans in all industries

In 1991, DB plans covered most members in all industries. Fifteen years later, the number of DC plans had increased in all industries and even included most employees in some, particularly in mining, quarrying, and oil and gas extraction, and in wholesale trade (Table 5).

**Table 5 Pension plan membership by industry**

	1991		2006	
	DB plan	DC plan	DB plan	DC plan
<b>Industry</b>	91.1	8.9	83.6	16.4
Agriculture, forestry, fishing and hunting	55.1	44.9	44.4	55.6
Mining, quarrying, and oil and gas extraction	82.6	17.4	45.8	54.2
Utilities	99.4	0.6	94.3	5.7
Construction	90.5	9.5	85.9	14.1
Manufacturing	90.5	9.5	76.5	23.5
Wholesale trade	71.7	28.3	48.9	51.1
Retail trade	79.2	20.8	75.4	24.6
Transportation and warehousing	89.0	11.0	81.5	18.5
Information, culture, arts, entertainment and recreation	93.8	6.2	57.5	42.5
Finance and insurance, administrative and professional services, real estate	87.3	12.7	77.4	22.6
Educational services, health care and social assistance	93.8	6.2	89.4	10.6
Accommodation and food services	81.4	18.6	70.8	29.2
Other services	71.5	28.5	34.9	65.1
Public administration	96.9	3.1	95.9	4.1

Note: Excluded are plans with fewer than three members, inactive plans and plans other than DB and DC.

Source: Statistics Canada, Pension Plans in Canada Survey.

### Methodology

The years 1991 to 2006 were used, and plans with fewer than three members were excluded because they are more similar to individual plans. Hybrid/mixed plans were excluded due to their small membership. DB/DC plans (under 80,000 members in 2006) were also dropped, because the information provided does not make it possible to distinguish the DB and DC parts of the plans. Lastly, non-active plans were excluded, except when discussing plan closures.

To determine the number of plans opened and closed during the study period, and particularly the number of members affected at the time of closure, files from 2006 with plan opening and closure dates were used. Closed plans remain in the database. For open plans, those started between 1991 and 2006, as well as their characteristics for 2006, were used.

To find the number of members affected by a plan conversion, files from two consecutive years were compared by plan number to see if the type of plan changed from one year to the next.

Since plans may change types more than once, they could be re-counted in other periods. However, there was a risk of underestimating the number of members affected by conversions, because sometimes employers closed an existing plan and opened a new plan when they wanted to make that type of transition. Furthermore, for several years, plan identification numbers were not consistent throughout Canada. Therefore, it may be that some still-existent plans could not be monitored from one year to the next. The scope of those underestimations could not be evaluated, but, due to their nature, they are unlikely to affect the observed trend.

NAICS two-digit codes were not used in the database before 1998. Standard Industrial Classification codes (SIC-1970) were used to identify industry. A conversion table was used to convert SIC-1970 codes to NAICS two-digit codes. Some industries had to be grouped together in order to ensure that 1991 to 1993 data, initially coded in accordance with SIC-70, were consistent with those coded under NAICS from 2004 to 2006.

## Industry changes do not explain DC increase

In part, a change in labour market structure may have created the increased prevalence of DC plans (Ippolito 1995, Gustman and Steinmeier 1992, and Aaronson and Coronado 2005). For example, if workers are now more likely to be part of a given industry and the employees in that industry are historically more often covered by DC plans, the greater overall prevalence of such plans could be partially attributable to the growth of that industry.

Two logistic regressions were estimated to understand to what degree changes in the industrial structure, plan size, and distribution of participants by sex and province between 1991 and 2006 explain the increased prevalence of DC plans (see *Logistic regression*). The first focused on the period from 1991 to 1993, and the second, 2004 to 2006. Even after taking all factors into account, the probability that a plan would be defined contribution was more than 2.5 times greater in the later period (Table 6). This trend therefore seems strong and does not seem to depend on changes in the industrial structure, paralleling previous results (Ippolito 1995).

