
Antti Mielonen and Mika Vidlund

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## A Comparison with the Pension Contribution Level in Europe

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Helsinki 2010

ISSN-L 1236-7737
ISSN 1798-7474 (online)

# ABSTRACT

In this review, we analyse the level of pension contributions paid in the United States and Canada primarily in 2005. The aim of the review is to provide an overview of the total contribution burden of pension provision when taking into account not only statutory pension contributions but also contributions into occupational pension schemes and the government's share in pension financing. Pension assets and related investment operations are not included in the analysis.

Pension contributions have been compared to GDP at market prices and at basic (factor) prices, as well as to the wage sum and compensation of employees, which include social security contributions paid by the employer. By using different indicators, we have sought to achieve maximum comparability between the results of the different countries. In proportion to GDP at market prices, the share of all pension contributions amounted to 9.2 per cent in the United States and 7.6 per cent in Canada. In proportion to the GDP at basic prices, pension contributions amounted to 10.1 per cent in the United States and 8.4 per cent in Canada. In addition to pension contribution levels, the review also presents the distribution of income for pensioners over the age of 65 in both countries in 2007, as well as time series from 1980 to 2007 of income sources for over 65-year-olds.

In this review, we compare the pension contribution levels in the United States and Canada to the pension contribution levels reported previously (in 2008) of nine European countries. The results show that the pension contribution levels are significantly lower in North America than in the reviewed European countries. Reasons for this can be found in the pension scheme structure, as well as in the fact that ageing and changes in the demography are not as strong in North America as in Europe.

# ABSTRAKTI

Tässä selvityksessä tarkastellaan Yhdysvalloissa ja Kanadassa maksettujen eläkevakuutusmaksujen tasoa pääasiassa vuonna 2005. Katsauksen tavoitteena on antaa kuva eläketurvan aiheuttamasta kokonaismaksurasituksesta, kun huomioon otetaan lakisääteisten eläkemaksujen lisäksi maksut lisäeläkejärjestelmiin sekä valtion osuus rahoituksesta. Eläkevarat ja niihin liittyvä sijoitustoiminta on jätetty tarkastelun ulkopuolelle.

Eläkemaksuja on verrattu suhteessa markkina- ja tuottajahintaiseen bruttokansantuotteeseen sekä palkkasummaan ja työnantajan sosiaaliturvamaksut sisältävään palkansaajakorvaukseen. Eri mittareilla on pyritty mahdollisimman vertailukelpoiseen tulokseen eri maiden välillä. Markkinahintaiseen bruttokansantuotteeseen suhteutettuna kaikkien eläkevakuutusmaksujen osuus oli Yhdysvalloissa 9,2 ja Kanadassa 7,6 prosenttia. Suhteutettuna tuottajahintaiseen bruttokansantuotteeseen eläkemaksujen osuus oli Yhdysvalloissa 10,1 ja Kanadassa 8,4 prosenttia.

Maksutasojen lisäksi katsauksessa on myös esitetty molemmista maista yli 65-vuotiaiden eläkkeensaajien tulojen koostumus vuodelta 2007 sekä tulolähteiden aikasarjat vuodesta 1980 vuoteen 2007.

Katsauksessa verrataan Yhdysvaltojen ja Kanadan eläkemaksutasoja vuonna 2008 ilmestyneen raportin yhdeksään eri Euroopan maahan. Tulokset osoittavat, että Pohjois-Amerikassa eläkemaksujen taso on selvästi matalampi kuin vertailluissa Euroopan maissa. Syitä tähän on itse eläketurvan rakenteessa samoin kuin siinä, että Pohjois-Amerikan maissa ikääntyminen ja väestörakenteen muutos ei ole yhtä voimakas kuin Euroopassa.

# CONTENTS

# 1 Introduction[1]

In this review, we outline the financing of the pension provision in Canada and the United States. The aim of our review is to present the total contribution burden caused by the pension provision when taking into account statutory pension contributions, as well as the contributions to occupational pension schemes, and the government's share in the funding of pensions. The view on financing is the same as in the report published in 2008 by the Finnish Centre for Pensions, in which the pension contribution level in nine European countries are compared (for the English version of the report, see Vidlund & Bach-Othman 2009). This review supplements the results of the 2008 report and presents a comparison of how the United States and Canada rank in regard to Denmark, Finland, France, Germany, Great Britain, the Netherlands, Norway, Sweden and Switzerland.

Canada and the United States represent a so-called liberal model in the classification of welfare state models, with the basic principle being that individuals are responsible for themselves. Characteristics of the model in question are low and often means-tested social benefits, directed at poor and low-income employees. Therefore, in countries that have adopted this model, private insurances play a large role. Of the European countries, primarily Great Britain is considered to represent this welfare model.

Although Canada mainly represents this welfare model, it has a residence-based national pension scheme in addition to the statutory earnings-related pension scheme. There is no national pension in the United States. Although the amount of the statutory pension provision is fairly low, it is a considerable source of income in both countries. Supplementary pension schemes thus play a key role, especially in upper-bracket income groups. Occupational (so-called II Pillar) pensions cover less than 40 per cent of employees in Canada and approximately 50 per cent in the United States. Individual pension accounts, excluded from the actual comparison presented in this review, have represented a growing share in the subsistence security of the ageing population. In the United States, working during the pension entitlement period is of great significance. However, the phenomenon cannot be directly derived from a low income level since gainful employment is common also among persons in upper-bracket income groups. In the top one fourth of the upper-bracket income groups, approximately 40 per cent of a person's income consists of earnings[2].

Data from the year 2005 forms the basis for the comparison of the total contribution so that the contributions of these two countries can be compared with the contributions of the aforementioned European countries. The attachments include time series of the contribution income development.

1 Assia Billig of the Office of the Chief Actuary in Canada and Beth Hima and Alice Wade of the Social Security Administration, SSA, in the USA have contributed to the completion of this report. We thank them for their cooperation and interest shown in the comparison of pension contribution levels by the Finnish Centre for Pensions.

2 Source: Employee Benefit Research Institute EBRI.

The structure of our review is as follows: First, we briefly present the structure of the total pension provision in the countries under comparison, along with an account of the financing of the pension scheme, followed by a comparison of pension provision financing, making use of the total premium data for 2005, as well as a comparison of the results with the pension contribution level in European countries. Finally, we present a summary of the key results of this review.

# 2 The structure of pension provision in the countries under comparison

A report by Edward Whitehouse (OECD 2003), *The Value of Pension Entitlements – A Model of Nine OECD Countries*, is a good starting point for the comparison of the pension provision in the United States and Canada. It also provides an overview of how the statutory pension schemes of these countries differ from that in Finland (see Figure 1). If only statutory pension schemes were to be considered, the view of the pension provision of the countries under comparison would be very narrow and different from what is the case when occupational pension schemes are included. In contrast to the case in Finland, the accrual of statutory earnings-related pension provision is limited by a pension ceiling in both countries. In Canada, the pensionable wage ceiling corresponds to the average salary level, while it is approximately 2.5 times the average salary in the United States. Despite the relatively high pensionable wage ceiling, the maximum pension in the United States is slightly less than 25 per cent of the highest pensionable wage, since the pension is calculated regressively (as the wages increase, the pension is a decreasing percentage of the average monthly income). In Canada, the maximum earnings-related pension is also 25 per cent of the pensionable wage ceiling.

Figure 1 shows that, at an income level below the average salary level, the pension provision in the United States is the lowest due to the lack of a national pension. For persons with an average salary, the pension provision remains at nearly the same level in all countries under comparison. In Canada, the earnings-related pension provision is lower than in the United States, but the national pension raises the total pension level. In higher income groups, differences between the countries arise, especially in comparison to the pension provision level in Finland for different income groups.

The aforementioned OECD report distinctly shows how the image of the total pension provision clearly changes to resemble the scheme in Finland when occupational pensions are included in the comparison. For example, in Canada (see Figure 2), the total pension grows in relation to earned income in quite a similar way as it does in Finland (cf. Figure 1).

***Figure 1**. Structure and compensation level of statutory pension schemes in Canada, the United States and Finland.*

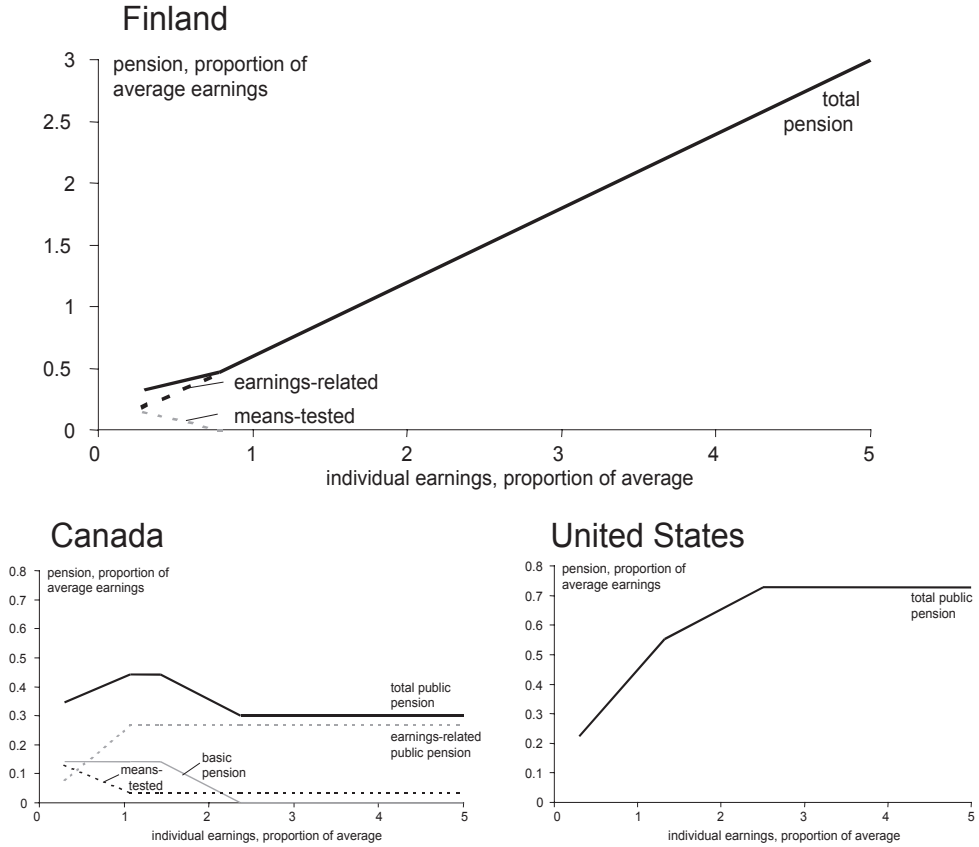
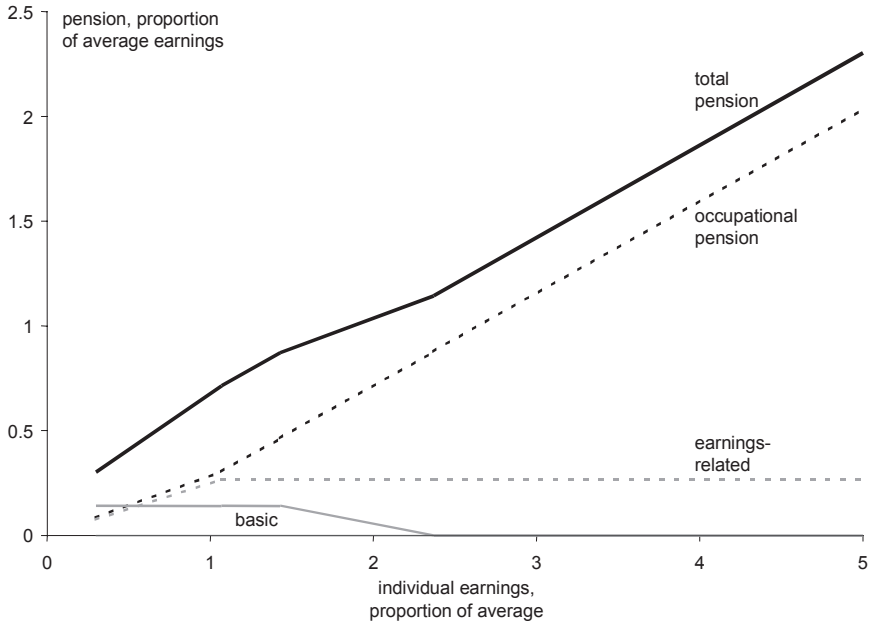


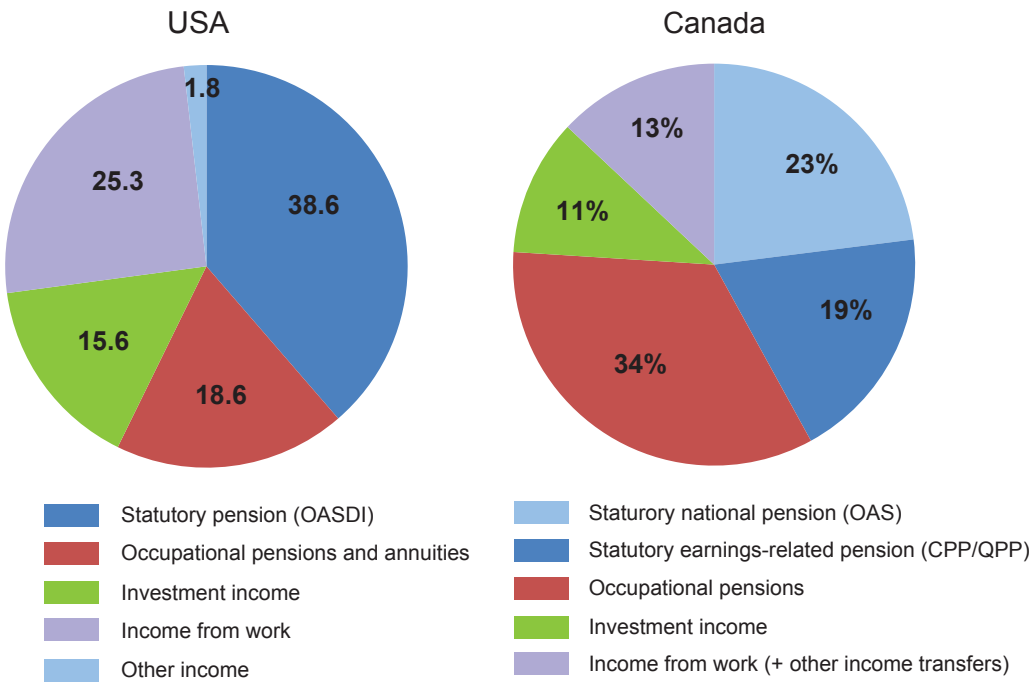

***Figure 2.** The structure of the total pension provision in Canada.*




Source: OECD 2003.

Despite its relatively low level, the statutory pension provision is the main source of income for pensioners aged 65 and over in both Canada and the United States. The share of the statutory pension provision amounts to approximately 40 per cent of the total income in both countries (see Figure 3). In the United States, occupational pensions accounted for less than one fifth of the average total income of persons aged 65 and over, while the equivalent share in Canada was approximately one third. As for Canada, in addition to occupational pensions, private occupational pensions in Figure 3 also include an individual, voluntary occupational pension, the Registered Retirement Savings Plan, described in more detail in section 3.4. In both countries, seniors draw their retirement income from multiple sources.

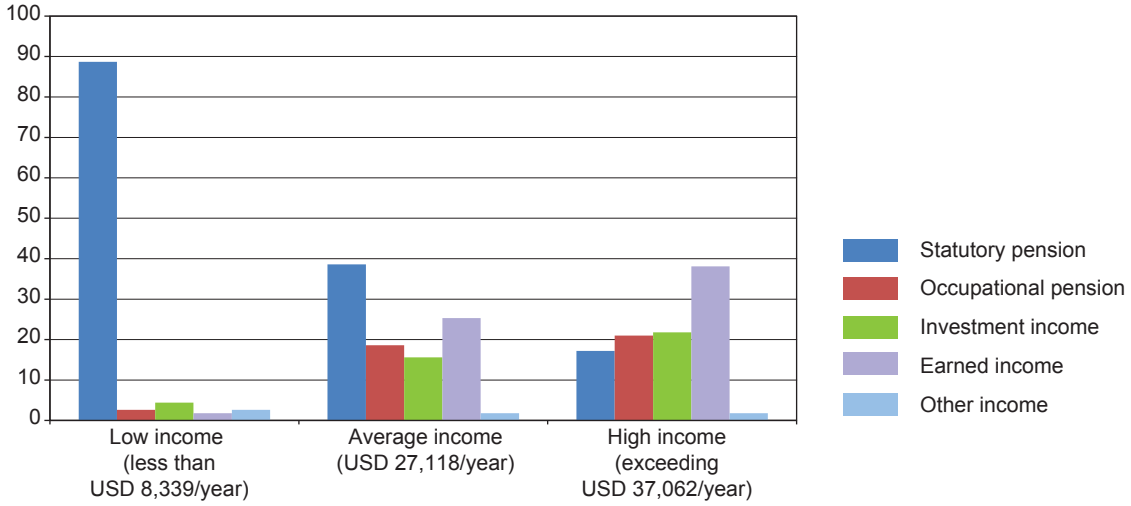
***Figure 3**. The average distribution of income of a person aged 65 and over in 2007.*




Source: EBRI. Source: Statistics Canada.

The impact on the total income structure of the United States of gainful employment during the pension entitlement period is striking, accounting for approximately 25 per cent of the total income of a pensioner with an average income. This is clearly higher than in Canada. It is interesting to note that in the United States, the share of income from work, in particular in relation to the total income of persons over the age of 65, increases dramatically along with the earnings. For those in the top one fifth income brackets, nearly 40 per cent of the total income consists of income from work (see Figure 4). As expected, the significance of occupational pensions and investment income increases considerably the larger the income of a person is. Conversely, the lower the income of a person over the age of 65 is, the larger is the share of statutory earnings-related pension and the fewer are the other sources of income. In the United States, approximately 90 per cent of the income of those belonging to the lowest one fifth income brackets consists of statutory earnings-related pension.

***Figure 4.*** *The distribution of income per income bracket in the USA in 2007 for persons aged 65 and over, %.*




Source: EBRI.

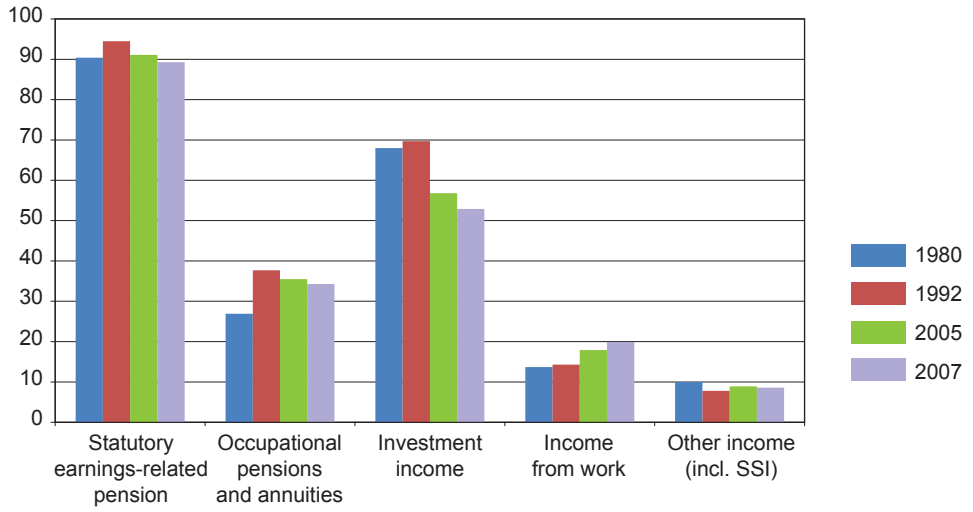
Figures 5 and 6 show the division of income sources of those aged 65 and over in the United States and in Canada since 1980. In Canada, nearly everyone receives statutory national pension. In both countries, nearly 90 per cent receive statutory earnings-related pension. In the United States, the proportion has remained on this level throughout most of the review period, while it has reached this level in Canada only in the 21st century. This can be explained, in part, by the fact that the earnings-related pension scheme was introduced in Canada in the 1960s, but already in the 1930s in the United States.

In Canada, the majority of pensioners receive private supplementary pension income, while the equivalent figure is clearly smaller in the United States. Of senior citizens (65+), 61 per cent received supplementary pension in Canada in 2005, and the proportion has increased to nearly 70 per cent in 2007. Fifty nine per cent received an occupational pension and nine per cent an individual supplementary pension (RRSP).

In Canada, the share of seniors receiving investment income and the share receiving supplementary pensions is almost the same. However, in the United States, the share of persons receiving investment income has decreased from the record figure of 70 per cent in the 1990s to slightly more than 50 per cent in 2007.

Traditionally, it is common for senior citizens in Canada and the United States to engage in gainful employment; thus, the proportion of persons earning an income is nearly the same in both countries. In the United States, the share of persons earning an income has steadily increased since the 1980s, and in 2007, nearly one fifth of the senior citizens in both countries received an income from work alongside other income. On the other hand, as shown in Figure 3, earned income forms a larger proportion of a pensioner's total income in the United States than in Canada. Therefore, in terms of subsistence, gainful employment seems to be more significant in the United States than in Canada.

***Figure 5**. Sources of income for persons aged 65 and over in the United States.*




Source: EBRI.

***Figure 6**. Sources of income for persons aged 65 and over in Canada.*


Source: Statistics Canada.

The aforementioned references show that a comparison of only statutory pension schemes would give an insufficient view of the countries' total pension provision and subsistence in general. The same applies to pension contributions. In the following, we will examine in more detail the structure of the pension schemes in both countries, as well as how these schemes are financed.

## 2.1 The statutory pension scheme in the United States[3]

The statutory pension scheme in the United States was established in 1935. The scheme is called OASDI, which stands for Old-Age, Survivors and Disability Insurance. At the end of 2005, more than 48 million persons received benefits through this system, a total of approximately 16 per cent of the population. The statutory earnings-related pension provision covers private-sector employees and entrepreneurs, and partly also employees in the public sector. The public sector has its own earnings-related pension schemes, which either replace or supplement the OASDI scheme.

In 2005, the OASDI scheme paid full old-age pension to persons aged 65 years and 6 months under the precondition that the annual income throughout the retiring person's employment history (40 years) amounted at least to the ceiling set for the annual wages serving as the basis for the calculation of a pension. Full pension thus amounted to USD 1,939/month, and the average old-age pension in 2005 was USD 1,002/month. It has also been possible to take old-age pension early, as of the age of 62, in which case the pension has been reduced with a permanent reduction for early retirement. Equivalently, it has been possible to defer the old-age pension to the age of 70, in which case a permanent increase has been calculated on the pension for the months of deferral. Payable pensions are adjusted annually according to a cost-of-living adjustment (COLA) index, and the accrued pension entitlement has been adjusted according to the average wage trend. As the income increases, the pension is a declining percentage of the average monthly income (see Figure 1). The level of compensation of the statutory old-age pension has amounted to approximately 40 per cent of the salary of an employee with an average salary.

### *2.1.1 SSI – Supplemental security income*

In accordance with the Social Security Act, if the statutory earnings-related pension remains below the required minimum subsistence level, disabled, blind and 65 year-old permanent residents of the United States are entitled to supplemental security income (SSI). The SSI scheme covers the entire federation and guarantees a unified minimum subsistence level for all residents. The benefit is financed with public tax revenues and can be supplemented with state-specific contributions paid by the states. The benefit is means-tested. In 2005, the average federal benefit was USD 439 per month. The amount of the benefit is adjusted annually according to changes in the consumer price index. The Social Security Administration (SSA) is in charge of granting and paying both SSI scheme benefits and earnings-related pensions. The benefit is paid monthly.

In 2005, approximately 2.5 million (5.1%) beneficiaries of the OASDI scheme also received social assistance from the SSI scheme. The benefits paid totalled USD 36 billion, i.e. 0.28 per cent of GDP at market prices. The figures are not included in the total contribution comparison since this is primarily a question of a benefit comparable to social security rather than a pension.

3 EUR 1 = USD 1,2441 (average exchange rate in 2005).

### *2.1.2 The financing of the OASDI scheme*

The OASDI scheme is financed primarily by pension contributions paid on a pay-as-you-go basis by the employer and the employee. Part of the financing stems from the scheme's buffer fund investment income and tax revenue. Pension contributions consist of separate old age and family pension (OASI) and disability pension (DI) contributions, collected from both the employee and the employer. In 2005, the employee's OASI contribution amounted to 5.3 per cent and the disability contribution to 0.9 per cent of the annual income below USD 90,000. No pension contribution is collected for income exceeding the limit. The employer's shares are of equal size, so the total contribution amounts to 12.4 per cent of the income that is below the abovementioned earnings ceiling. The OASI contribution for entrepreneurs is 10.6 per cent and the DI contribution 1.8 per cent, a total of 12.4 per cent. The nominal contribution levels have remained the same since 1990, but the earnings ceiling set for pension contributions has been adjusted annually according to an average wage index. For part of the granted benefits, a federal income tax is collected, the profit of which is rechannelled into the OASDI scheme (see Appendix 1).