An Oaxaca decomposition also confirmed the low contribution of these factors to the higher prevalence of DC plans. In fact, such changes should have contributed to a slight increase in DB coverage.

## Conclusion

A change in the prevalence of defined-contribution pension plans may have a significant impact on employers and workers. Between

**Table 6 Logistic regression coefficients for probability of defined-contribution plan**

	1991 to 1993		2004 to 2006	
	Coef-ficient	Proba-bility	Coef-ficient	Proba-bility
		%		%
<b>Defined-contribution plan</b>	-1.998*	11.9	-0.811*	30.8
<b>Members</b> (ref. 400 to 499)				
3 to 49	2.373*	59.3	1.695*	70.8
50 to 99	1.267*	32.5	1.198*	59.5
100 to 199	0.857*	24.2	0.747*	48.4
200 to 299	0.488*	18.1	0.413*	40.2
300 to 399	0.205	14.3	0.234	36.0
500 to 749	-0.177	10.2	-0.358*	23.7
750 to 999	-0.265	9.4	-0.403*	22.9
1,000 to 2,499	-0.729*	6.1	-0.653*	18.8
2,500 to 4,999	-1.779*	2.2	-0.814*	16.5
5,000 to 9,999	-1.178*	4.0	-1.651*	7.9
10,000 or more	-2.132*	1.6	-2.387*	3.9
<b>Control jurisdiction</b> (ref. Ontario)				
Newfoundland	0.326*	15.8	0.233	35.9
Prince Edward Island	1.148*	29.9	0.551	43.5
Nova Scotia	0.655*	20.7	0.464*	41.4
New Brunswick	0.578*	19.5	0.402*	39.9
Quebec	-0.035	11.6	-0.714*	17.9
Manitoba	0.666*	20.9	0.592*	44.5
Saskatchewan	0.709*	21.6	0.525*	42.9
Alberta	0.641*	20.5	0.752*	48.5
British Columbia	0.868*	24.4	0.419*	40.3
Other jurisdictions <sup>1</sup>	0.102	13.0	0.075	32.4
<b>Industry sector</b> (ref. private)				
Public	-0.335*	8.8	-0.476*	21.6
<b>Women in plan</b> (ref. 40% to 59%)				
0% to 19%	-0.370*	8.6	-0.384*	23.2
20% to 39%	-0.090	11.3	-0.114	28.4
60% to 79%	0.020	12.2	0.235*	36.0
80% to 100%	0.364*	16.3	0.466*	41.5
<b>Industry</b> (ref. manufacturing)				
Agriculture, forestry, fishing and hunting	0.773*	22.7	0.503*	42.4
Mining, quarrying, and oil and gas extraction	-0.060	11.3	0.215	35.5
Utilities	-0.555	7.2	-0.544*	20.5
Construction	1.154*	30.1	0.994*	54.6
Wholesale trade	0.639*	20.4	0.628*	45.4
Retail trade	1.461*	36.9	1.277*	61.5
Transportation and warehousing	0.764*	22.6	0.381*	39.4
Information, culture, arts, entertainment and recreation	0.644*	20.5	0.302*	37.6
Finance and insurance, administrative and professional services, real estate	0.430*	17.3	0.379*	39.4
Educational services, health care and social assistance	1.370*	34.8	1.164*	58.7
Accommodation and food services	0.719*	21.8	0.477*	41.7
Other services	0.542*	18.9	0.173	34.6
Public administration	1.336*	34.0	1.155*	58.5

\* significant difference from reference group (ref.) at the 0.05 level or better

1. Federal, Quebec/federal, not registered by proper pension authority.

Source: Statistics Canada, Pension Plans in Canada Survey.