In 2005, the total income of the OASDI scheme was USD 701.8 billion, of which OASI pension contributions accounted for 72.2 per cent and DI contributions for 12.3 per cent. The interest yield of government bonds amounted to 13.4 per cent of the income, while 2.1 per cent consisted of tax collected on benefits.

The total expenditures came to USD 529.9 billion, of which old-age pension and family pensions (OASI) accounted for 82.2 per cent. DI stood for 16.1 per cent and the railroad workers' pension scheme for 0.74 per cent of the expenditures.

The total surplus of USD 171.8 billion from the balancing of income and expenditures was accrued in the OASI and DI funds, which invest the surplus into special federal obligations not emitted on the general money markets. The value of the investments totalled USD 1,858.7 billion at year-end 2005, i.e. approximately 14.7 per cent of GDP at market prices. As the baby-boom generations will retire between 2010 and 2030, the scheme's annual surpluses are predicted to decrease as a result of the fierce growth in expenditures. However, the contribution income is sufficient to cover the expenditures until the year 2017, after which the pension expenditures will exceed the contribution income. At that point, the difference between income and expenditures shall be covered by a sell-off of the obligations, i.e. by a dissolution of the funds. According to predictions, the funds will be dissolved by 2040. After that, pension expenditures must be covered either by raising pension premiums or by cutting benefits. To avoid the dissolving of the funds, the current pension premium level should be increased immediately by 2.02 percentage points[4].

4 Source: The 2006 Annual Report of the Board of Trustees of the Federal OASDI Trust Funds.

## 2.2 Occupational pension schemes in the United States

In the United States, approximately 50 per cent of private-sector employees and nearly all public-sector employees are covered by an occupational pension scheme offered by the employer (in the public sector, usually only part-time employees are excluded from occupational pension schemes). The occupational pension provision is then funded, either as a defined contribution pension provision in individual pension accounts or as a defined benefit pension provision that the employer is liable for. Currently, the majority of the private-sector occupational pension schemes are defined contribution schemes: approximately 40 per cent of the total work force is covered by defined contribution and approximately 20 per cent by defined benefit pension schemes (some employees may be covered by both).

The public-sector occupational schemes cover federal (civil servants and military personnel), state and local government employees (e.g. police officers, teachers and civil servants). The schemes are nearly all defined benefit pension schemes. Approximately 15 per cent of the entire labour force in the United States are public sector employees[5].

### *2.2.1 Private-sector occupational pension schemes in the United States*

The statistical data of private-sector occupational pension schemes are primarily based on a report[6] by the U.S. Department of Labour, which annually compiles the financial statement data of private-industry pension schemes. According to the report, there were approximately 680,000 private-sector pension schemes at year-end 2005, covering a total of 117.4 million persons. Of these, 82.6 million were so-called active members (i.e. employees), while 34.8 million were recipients of benefits or persons who have resigned from the scheme, but for whom pension has accrued.

#### *Defined contribution schemes*

Common for defined contribution (DC) pension schemes is that the pension contributions are paid into individual pension accounts, which means that the employee's future pension capital is defined according to accumulated contributions and their return. In the United States, the distribution of contributions varies from one scheme to another: in some schemes, the entire pension contribution is paid by the employer, while in others, it is paid solely by the employee. In most schemes, the employee and the employer pay their own shares of the contributions. On average, pension contributions in DC schemes are divided as follows: 40 per cent is paid by the employer and 60 per cent by the employee. In most schemes, the EET (exempt-exempt-tax) system is adhered to, based on which the contributions and the return are tax-free. Only capital withdrawn from the pension account is taxable income.

In 2005, a total of 75.5 million employees were covered by DC schemes, i.e. a total of 64.3 per cent of the entire private-sector occupational pension scheme members. Of these,

5 Source: U.S. Census Bureau.
6 Private Pension Plan Bulletin: Abstract of 2005 Form 5500 Annual Reports, U.S. Department of Labor 2008.

62.4 million were active members, totalling 75.5 per cent of all active members of the sector's pension schemes.

The majority of DC pension schemes are so-called 401(k) schemes. Approximately 78 per cent of all persons covered by DC pension schemes belong to these schemes. The name 401(k) stems from an equivalent clause in the US tax law and functions as an umbrella for a large share of DC schemes (all schemes that meet the requirements stipulated in said clause).

401(k) schemes are divided into three categories, depending on how the contribution payment is divided between the employer and the employee, as well as on whether the employer's share of the contribution is compulsory or voluntary. In the general, so-called regular 401(k) schemes, the employee pays the larger proportion of the pension contribution, while the employer may participate in the payment of the pension contribution with a certain percentage of the proportion paid by the employee (a so-called matching contribution). In the Safe Harbor 401(k) schemes, the employer has been assigned a compulsory proportion of the pension contribution. For companies employing less than 100 persons, there is also the SIMPLE 401(k) pension scheme, which is less complicated to manage, and in which the employer has been signed a compulsory share of the contribution. In all defined contribution schemes, there is an upper limit for tax-free contributions. In 2005, this limit in the 401 (k) schemes amounted to USD 42,000 or 100 per cent of the salary (whichever is smallest).

In addition to the 401(k) schemes, private sector DC schemes include various schemes that resemble individual retirement accounts (IRA). Among others, these include Payroll deduction IRA, SIMPLE IRA, SEP and SARSEP. Furthermore, defined contribution schemes include Employee Stock Ownership Plans (ESOP) and the Profit Sharing scheme, where the employer's pension contributions are linked to the company's result. The Money Purchase scheme is also a DC scheme, in which the employer has been assigned a certain, fixed, percentual share of the pension contribution. In this scheme, the employer is liable to pay additional tax if failing to pay the required pension contribution. In 2005, approximately 13 per cent of all persons falling under DC pension schemes were covered by the above-mentioned schemes.

### *Defined benefit pension schemes*

In defined benefit (DB) pension schemes, the employer carries the financial responsibility for the accrued pension entitlements, and the pension usually accrues in the form of percentages of the employee's average salary during the last few years of employment. In the United States, if the employer faces financial difficulties, the characteristics of DB pension schemes combined with minor regulation have often led to the underfunding of the pension scheme that the company is liable for, or even the loss of the employees' occupational pension provision. For example, when the car manufacturer Studebaker failed in 1963, approximately 4,000 of the company's employees lost their occupational pension provision either partly or in full.

Difficulties with the financing of DB pension schemes of other companies, as well, resulted in the passing of the 1974 Employee Retirement Income Security Act, which increased the regulation of occupational pension schemes. Furthermore, to secure DB pension schemes, the Pension Benefit Guaranty Corporation (PBGC) was founded. It is financed by federal and

private-sector employers and (partly) secures private-sector employees' DB pension scheme pensions. In the 1990s and the 21st century, PBGC has had to secure pension schemes of several major companies, mainly within the metal and aviation industries (including United Airlines, Enro, Pan American Air and Bethlehem Steel). The regulation of DB pension schemes in particular, but also of DC pension schemes, was increased in the 2006 Pension Protection Act (PPA), in which amendments were made, for example, to the technical provision calculation assumptions and the investment values of the schemes.

Partly due to the aforementioned historical reasons and the development of new, from the employer's point of view, more risk-free DB pension schemes, private-sector DB pension schemes have lost their popularity during recent decades. In 1985, there were a total of 114,000 such schemes; in 2005, only 47,600 remained. The schemes still covered 41.9 million members, i.e. 35.7 per cent of the members in the entire sector's pension schemes. However, the number of active members decreased to 20.3 million, i.e. to 24.6 per cent of the active members in private-sector pension schemes.

In the United States, traditional DB pension schemes have been multi-employer schemes of major employers or industries in particular. In these schemes, pension accrues on the basis of the employee's age, years of employment and salary, with no separate, employee-specific retirement accounts to which contributions are paid. Thus, the pension is defined as a percentage of the salary (usually an average salary during the most recent years of employment), and it is paid as an annuity throughout the pensioner's lifetime. In 2005, approximately 75 per cent of all persons covered by DB pension schemes belonged to traditional DB pension schemes and so-called Pension Equity schemes.

Due to the popularity of defined contribution schemes, attempts to develop defined benefit pension schemes have also been made. In the 1980s, alongside the traditional DB pension schemes, so-called hybrid schemes were introduced, which tried to incorporate characteristics of DC pension schemes into DB pension schemes.

Hybrid schemes are basically DB pension schemes, but they include features of DC schemes. In hybrid schemes, an employee usually has a so-called theoretical retirement account, via which he or she can monitor the pension capital's computational development. The employer's actual annual investment into the pension fund can be smaller or larger than the amount credited to the employee's account, but the employer's pension liability develops according to the scheme's accrual regulations. The advantage with the hybrid scheme is that the accrued pension can be transferred easily to another scheme, e.g. in connection with a change of employer.

Hybrid schemes include Cash Balance and Pension Equity schemes. Cash Balance schemes are more common and cover approximately 25 per cent of all members of private-sector DB pension schemes. Pension Equity schemes are considerably more rare (statistics compiled together with traditional schemes). The major difference between the schemes is the accrual of benefits. In Pension Equity schemes, the pension accrues to a theoretical retirement account as a percentage, which is applied to the salary of the last year of gainful employment, while in Cash Balance schemes, pension in money is accrued on the theoretical pension account for each year of employment.

### 2.2.2 Public-sector pension schemes in the United States

The public sector in the United States employed a total of 23.2 million persons in 2005. The figure consists of personnel in state and local governments (19 million), federal civil servants (2.7 million) and military personnel (1.5 million).

For historical and scheme-related reasons, the coverage of pension schemes in the public sector is considerably higher than that of schemes in the private sector.

Persons of certain occupations (e.g. teachers) are often not automatically part of the OASDI scheme, which means that the public-sector pension scheme may be their only source of pension provision. Contrary to praxis in the private sector, joining occupational pension schemes is often automatic in the public sector. A total of 18.2 million active members are part of the sector's pension schemes, which means a coverage of approximately 78.4 per cent of the sector's employees.

In the public sector, all levels of administration have their own pension schemes. In addition, the federation has its own schemes for both civil servants and military personnel. On the state and local government level, pension schemes may vary from schemes covering all state employees to pension schemes covering only town employees or the employees of a single school district.

#### 2.2.2.1 Federal civil servant pension schemes

In 2005, federal civil servant pension schemes covered a total of 2.6 million active members. Civil servants have three different pension schemes: the Civil Service Retirement System, intended for long-time employees (those employed prior to 1987), and the Federal Employees Retirement System, for those employed at a later date. In addition, members of both schemes may participate in the Thrift Savings Plan (TSP), which is a defined contribution pension scheme. FERS and CSRS, for their part, are defined benefit pension schemes.

In all three schemes, the employer pays part of the pension contribution. Unlike those belonging to the FERS scheme, the employees belonging to the CSRS scheme do not pay contributions to the statutory pension scheme (OASDI), nor do they accumulate OASDI scheme pension.

#### 2.2.2.2 Federal military personnel pension scheme

In 2005, the pension scheme for the federal military personnel had 1.4 million active members. The pension scheme is benefit-based. The employer is liable for the scheme's financing; employees do not participate in the contributions. Furthermore, the pension scheme has been coordinated with the statutory pension scheme, so its members also pay OASDI pension contributions (and the employer pays its share) and are thus entitled to statutory earnings-related pension provision. Optionally, the military personnel is also entitled to participate in the defined contribution TSP pension scheme for federal employees.

### *2.2.2.3 State and local government pension schemes*

State and local government employees form the overwhelmingly largest group of public-sector employees. In March 2005, the state and local governments employed approximately 19 million persons, of which 14.1 million were active members of pension schemes. There were a total of 2,656 individual pension schemes, of which 8.4 per cent were state and 91.6 per cent were local government schemes.[7]

Nearly all of the state and local government pension schemes are benefit-based[8]. Contrary to private benefit-based schemes, the employee nearly always participates in the paying of pension contributions in state and local government schemes. The total pension contribution of an individual employee varies from one scheme to another, depending on, for example, whether the scheme is coordinated with the OASDI scheme. Approximately one quarter of state and local government employees do not belong to the OASDI scheme and therefore do not pay OASDI pension contributions. The average total pension contribution thus amounted to 20.7 per cent of the earned income, of which 12.1 per cent was paid by the employer and 8.6 per cent by the employee. If the employee belongs to the OASDI scheme, in addition to paying the OASDI contribution, he or she also pays contributions to an occupational pension scheme. The overall level of such contributions is slightly lower: 13 per cent on average, of which the employer pays 8 per cent and the employee 5 per cent[9].

As an example of the collected contributions, table 1 presents the median state and local government pension scheme contributions. When statutory pension scheme contributions are added to these, the result is the employer's total pension contribution and its division into employer and employee shares.

***Table 1.*** *State/local government employee's pension contribution (incl. the OASDI contribution, % of average salary).*

| | Employee | Employer |
|---|---|---|
| Statutory pension provision | | |
| Old age and family pension contribution (OASI) | 5.3 | 5.3 |
| Disability pension contribution (DI) | 0.9 | 0.9 |
| Occupational pension provision | 5.0 | 8.0 |
| **Total pension contribution** | 11.2 | 11.2 |

Source: Public Fund Survey: Summary of Findings for FY 2005.

7 Source: U.S. Census Bureau.
8 In a comparison made by the Wisconsin Legislative Council, 83 out of 85 schemes studied were benefit-based. The comparison covered approximately 85 per cent of the sector's pension schemes.
9 Public Fund Survey, Summary of Findings FY 05.

## 2.3 Statutory pension scheme in Canada[10]

All employees and entrepreneurs over the age of 18 belong to the Canadian statutory pension scheme, the Canada Pension Plan (CPP). The general retirement age is 65 years. The scheme incorporates old age, disability and family pension. The statutory pension is earnings-related and is intended to compensate approximately 25 per cent of the average income during the working career. Quebec has its own earnings-related pension scheme, the Quebec Pension Plan (QPP), which is very similar to the federal scheme. Earnings-related pension schemes in both Canada and Quebec came into force in 1966. Primarily, the data presented in this review concerns both schemes, with separate mention of the Quebec earnings-related pension scheme if it differs significantly from the Canadian scheme.

The benefits are low. In 2005, the maximum monthly old-age pension paid by the earnings-related pension scheme was CAD 828.75 (EUR 550). The average monthly pension came to CAD 464.20. The maximum monthly disability pension amounted to CAD 1,010.23 (EUR 670) and CAD 756.39, on average. The pensions are adjusted with a price index.

Canada also has a national pension scheme, Old Age Security (OAS), which provides old-age pension. In addition, a pensioner may receive benefits from the Guaranteed Income System (GIS; an income-based guaranteed income supplement) as well as from Spouse's Allowance (SA). The spouse's allowance guarantees a minimum income for 60–64-year-old married or common-law spouses or widows (also common-law widows) until the person is entitled to a national pension. The scheme does not pay disability pension. In connection with their taxation, pensioners, whose net income exceeded CAD 60,806 per year (in 2005), were forced to return in part or in full the national pension they had received, depending on their amount of earned income. In 2005, the full national pension amounted to CAD 479.83 per month. The maximum monthly guaranteed income supplement paid to single persons was CAD 570.27. The regular spouse's allowance amounted to CAD 851.29. The benefits of the national pension scheme are adjusted, according to changes in consumer prices, four times a year: at the beginning of January, April, July and October.

### *2.3.1 Pension scheme financing*

The employee and the employer both pay a contribution of 4.95 per cent, i.e. a total of 9.9 per cent of the salary. The contribution of an entrepreneur is 9.9 per cent of his or her net income. The contribution is paid for the average annual income of the Year's Basic Exemption (YBE) and the Year's Maximum Pensionable Earnings (YMPE). In 2005, the YBE was CAD 3,500 (frozen since 1998) and the YMPE was CAD 41,100 (EUR 27,242) (linked to Canada's average salary).

From the year the scheme was founded (1966) until 1986, the pension contribution was 3.6 per cent, but in 1987, the contribution was increased to 3.8 per cent, and by 0.2 percentage units annually until 1996, when it amounted to 5.6 per cent. The contribution has been raised

10 EUR 1 = CAD 1,5087 (average exchange rate in 2005).

to its current level between the years 1997 and 2003, and on the long-term, it is supposed to remain unchanged (through co-called steady-state financing) (see Appendix 2).

Earnings-related pension contributions are funded for the part exceeding benefit expenditures. The earnings-related pension scheme's fund came to CAD 94.4 billion, i.e. approximately 6.9 per cent of GDP at year-end 2005 (see Appendix 2). The contribution income is estimated to exceed the pension expenditures until the year 2020. At this point, the fund is intended to cover 25 per cent of the pension liability, in which case the pension fund will cover the following year's pension expenditures by approximately 5.5 times. After this, the funds' investment income will be used to an increasing degree to cover pension expenditures. No changes have been planned to the pension contributions. The regulations that are binding to the pension fund require that any improvements made to the pension benefits, whether new or incremented benefits, must be fully funded (according to the incremental full-funding principle) (Actuarial Report on the Canada Pension Plan, 2006). Canada's financial ministers and its provinces evaluate the country's employment pension scheme every third year. The next actuary report that evaluates the scheme's financial endurance will be published at the end of 2009.

Correspondingly, Quebec's scheme is evaluated every three years. In addition, Quebec's government negotiates with the various parties involved (public consultation) at least every sixth year concerning the status of the Quebec statutory employment pension scheme. In the Quebec scheme, the financing principles and the income limits are the same as in the Canadian scheme. The Quebec employment pension scheme has its own fund, which came to nearly CAD 27 billion in 2005, i.e. approximately 2 per cent of GDP and 3.2 times the pension expenditures of the following year.

The financial status of Quebec's scheme has weakened, and the fund is expected to be consumed by the year 2049 if the contribution and benefits remain unchanged. According to predictions, the contribution income will exceed pension expenditures only until 2011, after which the pension fund's investment income must be used to finance the pensions. According to calculations of the Office of the Chief Actuary, the pension contribution should be 10.62 per cent instead of the current 9.9 per cent. If the contribution is not raised in time, it is estimated to be at 12.6 per cent as of 2050 (see Appendix 2). A key reason for the weakening of the financial situation is the ageing of the population and the change in demography, which is more vigorous in Quebec than in the other provinces. As a result of the financial crisis, the status of the Quebec fund has weakened further. In 2008, the fund's investment loss amounted to -26 per cent, and it has been suggested in the public media (e.g., the Financial Post 21 April 2009) that, unless corrective measures are taken, the fund's assets will run out already in 2037. The government's previous consultation procedure regarding the Quebec pension scheme was arranged in 2004. Decisions regarding the renewal of the scheme will be made during the 2010 consultation procedure, based on the working documents relating to the consultation procedure and published in 2008 and 2009 (Toward a Stronger and Fairer Québec Pension Plan).

## 2.4 Occupational pension schemes in Canada

Registered Pension Plans (RPP), a registered occupational pension provision, covers less than 40 per cent of employees in Canada. The occupational pension provision covers more than 80 per cent of the employees in the public sector, but only one fourth of the employees in the private sector. The occupational pension may be arranged by only one or several employers, and it may be based on a labour market agreement. The schemes must be registered with customs and the tax office for the contributions to be tax deductible. In 2005, there were 15,336 registered occupational pension schemes, and the figure has grown to 19,185 in 2008. Schemes involving less than ten members have increased in recent years.

In 2005, the occupational schemes covered approximately 5.7 million members, while the figure in 2008 was 5.9 million. The majority are members in benefit-based schemes, although member figures have decreased slightly in recent years: 81 per cent in 2005 and 77 per cent in 2008. Although they have become more common, the proportion of defined contribution schemes has remained fairly constant when measured in terms of membership figures, at approximately 16 per cent. As in the United States, there has been a shift during the last decade from defined benefit schemes to hybrid schemes, in which a combination of the defined benefit and the defined contribution model is applied. In the private sector, the scope of hybrid schemes has increased from 2 per cent to 12 per cent, and in the public sector, from 1 per cent to 2 per cent. For the majority of members (4.8 million), the occupational pension has been managed by trust funds (trusteed plans), and for the rest (1.1. million), primarily by pension insurance companies (Statistics Canada).

In defined contribution pension schemes, the maximum deductible contribution shared between the employee and the employer is 18 per cent of the salary, but no more than CAD 18,000 in the 2005 taxation.

In addition to the registered occupational pension provision, the employer can arrange a pension insurance for its employees based on the company's profit (Deferred Profit-Sharing Plans, DPSP), where only the employer pays insurance contributions according to the company's profits. In the profit-based DPSP scheme, the employer can make an insurance contribution deduction worth 9 per cent of the wages, or CAD 9,000 (in 2005) at the most, i.e. a maximum of half of the upper RPP limit. The employer can also arrange for a group pension insurance (Group Registered Retirement Savings Plans, GRRSP) for its employees, which is similar to the registered individual pension insurance (Registered Retirement Savings Plans, RRSP) that holds the most significant position and has increased in popularity during recent years. In 2005, more than 6.1 million insured saved into a registered, individual pension account. Contributions worth CAD 30.6 billion were collected. In 2007, the number of insured employees had grown to 6.3 million and the contribution income amounted to CAD 34.1 billion. (Statistics Canada). The amount is expected to continue to grow since, of the potential amount of savers (nearly 90 per cent of taxpayers), approximately one third pays contributions to RRSP. The median contribution in 2007 was CAD 2,780.

In registered individual pension schemes, the upper limit of the deductible contribution is based on annual income and cannot exceed 18 per cent of the previous year's income, or CAD 16,500 at the most in 2005. If the employee also belongs to a registered labour-market-based scheme, the upper limit of the deductible contributions in the individual scheme is reduced equivalently (Pension Adjustment). An unused right to deduct in taxation can be transferred in full to the following years.

The table below presents an example of benefit-based occupational pension scheme contributions in the private sector in relation to the average salary. The contributions vary depending on the scheme, so in order to create as representative an image as possible, the example has been formed based on the contribution data of eight broad occupational pension schemes and divided into two groups, based on whether the employee participates in its financing or not.

***Table 2.*** *Pension contributions of members of the private sector occupational pension schemes in 2005, percentage of average salary.*

| | **Total** | **Contributory plans** | **Non-contributory plans** |
|---|---|---|---|
| *Number of schemes* | *8* | *5* | *3* |
| *Active members* | *174,060* | *93,865* | *80,195* |
| **Employee's occupational pension contribution** | **1.98%** | **3.65%** | **0.00%** |
| Employer's occupational pension contribution (the norm) | 7.44% | 6.55% | 8.48% |
| Employer's occupational pension contribution (collected for a shortage in financing) | 2.88% | 4.89% | 0.49% |
| **Employer's occupational pension contribution (total)** | **10.32%** | **11.44%** | **8.97%** |
| Employee's statutory earnings-related pension contribution (CPP/QPP) | 3.43% | 3.42% | 3.45% |
| Employer's statutory earnings-related pension contribution (CPP/QPP) | 3.43% | 3.42% | 3.45% |
| **Total** | **17.18%** | **18.28%** | **15.87%** |

Source: Office of the Chief Actuary.

# 3 Pension contributions in relation to wages and GDP

In this chapter, we examine pension contributions in relation to the total wage sum in the national economy and the gross domestic product. The data of the statutory pension contributions and the income flows of various countries is mainly based on statistics, accounting and budget data of the actors in the social insurance industry of the countries in question, as well as on various official reports.

The starting point for the collection of data was its comparability with the results of the report on the total pension contribution level in nine European countries, published by the Finnish Centre for Pensions in 2008 (Vidlund & Bach-Othman 2009). Hence, as in the aforementioned comparison, two different wage sums (compensation for employees and wage sum) and the GDP at market and basic prices were used as indicators. The wage sum includes wages and remunerations. In addition to the above, compensation of employees includes social security contributions paid by employers. GDP at market prices, representing total production, includes commodity taxes (VAT, excise). Reducing the commodity tax and adding commodity subsidies (export subsidy or other equivalent) to GDP at market prices results in the so-called GDP at basic prices.

The wage sum is a generally employed indicator, but, for its part, it may lead to incorrect interpretations when comparing different countries, in which the shares of social security contributions of the employer and the employee vary. This kind of situation is particularly common when comparing two countries in which, on the one hand, the financing of the pension provision is based on high employer contributions (e.g. Sweden) while, on the other hand, the financing is primarily based on taxes and employee contributions (e.g. Denmark). Since employee contributions are not differentiated from the wage sum in international statistics, and even though the contribution burden is the same in both countries, differences can arise between countries, depending on who pays the contributions. Depending on the different tax structure of the countries, equivalent differences between countries may occur when comparing the contribution income in relation to the gross domestic product at market prices. Hence, this comparison also includes a GDP at basic prices, which levels out tax differences (for further information, see Vidlund & Bach-Othman 2009).

The following table presents GDP and the wage sum of both countries in their national currencies. Deviating from the previous comparison, primarily national statistical sources have been used for Canada and the United States since not all of the statistical data in the OECD's Economic Outlook database, used in the previous comparison, was available. However, there are no significant differences between national and OECD statistics. The only exception concerns the data on the compensation of employees in Canada which, according to the OECD statistics (CAD 688.2 billion), is clearly smaller than the data used in the comparison (see below). The financial figures for Canada are supplied by Statistics Canada. Figures for the United States were provided by the Bureau of Economic Analysis, U.S. Department of Commerce (except for GDP at basic prices, which derives from OECD's statistics).