## Logistic regression

A logistic model was chosen based on a study using a similar methodology (Ippolito 1995). The logistic regression models the probability of plans being defined contribution based on certain characteristics. The equation used was

$$DC = \alpha + \beta_1 T_g + \beta_2 J_i + \beta_3 Public + \beta_4 S_j + \beta_5 I_i.$$

$DC$  is a binary dependent variable equal to 1 when a plan is a DC plan and 0 when it is a DB plan.<sup>8</sup>  $T_g$  is a vector of binary variables for plan size according to membership.  $J_i$  is a vector of binary variables representing each of the jurisdictions in which plans can be registered.  $Public$  is a binary variable equal to 1 for a public-sector plan and 0 for the private sector.  $S_j$  represents the proportion of women pension plan members, and  $I_i$  is a binary variable repre-

senting different industries. Industries were identified according to North American Industry Classification System (NAICS) two-digit codes.<sup>9</sup> The high number of size variables allows the best consideration of the effect of members and their numbers on the probability of a plan being defined contribution.

The regression was carried out on a group of plans over three consecutive years in the beginning (1991 to 1993) and at the end (2004 to 2006) of the study period. Those years were selected to verify whether the probability of plans being defined contribution had changed.

Information on unionization, as Ippolito had in 1995, was not available.

1991 and 2006, DC plan membership nearly doubled, greatly increasing their prevalence, to the detriment of DB plans. Furthermore, the increase in prevalence of DC plans was relatively steady through the study period, and a significant portion of the decrease in DB plan membership came from conversions to defined-contribution or hybrid/mixed plans. Although DC plans have some undeniable advantages for employees, their increased prevalence suggests a transfer of risk from employers to workers since 1991.

The increased prevalence of DC plans is reflected in nearly all plan sizes but almost exclusively in the private sector. A regression analysis indicates that industry changes, for example, did not appear to play a role. In fact, the changing labour market structure should have encouraged the growth, albeit slight, of DB plans. Instead, the increased prevalence of DC plans appears to come from a basic change in private-sector employer practices.

## Perspectives

### Notes

1. These data are from the Longitudinal Administrative Database (LAD).
2. See *Other employer-sponsored pension plans*.
3. Members from the Canadian territories were withdrawn from these coverage rates since they are not part of the Labour Force Survey. Plans with fewer than three members and inactive plans were withdrawn from the sample.
4. For more details on the effects of employment change on retirement income, see Blake 2003.

5. This trend is even more pronounced when group RRSPs are taken into account. They are not part of the database used here and cannot be taken into consideration.
6. See Morissette and Zhang 2004 for a presentation of RPP and GRRSP characteristics.
7. See *Methodology* for reasons that may lead to plan closure.
8. H/M plans were excluded from the sample.
9. See *Methodology*.

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Shifting Perspectives in Pensions. Abstract. This paper uses economic principles to analyse concepts used in the area of pensions. It discusses the issue of an efficient pension system and typical dichotomies: unfunded versus funded, private versus public and defined contribution versus defined benefit. The paper uses the concept of Notional Defined Contribution, as a vehicle of an analysis of central issues of pension economics. The concept is discussed in parallel with the concept of Financial Defined Contribution. Pension benefits are difficult to determine before retirement, as the benefit is dependent on savings accumulated under the plan and the type of annuity purchased at retirement. Contributions are easily transferred if employment changes prior to retirement (Gougeon, 2009). Since employees are responsible for choosing where their contributions are invested, investment performance risk is borne by the employee.

... Do policymakers have significant leeway in shifting pension policy paths, or is there significant room for choice? Models of Pension Regime Change. Unconstrained choice: Regime Type at t1. Regime Type at t2. Regime Type at t3. The Convention Wisdom on Pension Regime Change. Categorizing Pension Regimes: Welfare states can be divided into three categories. Universal/citizenship regimes (Scandinavia). Social insurance Bismarckian regimes (continental Europe). Suddenly, a Shifting Pension Paradigm? by Steven Greenhut. September 22, 2016, 12:00 AM. It turns out CalPERS, which managed the little pension plan, keeps two sets of books: the officially stated numbers, and another set that reflects the "market value" of the pensions that people have earned. The second number is not publicly disclosed. And it typically paints a much more troubling picture, according to people who follow the money.