***Table 3**. Background figures for 2005, billion, national currency.*

| | USA | Canada |
|---|---|---|
| GDP (at basic prices) | 11,532.8 | 1,155.7 |
| GDP (at market prices) | 12,638.4 | 1,372.6 |
| GDP/capita (US$, PPP) | 41,789 | 34,058 |
| Wage sum | 5,706.0 | 637.0 |
| Compensation of employees (including social security contributions) | 7,065.0 | 726.3 |
| Average salary/Earnings ceiling | USD 37,640 / USD 90,000 | CAD 39,820 / CAD 41,100 |

EUR 1 = USD 1.2441; CAD 1.5087 (average exchange rate in 2005).
Sources: Statistics Canada; BEA; OECD.

In the following section, the contribution income has been divided according to the financiers of pension schemes and pension expenditures.

## 3.1 The total contribution level of the United States pension scheme

The total contribution income of the United States is compiled in table 4. The contribution income of the statutory OASDI scheme, as well as the tax income collected from the benefits, makes up approximately half of the total pension contribution level. The employer's and the employee's shares are of equal size, approximately 5.2 per cent of the wage sum. The share of tax funding is small in relation to other contributions: 0.3 per cent of the wage sum. The total amount of the contribution income and the tax funding is approximately USD 608 billion.

The other half of the total pension contribution level consists of private and public sector occupational pension schemes. The total premium contribution income of private sector occupational pension schemes amounts to approximately USD 341.4 billion. The majority of the contribution income was paid to various types of 401(k) funds, a total of USD 209 billion. On average, the employer's share of the contributions to the 401(k) schemes was 33.7 per cent, and the employee's 66.3 per cent. On the whole, a total of USD 249 billion in pension contributions were paid into defined contribution schemes, i.e. 72.9 per cent of the contribution income of private sector occupational pension schemes. Into private sector benefit-based schemes, a total of approximately USD 92.7 billion were paid (27.1 per cent of the sector's contribution income), of which the employer's share was almost 100 per cent.

A total of USD 212 billion in pension contributions were paid into public sector occupational pension schemes. The contributions were divided on average as follows: 76.6 per cent paid by the employer and 23.4 per cent by the employee. Pension contributions totalling USD 93.7 billion were paid into state and local government pension schemes, i.e. approximately 44.2 per cent of the contribution income of the entire sector. A total of USD 66.3 billion were paid into pension schemes for state city officials (CSRS and FERS), equalling approximately 31.3 per cent of the sector's contribution income. In the pension scheme for military personnel, the federal employer paid a total of USD 52 billion in pension contributions, accounting for 24.5 per cent of the sector's contribution income. The figure also includes contributions paid into the Retiree Health Care Fund for retired military personnel.

***Table 4**. Pension contributions' share of GDP and wage sum in 2005.*

| Pension scheme | Million USD | Contribution income/ compensation of employees[a] | Contribution income/ Wage sum[b] | % of GDP | % of GDP[c] |
|---|---|---|---|---|---|
| **Statutory pensions OASDI** | | | | | |
| Employer | 296,470 | | | | |
| Employee | 296,470 | | | | |
| Tax funding | 14,900 | | | | |
| Total | | **8.6%** | **10.7%** | **4.8%** | **5.3%** |
| **Occupational pension provisions** | | | | | |
| Employer | | | | | |
| Public sector | 162,500 | | | | |
| Private sector | 190,096 | | | | |
| Employee | | | | | |
| Public sector | 49,577 | | | | |
| Private sector | 151,353 | | | | |
| Total | | **7.8%** | **9.7%** | **4.4%** | **4.8%** |
| Statutory and occupational pensions, total | | **16.4%** | **20.4%** | **9.2%** | **10.1%** |

a) including employer's social security contributions.
b) excluding employer's social security contributions.
c) at market prices, including excises.
d) at basic prices (source: OECD).

***Table 5.** The distribution of pension contributions in relation to GDP and wage sum in 2005.*

| | Contribution income/ compensation of employees[a] | Contribution income/ wage sum[b] | % of GDP[c] | % of GDP[d] |
|---|---|---|---|---|
| **Employee** | | | | |
| - OASDI | 4.2% | 5.2% | 2.35% | 2.6% |
| - Occupational pension provisions | 2.8% | 3.5% | 1.6% | 1.7% |
| Employees total | 7.0% | 8.7% | 3.95% | 4.3% |
| **Employer** | | | | |
| - OASDI | 4.2% | 5.2% | 2.35% | 2.6% |
| - Occupational pension provisions | 5.0% | 6.2% | 2.8% | 3.1% |
| Employer total | 9.2% | 11.4% | 5.15% | 5.7% |
| **Tax funding** | | | | |
| - OASDI | 0.2% | 0.3% | 0.1% | 0.1% |
| Total | 16.4% | 20.4% | 9.2% | 10.1% |

a) including employer's social security contributions.
b) excluding employer's social security contributions.
c) at market prices, including excises.
d) at basic prices (source: OECD).

## 3.2 The total contribution level of the Canadian pension scheme

In 2005, in relation to the wage sum, the total pension contributions in Canada amounted to 16.5 per cent and, in relation to the compensation of employees, 14.3 per cent. In relation to GDP at market prices, pension contributions accounted for 7.6 per cent and, in relation to GDP at basic prices, 8.4 per cent (see Table 6).

The statutory earnings-related contributions are divided equally between the employer and the employee. The entrepreneur pays the entire contribution. The expenditures of Canada's statutory earnings-related scheme amounted to nearly CAD 25 billion, accounting for approximately 1.8 per cent of GDP in 2005. The total employer and employee contribution income was nearly CAD 30 billion (table 6). That same year, the investment income was CAD 11 billion. The pension assets exceed the following year's pension expenditures by 3.6 times (see Appendix 2). The expenditure of Quebec's statutory earnings-related scheme amounted to nearly CAD 7,9 billion, accounting for approximately 0.6 per cent of GDP in 2005. The income of the scheme (incl. the profit of the fund) amounted to a total of approximately CAD 12.5 billion. The pension assets exceeded the following year's pension expenditure by 3.2 times (Actuarial Report).

The national pension is financed with tax revenues, and the contribution income according to the principle of the pay-as-you-go system, presented in table 6, corresponds to the pension expenditures of the year in question. National pension expenditures accounted for 2.1 per cent of GDP.

For the most part, occupational pensions (RPP) are funded by the employers. In Canada, the employers' share of the funding of occupational pension schemes amounts to approximately 70 per cent. The contribution income of occupational pensions accounted for 2.7 per cent of GDP. Individual supplementary pensions (RRSP), excluded from the comparison, have grown into a significant segment of supplementary retirement account schemes. In 2005, contribution income amounted to CAD 30.6 billion, accounting for approximately 2.2 per cent of GDP (CAD 34.1 billion in 2007).

***Table 6.*** *Pension contributions' share of GDP and wage sum in 2005.*

| Pension scheme | Million CAD | Contribution income/ compensation of employees[a] | Contribution income/ wage sum[b] | % of GDP[c] | % of GDP[d] |
|---|---|---|---|---|---|
| **Statutory earnings** | | | | | |
| Canada, CPP | | | | | |
| Employer | 14,769.3 | | | | |
| Employee | 14,769.3 | | | | |
| Tax funding | - | | | | |
| **Statutory earnings related pensions** | | | | | |
| Quebec, QPP | | | | | |
| Employer | 4,312.2 | | | | |
| Employee | 4,312.2 | | | | |
| Tax funding | - | | | | |
| **National pension, OAS** | | | | | |
| Tax funding | 29,085 | | | | |
| Total | | **9.2%** | **10.6%** | **4.9%** | **5.4%** |
| **Occupational pension provisions** | | | | | |
| Employer | 26,200 | | | | |
| Employee | 11,200 | | | | |
| Total | | **5.1%** | **5.9%** | **2.7%** | **3.0%** |
| Statutory and occupational pension, total | | **14.3%** | **16.5%** | **7.6%** | **8.4%** |

a) including employer's social security contributions.
b) excluding employer's social security contributions.
c) at market prices, including excises.
d) at basic prices.

***Table 7.*** *The distribution of pension contributions in relation to GDP and wage sum in 2005.*

| | Contribution income/ compensation of employees[a] | Contribution income/ wage sum[b] | % of GDP[c] | % of GDP[d] |
|---|---|---|---|---|
| **Employee** | | | | |
| - CPP, QPP | 2.6 | 3.0 | 1.4 | 1.5 |
| - Occupational pensions provisions | 1.5 | 1.8 | 0.8 | 0.9 |
| Employee total | 4.1 | 4.8 | 2.2 | 2.4 |
| **Employer** | | | | |
| - CPP, QPP | 2.6 | 3.0 | 1.4 | 1.5 |
| - Occupational pensions provisions | 3.6 | 4.1 | 1.9 | 2.1 |
| Employer, total | 6.2 | 7.1 | 3.3 | 3.6 |
| **Tax funding** | | | | |
| - OAS | 4.0 | 4.6 | 2.1 | 2.4 |
| Total | 14.3 | 16.5 | 7.6 | 8.4 |

a) including employer's social security contributions.
b) excluding employer's social security contributions.
c) at market prices, including excises.
d) at basic prices.

## 3.3 A comparison with the pension contribution level in European countries

Next, the total pension contributions in the United States and Canada are compared with the results of the 2008 report, published by the Finnish Centre for Pensions, in which the contribution level in nine European countries were compared. For all indicators, the contribution levels in Canada and the United States remain clearly below those in the European countries under comparison (see Figures 7–10). The reason for this can be found in the pension provision structure. As stated above, the primary task of the statutory pension scheme is to offer basic pension security which each person can supplement with individual pension arrangements according to their own preferences. In both Canada and the United States, occupational pensions thus hold a significant position, which is visible in the comparison with the European countries. Measured in contribution income, occupational pensions form approximately half of the total contributions in the United States. In Canada, the share is smaller, approximately one third. However, it should be noted that common, individual savings accounts of various types in the United States and Canada have been excluded from the comparison.

The statutory pension contribution shares of employers and employees are distributed evenly in Canada and the United States. In the United States, the contribution level of employees, approximately 5 per cent of the wage sum, is of equal size as in most European countries participating in the comparison. In Canada, the figure is clearly lower, with the employee contribution income accounting for 3 per cent of the wage sum. Only in Denmark, where the pension scheme is primarily funded by tax revenues, is the employee contribution share smaller. Employers' contributions are lower in Canada and the United States compared to all other countries of comparison, excluding Denmark.

***Figure** 7. Pension contributions in relation to wage sum.*

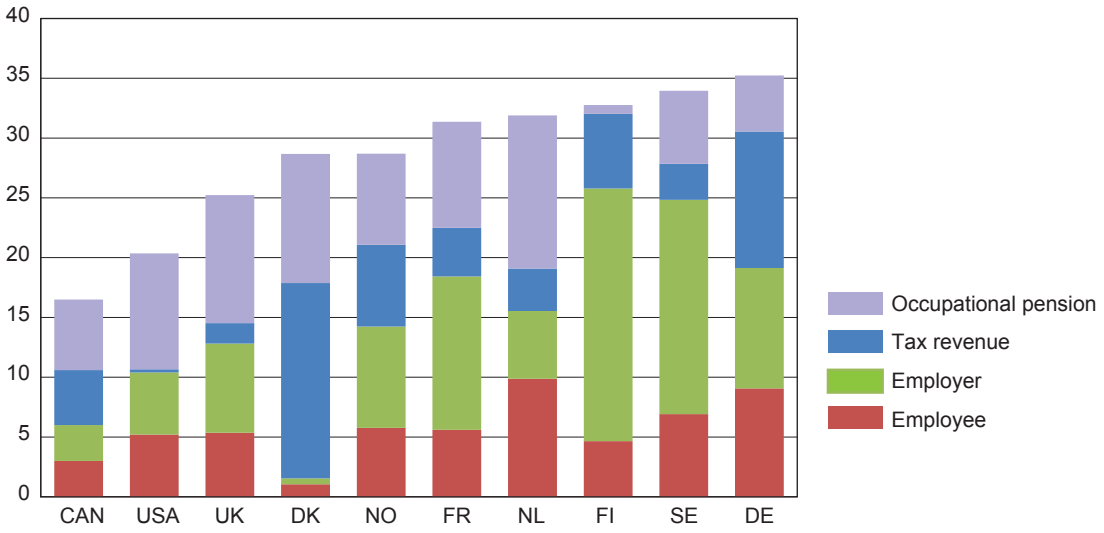
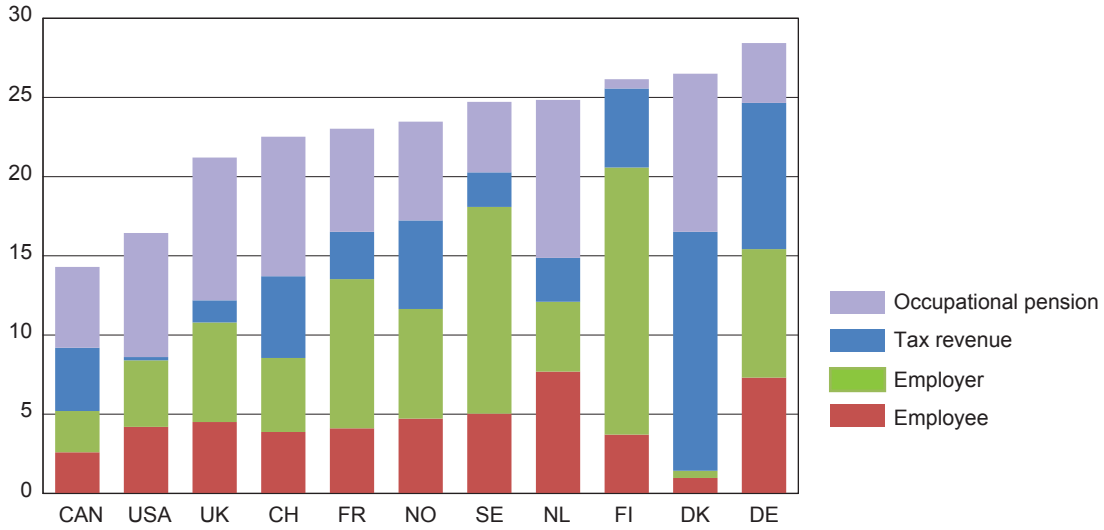


***Figure 8.*** *Pension contributions in relation to compensation of employees.*




The government's share of the financing, i.e. the share of tax revenues, is smaller in the United States than in the countries of comparison. For the United States, the figure of comparison does not include SSI, but its share would amount only to approximately 0.28 per cent of GDP at market prices. In Canada, the share of tax revenue exceeds 25 per cent of the total contribution income and 2.1 per cent of GDP.

***Figure 9.*** *Pension contributions in relation to GDP at market prices in 2005.*

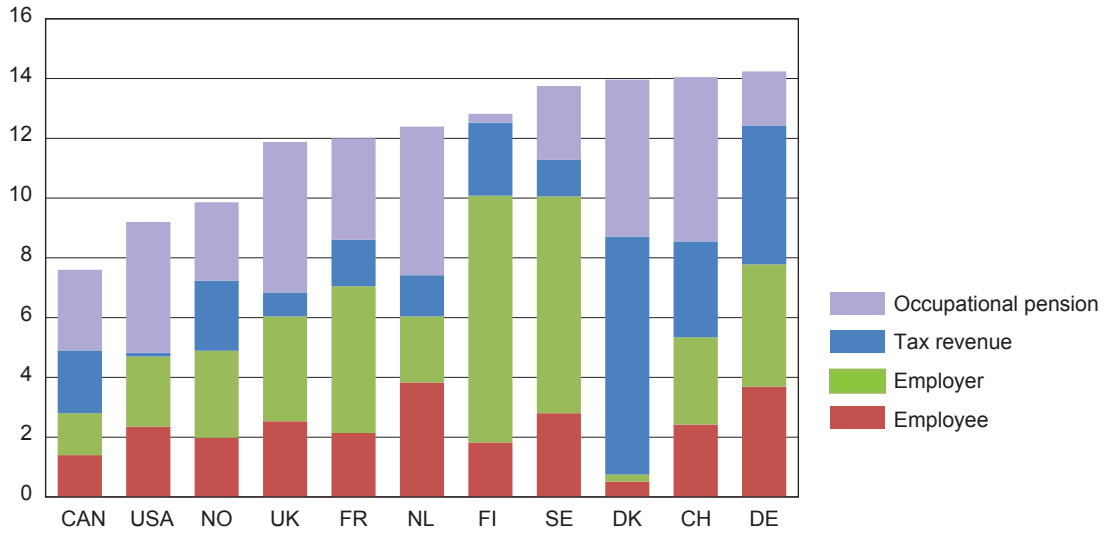
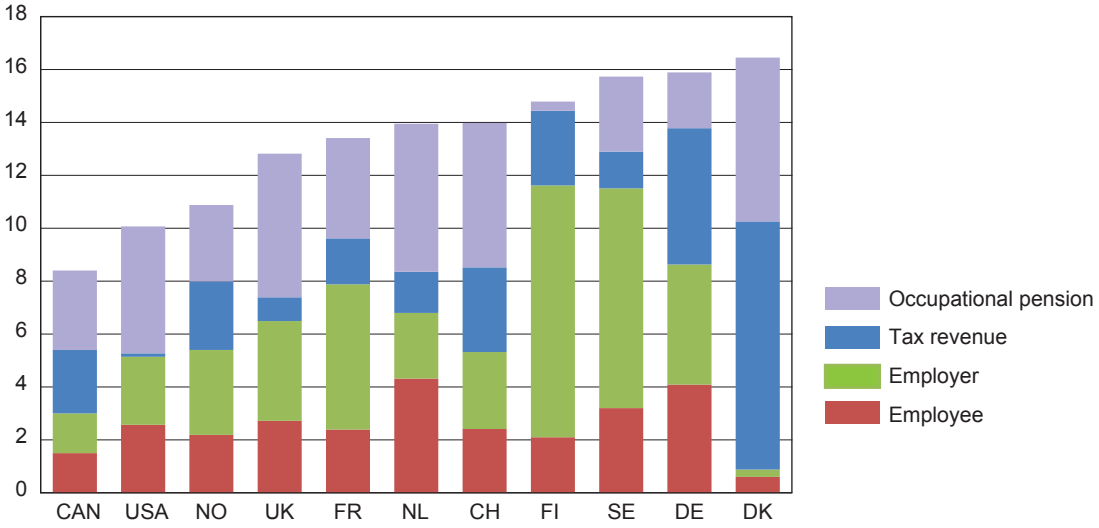


***Figure 10**. Pension contributions in relation to GDP at basic prices in 2005.*




The contribution pressure is reduced in Canada and the United States due to their demographies, which are more favourable than in the European countries. In 2005, the old-age dependency ratio (the amount of over-64-year-olds in proportion to the 15–64-year-olds) was 0.19 in the United States and Canada, and it is expected to increase to 0.32 in the United States and 0.37 in Canada in 2030 as the baby-boomer generation retires. In Western Europe, the old-age dependency ratio will increase during the equivalent time period from 0.26 to 0.43 per cent, and to 0.51 per cent in 2050. The old-age dependency ratio is predicted to reach the same level in Canada in 2050 as in Western Europe in 2030. Even then, the United States will remain clearly below 0.35 per cent. On average, the population growth in the United States from 1985 to 2005 has been over one per cent, while, during the same time period in Western Europe, the growth has remained at less than one half percentage unit. According to a prediction by the UN, the population growth in the United States will slow down from this level to approximately half a percentage unit by 2035, but even then, it will exceed the Western European level, where the population is predicted to decrease as of the year 2025[11].

11 United Nations, World Population Prospects: The 2008 Revision Population Database.

# 4 Summary

The comparison shows that the pension contribution level remains lower in the United States and Canada than in the European countries. Reasons for this lie in the pension provision structure, as well as in the fact that ageing and changes in the demography are not as strong in North America as they are in the reviewed European countries.Since the United States and Canada represent liberal welfare models, the result can be described, to some degree, as expected. However, as a side remark, it should be noted that Canada has a comprehensive basic pension provision, and the pension provision in the United States is perhaps slightly more comprehensive than what is generally assumed. Nevertheless, the North American pension model seems to differ clearly from the European model.

In addition to the level of statutory earnings-related pension provision, attention has been paid to occupational pension provision. As the data on pensioner income packages presented in chapter 2 shows, the North American pension account model differs from that in, for example, Finland, where statutory earnings-related pension provision is supplemented only with individual pension insurances. In the United States and Canada, the statutory pension is supplemented fairly often with various forms of investments. This is evidenced by the large share of senior citizens receiving investment income in both North American countries. However, individual (pension) savings were not examined in more detail in this review, but we can assume that, to their extent, they reflect the low total contribution level presented in this review.

The reference data of the review is based on cross-section data, which has its limitations since it describes the situation at a certain point in time only. However, no great annual fluctuations occur in contribution levels. Therefore, cross-section data can be regarded as descriptive for several years.

For Canada's part, the development of the statutory pension contribution level appears to be fairly stable in the near future since, according to projections, the contribution has been stabilized far into the future. In both countries, pension schemes are on surplus, i.e. the contribution income collected exceeds the amount required at the moment to fund pension expenditures. The strategy for the next few years is to use the profit of the funds and then dissolve the trust funds when expenditures exceed the contribution income. In Quebec, this situation will be at hand already at the beginning of the next decade. The weakening of the funding of the scheme, which is more rapid than predicted, may thus manifest itself in raised contributions already in the next few years. In Canada, the financial status of the scheme is brighter and, for this part, there is no need for reforms or increased contributions. In the United States, preparations for the ageing of the population and an increase in pension expenditures have been made through gradually raising the retirement age from 65 to 67 by the year 2027. In addition, contributions, which have remained on the same level since 1990, need to be raised to maintain the scheme's financial balance.

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# Appendices

## Appendix 1. The United States

***Table A1.1**. Contribution percentages of OASDI and health insurance.*

| | Employees and employers, each | | | Self employed | | |
|---|---|---|---|---|---|---|
| Calendar years | OASDI | HI | Combined | OASDI | HI | Combined |
| 1966 | 3.85 | 0.35 | 4.20 | 5.80 | 0.35 | 6.15 |
| 1967 | 3.90 | .50 | 4.40 | 5.90 | .50 | 6.40 |
| 1968 | 3.80 | .60 | 4.40 | 5.80 | .60 | 6.40 |
| 1969–70 | 4.20 | .60 | 4.80 | 6.30 | .60 | 6.90 |
| 1971–72 | 4.60 | .60 | 5.20 | 6.90 | .60 | 7.50 |
| 1973 | 4.85 | 1.00 | 5.85 | 7.00 | 1.00 | 8.00 |
| 1974–77 | 4.95 | .90 | 5.85 | 7.00 | .90 | 7.90 |
| 1978 | 5.05 | 1.00 | 6.05 | 7.10 | 1.00 | 8.10 |
| 1979–80 | 5.08 | 1.05 | 6.13 | 7.05 | 1.05 | 8.10 |
| 1981 | 5.35 | 1.30 | 6.65 | 8.00 | 1.30 | 9.30 |
| 1982–83 | 5.40 | 1.30 | 6.70 | 8.05 | 1.30 | 9.35 |
| 1984 | 5.70 | 1.30 | 7.00 | 11.40 | 2.60 | 14.00 |
| 1985 | 5.70 | 1.35 | 7.05 | 11.40 | 2.70 | 14.10 |
| 1986–87 | 5.70 | 1.45 | 7.15 | 11.40 | 2.90 | 14.30 |
| 1988–89 | 6.06 | 1.45 | 7.51 | 12.12 | 2.90 | 15.02 |
| 1990 and later | 6.20 | 1.45 | 7.65 | 12.40 | 2.90 | 15.30 |

Source: The 2006 Annual Report of the Board of Trustees of the Federal OASDI Trust Fund.

***Table A1.2.*** *Income, expenditures and assets of the OASDI pension scheme.*

| | Income | | | | Expenditures | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Calendar year | Total | Net contri-butions | Taxa-tion of benefits | Net interest | Total | Benefit pay-ments | Admin-istrative costs | RRB inter-change | Net in-crease during year | Amount at end of year | Trust fund ratio |
| 1957 | 8.1 | 7.5 | - | 0.6 | 7.6 | 7.4 | 0.2 | | 0.5 | 23.0 | 298 |
| 1958 | 9.1 | 8.5 | - | .6 | 8.9 | 8.6 | .2 | 0.1 | .2 | 23.2 | 259 |
| 1959 | 9.5 | 8.9 | - | .6 | 10.8 | 10.3 | .2 | .3 | -1.3 | 22.0 | 215 |
| 1960 | 12.4 | 11.9 | - | .6 | 11.8 | 11.2 | .2 | .3 | .6 | 22.6 | 186 |
| 1961 | 12.9 | 12.3 | - | .6 | 13.4 | 12.7 | .3 | .3 | -.5 | 22.2 | 169 |
| 1962 | 13.7 | 13.1 | - | .6 | 15.2 | 14.5 | .3 | .4 | -1.5 | 20.7 | 146 |
| 1963 | 16.2 | 15.6 | - | .6 | 16.2 | 15.4 | .3 | .4 | f | 20.7 | 128 |
| 1964 | 17.5 | 16.8 | - | .6 | 17.0 | 16.2 | .4 | .4 | .5 | 21.2 | 122 |
| 1965 | 17.9 | 17.2 | - | .7 | 19.2 | 18.3 | .4 | .5 | -1.3 | 19.8 | 110 |
| 1966 | 23.4 | 22.6 | - | .7 | 20.9 | 20.1 | .4 | .5 | 2.5 | 22.3 | 95 |
| 1967 | 26.4 | 25.4 | - | .9 | 22.5 | 21.4 | .5 | .5 | 3.9 | 26.3 | 99 |
| 1968 | 28.5 | 27.0 | - | 1.0 | 26.0 | 25.0 | .6 | .5 | 2.5 | 28.7 | 101 |
| 1969 | 33.3 | 31.5 | - | 1.3 | 27.9 | 26.8 | .6 | .5 | 5.5 | 34.2 | 103 |
| 1970 | 37.0 | 34.7 | - | 1.8 | 33.1 | 31.9 | .6 | .6 | 3.9 | 38.1 | 103 |
| 1971 | 40.9 | 38.3 | - | 2.0 | 38.5 | 37.2 | .7 | .6 | 2.4 | 40.4 | 99 |
| 1972 | 45.6 | 42.9 | - | 2.2 | 43.3 | 41.6 | .9 | .7 | 2.3 | 42.8 | 93 |
| 1973 | 54.8 | 51.9 | - | 2.4 | 53.1 | 51.5 | .8 | .8 | 1.6 | 44.4 | 80 |
| 1974 | 62.1 | 58.9 | - | 2.7 | 60.6 | 58.6 | 1.1 | .9 | 1.5 | 45.9 | 73 |
| 1975 | 67.6 | 64.3 | - | 2.9 | 69.2 | 67.0 | 1.2 | 1.0 | -1.5 | 44.3 | 66 |
| 1976 | 75.0 | 71.6 | - | 2.7 | 78.2 | 75.8 | 1.2 | 1.2 | -3.2 | 41.1 | 57 |
| 1977 | 82.0 | 78.7 | - | 2.5 | 87.3 | 84.7 | 1.4 | 1.2 | -5.3 | 35.9 | 47 |
| 1978 | 91.9 | 88.9 | - | 2.3 | 96.0 | 93.0 | 1.4 | 1.6 | -4.1 | 31.7 | 37 |
| 1979 | 105.9 | 103.0 | - | 2.2 | 107.3 | 104.4 | 1.5 | 1.5 | -1.5 | 30.3 | 30 |
| 1980 | 119.7 | 116.7 | - | 2.3 | 123.6 | 120.6 | 1.5 | 1.4 | -3.8 | 26.5 | 25 |
| 1981 | 142.4 | 139.4 | - | 2.2 | 144.4 | 141.0 | 1.7 | 1.6 | -1.9 | 24.5 | 18 |
| 1982 | 147.9 | 145.7 | - | 1.4 | 160.1 | 156.2 | 2.1 | 1.8 | .2 | 24.8 | 15 |
| 1983 | 171.3 | 156.3 | - | 8.3 | 171.2 | 166.7 | 2.2 | 2.3 | .1 | 24.9 | 14 |
| 1984 | 186.6 | 180.1 | 3.0 | 3.4 | 180.4 | 175.7 | 2.3 | 2.4 | 6.2 | 31.1 | 21 |
| 1985 | 203.5 | 194.1 | 3.4 | 2.7 | 190.6 | 186.1 | 2.2 | 2.4 | 11.1 | 42.2 | 24 |
| 1986 | 216.8 | 209.1 | 3.7 | 3.9 | 201.5 | 196.7 | 2.2 | 2.7 | 4.7 | 46.9 | 29 |
| 1987 | 231.0 | 222.4 | 3.2 | 5.3 | 209.1 | 204.1 | 2.4 | 2.6 | 21.9 | 68.8 | 31 |
| 1988 | 263.5 | 251.8 | 3.4 | 8.2 | 222.5 | 217.1 | 2.5 | 2.9 | 41.0 | 109.8 | 41 |
| 1989 | 289.4 | 274.2 | 2.5 | 12.7 | 236.2 | 230.9 | 2.4 | 2.9 | 53.2 | 163.0 | 57 |
| 1990 | 315.4 | 296.1 | 5.0 | 17.2 | 253.1 | 247.8 | 2.3 | 3.0 | 62.3 | 225.3 | 75 |
| 1991 | 329.7 | 301.7 | 6.1 | 21.9 | 274.2 | 268.2 | 2.6 | 3.5 | 55.5 | 280.7 | 82 |
| 1992 | 342.6 | 311.1 | 6.1 | 25.4 | 291.9 | 286.0 | 2.7 | 3.2 | 50.7 | 331.5 | 96 |
| 1993 | 355.6 | 322.1 | 5.6 | 27.9 | 308.8 | 302.4 | 3.0 | 3.4 | 46.8 | 378.3 | 107 |
| 1994 | 381.1 | 344.7 | 5.3 | 31.1 | 323.0 | 316.8 | 2.7 | 3.5 | 58.1 | 436.4 | 117 |
| 1995 | 399.5 | 359.0 | 5.8 | 35.0 | 339.8 | 332.6 | 3.1 | 4.1 | 59.7 | 496.1 | 128 |
| 1996 | 424.5 | 378.9 | 6.8 | 38.7 | 353.6 | 347.1 | 3.0 | 3.6 | 70.9 | 567.0 | 140 |
| 1997 | 457.7 | 406.0 | 7.9 | 43.8 | 369.1 | 362.0 | 3.4 | 3.7 | 88.6 | 655.5 | 154 |
| 1998 | 489.2 | 430.2 | 9.7 | 49.3 | 382.3 | 375.0 | 3.5 | 3.8 | 107.0 | 762.5 | 171 |
| 1999 | 526.6 | 459.6 | 11.6 | 55.5 | 392.9 | 385.8 | 3.3 | 3.8 | 133.7 | 896.1 | 194 |
| 2000 | 568.4 | 492.5 | 12.3 | 64.5 | 415.1 | 407.6 | 3.8 | 3.7 | 153.3 | 1,049.4 | 216 |
| 2001 | 602.0 | 516.4 | 12.7 | 72.9 | 438.9 | 431.9 | 3.7 | 3.3 | 163.1 | 1,212.5 | 239 |
| 2002 | 627.1 | 532.5 | 13.8 | 80.4 | 461.7 | 453.8 | 4.2 | 3.6 | 165.4 | 1,378.0 | 263 |
| 2003 | 631.9 | 533.5 | 13.4 | 84.9 | 479.1 | 470.8 | 4.6 | 3.7 | 152.8 | 1,530.8 | 288 |
| 2004 | 657.7 | 553.0 | 15.7 | 89.0 | 501.6 | 493.3 | 4.5 | 3.8 | 156.1 | 1,686.8 | 305 |
| 2005 | 701.8 | 592.9 | 14.9 | 94.3 | 529.9 | 520.7 | 5.3 | 3.9 | 171.8 | 1,858.7 | 318 |
| 2006 | 744.9 | 625.6 | 16.9 | 102.4 | 555.4 | 546.2 | 5.3 | 3.8 | 189.5 | 2,048.1 | 335 |
| 2007 | 784.9 | 656.1 | 18.6 | 110.2 | 594.5 | 584.9 | 5.5 | 4.0 | 190.4 | 2,238.5 | 345 |
| 2008 | 805.3 | 672.1 | 16.9 | 116.3 | 625.1 | 615.3 | 5.7 | 4.0 | 180.2 | 2,418.7 | 358 |

Source: The 2009 Annual Report of the Board of Trustees of the Federal OASDI Trust Funds.

## Appendix 2. Canada

***Table A2.1**. Income, expenditures and assets of Canada's pension scheme (CPP), CAD million.*

| Year | PayGo Rate* (%) | Contri-bution Rate (%) | Contri-butions | Expen-ditures | Net Cash Flow | Invest-ment Earnings | Assets at 31 Dec.** | Yield/ Return** (%) | Asset/ Expendi-ture Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 1966 | 0.05 | 3.6 | 531 | 8 | 523 | 2 | 525 | 0.7 | 52.50 |
| 1967 | 0.06 | 3.6 | 623 | 10 | 613 | 37 | 1,175 | 4.3 | 48.96 |
| 1968 | 0.13 | 3.6 | 686 | 24 | 662 | 79 | 1,916 | 5.1 | 35.48 |
| 1969 | 0.26 | 3.6 | 737 | 54 | 683 | 128 | 2,727 | 5.6 | 28.11 |
| 1970 | 0.45 | 3.6 | 773 | 97 | 676 | 193 | 3,596 | 6.2 | 24.13 |
| 1971 | 0.66 | 3.6 | 816 | 149 | 667 | 260 | 4,523 | 6.5 | 21.33 |
| 1972 | 0.88 | 3.6 | 869 | 212 | 657 | 333 | 5,513 | 6.8 | 19.83 |
| 1973 | 1.07 | 3.6 | 939 | 278 | 661 | 404 | 6,578 | 6.8 | 16.78 |
| 1974 | 1.17 | 3.6 | 1,203 | 392 | 811 | 498 | 7,887 | 7.0 | 14.06 |
| 1975 | 1.42 | 3.6 | 1,426 | 561 | 865 | 607 | 9,359 | 7.2 | 11.47 |
| 1976 | 1.80 | 3.6 | 1,630 | 816 | 814 | 747 | 10,920 | 7.6 | 10.48 |
| 1977 | 2.05 | 3.6 | 1,828 | 1,042 | 786 | 890 | 12,596 | 7.8 | 9.72 |
| 1978 | 2.31 | 3.6 | 2,022 | 1,296 | 726 | 1,043 | 14,365 | 7.9 | 9.03 |
| 1979 | 2.47 | 3.6 | 2,317 | 1,590 | 727 | 1,236 | 16,328 | 8.3 | 8.31 |
| 1980 | 2.72 | 3.6 | 2,604 | 1,965 | 639 | 1,466 | 18,433 | 8.7 | 7.64 |
| 1981 | 2.89 | 3.6 | 3,008 | 2,413 | 595 | 1,784 | 20,812 | 9.4 | 7.04 |
| 1982 | 2.91 | 3.6 | 3,665 | 2,958 | 707 | 2,160 | 23,679 | 10.0 | 6.58 |
| 1983 | 3.73 | 3.6 | 3,474 | 3,598 | (124) | 2,494 | 26,049 | 10.4 | 6.22 |
| 1984 | 3.66 | 3.6 | 4,118 | 4,185 | (67) | 2,829 | 28,811 | 10.7 | 5.97 |
| 1985 | 4.31 | 3.6 | 4,032 | 4,826 | (794) | 3,113 | 31,130 | 10.8 | 5.66 |
| 1986 | 4.20 | 3.6 | 4,721 | 5,503 | (782) | 3,395 | 33,743 | 10.9 | 4.73 |
| 1987 | 5.02 | 3.8 | 5,393 | 7,130 | (1,737) | 3,654 | 35,660 | 10.9 | 4.31 |
| 1988 | 5.41 | 4.0 | 6,113 | 8,272 | (2,159) | 3,886 | 37,387 | 11.0 | 3.98 |
| 1989 | 5.89 | 4.2 | 6,694 | 9,391 | (2,697) | 4,162 | 38,852 | 11.3 | 3.72 |
| 1990 | 5.82 | 4.4 | 7,889 | 10,438 | (2,549) | 4,386 | 40,689 | 11.4 | 3.53 |
| 1991 | 6.31 | 4.6 | 8,396 | 11,518 | (3,122) | 4,476 | 42,043 | 11.2 | 3.22 |
| 1992 | 7.07 | 4.8 | 8,883 | 13,076 | (4,193) | 4,497 | 42,347 | 11.0 | 2.97 |
| 1993 | 7.79 | 5.0 | 9,166 | 14,273 | (5,107) | 4,480 | 41,720 | 10.9 | 2.72 |
| 1994 | 8.33 | 5.2 | 9,585 | 15,362 | (5,777) | 4,403 | 40,346 | 11.0 | 2.52 |
| 1995 | 7.91 | 5.4 | 10,911 | 15,986 | (5,075) | 4,412 | 39,683 | 11.3 | 2.37 |
| 1996 | 8.71 | 5.6 | 10,757 | 16,723 | (5,966) | 4,177 | 37,894 | 11.0 | 2.16 |
| 1997 | 8.67 | 6.0 | 12,165 | 17,570 | (5,405) | 3,971 | 36,460 | 10.8 | 1.99 |
| 1998 | 8.11 | 6.4 | 14,473 | 18,338 | (3,865) | 3,938 | 36,535 | 10.9 | 1.94 |
| 1999 | 8.23 | 7.0 | 16,052 | 18,877 | (2,825) | 764 | 42,783 | 1.7 | 2.17 |
| 2000 | 7.69 | 7.8 | 19,977 | 19,683 | 294 | 4,446 | 47,523 | 9.9 | 2.32 |
| 2001 | 7.85 | 8.6 | 22,469 | 20,515 | 1,954 | 3,154 | 52,631 | 6.2 | 2.43 |
| 2002 | 8.16 | 9.4 | 24,955 | 21,666 | 3,289 | 187 | 56,107 | 0.3 | 2.47 |
| 2003 | 8.19 | 9.9 | 27,454 | 22,716 | 4,738 | 6,769 | 67,614 | 11.1 | 2.84 |
| 2004 | 8.29 | 9.9 | 28,459 | 23,833 | 4,626 | 6,475 | 78,715 | 8.9 | 3.15 |
| 2005 | 8.37 | 9.9 | 29,539 | 24,976 | 4,563 | 11,083 | 94,361 | 13.2 | 3.60 |
| 2006 | 8.37 | 9.9 | 31,000 | 26,213 | 4,787 | 14,433 | 113,581 | 14.5 | 4.11 |

Source: Actuarial Report on the Canada Pension Plan, 23rd, as at 31 December 2006.

***Table A2.2.*** *Income, expenditures and assets of Canada's pension scheme (CPP), CAD million.*

| Year | PayGo Rate* (%) | Contri-bution Rate (%) | Contri-butions | Expen-ditures | Net Cash Flow | Invest-ment Earnings | Assets at 31 Dec.** | Yield/ Return** (%) | Asset/ Expendi-ture Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 1966 | 0.05 | 3.6 | 531 | 8 | 523 | 2 | 525 | 0.7 | 52.50 |
| 1967 | 0.06 | 3.6 | 623 | 10 | 613 | 37 | 1,175 | 4.3 | 48.96 |
| 1968 | 0.13 | 3.6 | 686 | 24 | 662 | 79 | 1,916 | 5.1 | 35.48 |
| 1969 | 0.26 | 3.6 | 737 | 54 | 683 | 128 | 2,727 | 5.6 | 28.11 |
| 1970 | 0.45 | 3.6 | 773 | 97 | 676 | 193 | 3,596 | 6.2 | 24.13 |
| 1971 | 0.66 | 3.6 | 816 | 149 | 667 | 260 | 4,523 | 6.5 | 21.33 |
| 1972 | 0.88 | 3.6 | 869 | 212 | 657 | 333 | 5,513 | 6.8 | 19.83 |
| 1973 | 1.07 | 3.6 | 939 | 278 | 661 | 404 | 6,578 | 6.8 | 16.78 |
| 1974 | 1.17 | 3.6 | 1,203 | 392 | 811 | 498 | 7,887 | 7.0 | 14.06 |
| 1975 | 1.42 | 3.6 | 1,426 | 561 | 865 | 607 | 9,359 | 7.2 | 11.47 |
| 1976 | 1.80 | 3.6 | 1,630 | 816 | 814 | 747 | 10,920 | 7.6 | 10.48 |
| 1977 | 2.05 | 3.6 | 1,828 | 1,042 | 786 | 890 | 12,596 | 7.8 | 9.72 |
| 1978 | 2.31 | 3.6 | 2,022 | 1,296 | 726 | 1,043 | 14,365 | 7.9 | 9.03 |
| 1979 | 2.47 | 3.6 | 2,317 | 1,590 | 727 | 1,236 | 16,328 | 8.3 | 8.31 |
| 1980 | 2.72 | 3.6 | 2,604 | 1,965 | 639 | 1,466 | 18,433 | 8.7 | 7.64 |
| 1981 | 2.89 | 3.6 | 3,008 | 2,413 | 595 | 1,784 | 20,812 | 9.4 | 7.04 |
| 1982 | 2.91 | 3.6 | 3,665 | 2,958 | 707 | 2,160 | 23,679 | 10.0 | 6.58 |
| 1983 | 3.73 | 3.6 | 3,474 | 3,598 | (124) | 2,494 | 26,049 | 10.4 | 6.22 |
| 1984 | 3.66 | 3.6 | 4,118 | 4,185 | (67) | 2,829 | 28,811 | 10.7 | 5.97 |
| 1985 | 4.31 | 3.6 | 4,032 | 4,826 | (794) | 3,113 | 31,130 | 10.8 | 5.66 |
| 1986 | 4.20 | 3.6 | 4,721 | 5,503 | (782) | 3,395 | 33,743 | 10.9 | 4.73 |
| 1987 | 5.02 | 3.8 | 5,393 | 7,130 | (1,737) | 3,654 | 35,660 | 10.9 | 4.31 |
| 1988 | 5.41 | 4.0 | 6,113 | 8,272 | (2,159) | 3,886 | 37,387 | 11.0 | 3.98 |
| 1989 | 5.89 | 4.2 | 6,694 | 9,391 | (2,697) | 4,162 | 38,852 | 11.3 | 3.72 |
| 1990 | 5.82 | 4.4 | 7,889 | 10,438 | (2,549) | 4,386 | 40,689 | 11.4 | 3.53 |
| 1991 | 6.31 | 4.6 | 8,396 | 11,518 | (3,122) | 4,476 | 42,043 | 11.2 | 3.22 |
| 1992 | 7.07 | 4.8 | 8,883 | 13,076 | (4,193) | 4,497 | 42,347 | 11.0 | 2.97 |
| 1993 | 7.79 | 5.0 | 9,166 | 14,273 | (5,107) | 4,480 | 41,720 | 10.9 | 2.72 |
| 1994 | 8.33 | 5.2 | 9,585 | 15,362 | (5,777) | 4,403 | 40,346 | 11.0 | 2.52 |
| 1995 | 7.91 | 5.4 | 10,911 | 15,986 | (5,075) | 4,412 | 39,683 | 11.3 | 2.37 |
| 1996 | 8.71 | 5.6 | 10,757 | 16,723 | (5,966) | 4,177 | 37,894 | 11.0 | 2.16 |
| 1997 | 8.67 | 6.0 | 12,165 | 17,570 | (5,405) | 3,971 | 36,460 | 10.8 | 1.99 |
| 1998 | 8.11 | 6.4 | 14,473 | 18,338 | (3,865) | 3,938 | 36,535 | 10.9 | 1.94 |
| 1999 | 8.23 | 7.0 | 16,052 | 18,877 | (2,825) | 764 | 42,783 | 1.7 | 2.17 |
| 2000 | 7.69 | 7.8 | 19,977 | 19,683 | 294 | 4,446 | 47,523 | 9.9 | 2.32 |
| 2001 | 7.85 | 8.6 | 22,469 | 20,515 | 1,954 | 3,154 | 52,631 | 6.2 | 2.43 |
| 2002 | 8.16 | 9.4 | 24,955 | 21,666 | 3,289 | 187 | 56,107 | 0.3 | 2.47 |
| 2003 | 8.19 | 9.9 | 27,454 | 22,716 | 4,738 | 6,769 | 67,614 | 11.1 | 2.84 |
| 2004 | 8.29 | 9.9 | 28,459 | 23,833 | 4,626 | 6,475 | 78,715 | 8.9 | 3.15 |
| 2005 | 8.37 | 9.9 | 29,539 | 24,976 | 4,563 | 11,083 | 94,361 | 13.2 | 3.60 |
| 2006 | 8.37 | 9.9 | 31,000 | 26,213 | 4,787 | 14,433 | 113,581 | 14.5 | 4.11 |

* The pay-as-you-go rates have been calculated using the historical contributory earnings while the contributions are based on an estimate made by the Department of Finance.
** Results for years 1966 to 1998 are on a cost basis, while results for years 1999 to 2006 are presented on a market value basis. If assets were shown at market value at the end of 1998, total assets would be $44,864 instead of $36,535 million.
Source: Actuarial Report on the Canada Pension Plan, 23rd, as at 31 December 2006.

***Table A2.3.*** *Pension expenditures per type of benefit in the Canadian pension scheme, CAD million.*

| Year | PayGo Rate (%) | Contri-bution Rate (%) | Contri-butory Earnings | Contri-butions | Expen-ditures | Net Cash Flow | Invest-ment Earnings | Assets at 31 Dec. | Yield (%) | Asset/ Expend-iture Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 2007 | 8.35 | 9.90 | 331,200 | 32,789 | 27,665 | 5,124 | 6,785 | 125,490 | 5.82 | 4.31 |
| 2008 | 8.48 | 9.90 | 343,669 | 34,023 | 29,149 | 4,874 | 7,344 | 137,707 | 5.72 | 4.47 |
| 2009 | 8.63 | 9.90 | 356,699 | 35,313 | 30,773 | 4,540 | 7,856 | 150,104 | 5.60 | 4.62 |
| 2010 | 8.78 | 9.90 | 370,305 | 36,660 | 32,504 | 4,156 | 8,351 | 162,611 | 5.47 | 4.74 |
| 2011 | 8.90 | 9.90 | 385,232 | 38,138 | 34,299 | 3,839 | 8,838 | 175,288 | 5.36 | 4.84 |
| 2012 | 9.04 | 9.90 | 400,338 | 39,633 | 36,195 | 3,438 | 9,953 | 188,680 | 5.61 | 4.93 |
| 2013 | 9.18 | 9.90 | 416,806 | 41,264 | 38,249 | 3,015 | 11,269 | 202,963 | 5.92 | 5.02 |
| 2014 | 9.29 | 9.90 | 434,853 | 43,050 | 40,414 | 2,636 | 12,746 | 218,345 | 6.23 | 5.11 |
| 2015 | 9.41 | 9.90 | 454,172 | 44,963 | 42,729 | 2,234 | 14,386 | 234,965 | 6.55 | 5.20 |
| 2016 | 9.52 | 9.90 | 474,661 | 46,991 | 45,202 | 1,789 | 16,360 | 253,115 | 6.93 | 5.29 |
| 2017 | 9.63 | 9.90 | 496,827 | 49,186 | 47,843 | 1,343 | 17,552 | 272,010 | 6.91 | 5.37 |
| 2018 | 9.75 | 9.90 | 519,263 | 51,407 | 50,643 | 764 | 18,774 | 291,549 | 6.89 | 5.44 |
| 2019 | 9.88 | 9.90 | 542,573 | 53,715 | 53,601 | 114 | 20,027 | 311,689 | 6.87 | 5.49 |
| 2020 | 10.01 | 9.90 | 566,677 | 56,101 | 56,731 | (630) | 21,300 | 332,360 | 6.84 | 5.54 |
| 2021 | 10.15 | 9.90 | 591,647 | 58,573 | 60,026 | (1,453) | 22,607 | 353,514 | 6.82 | 5.57 |
| 2022 | 10.28 | 9.90 | 617,378 | 61,120 | 63,468 | (2,348) | 23,928 | 375,095 | 6.80 | 5.59 |
| 2023 | 10.42 | 9.90 | 643,966 | 63,753 | 67,080 | (3,327) | 25,281 | 397,048 | 6.78 | 5.60 |
| 2024 | 10.55 | 9.90 | 671,707 | 66,499 | 70,852 | (4,353) | 26,651 | 419,346 | 6.76 | 5.61 |
| 2025 | 10.67 | 9.90 | 700,665 | 69,366 | 74,756 | (5,390) | 28,031 | 441,987 | 6.74 | 5.61 |
| 2026 | 10.77 | 9.90 | 731,095 | 72,378 | 78,763 | (6,385) | 29,447 | 465,049 | 6.72 | 5.61 |
| 2027 | 10.85 | 9.90 | 763,246 | 75,561 | 82,848 | (7,287) | 30,968 | 488,731 | 6.72 | 5.62 |
| 2028 | 10.92 | 9.90 | 796,795 | 78,883 | 87,029 | (8,146) | 32,524 | 513,108 | 6.72 | 5.62 |
| 2029 | 10.97 | 9.90 | 832,253 | 82,393 | 91,339 | (8,946) | 34,128 | 538,290 | 6.72 | 5.62 |
| 2030 | 11.02 | 9.90 | 869,269 | 86,058 | 95,767 | (9,709) | 35,789 | 564,370 | 6.72 | 5.63 |
| 2031 | 11.06 | 9.90 | 906,667 | 89,760 | 100,308 | (10,548) | 37,507 | 591,328 | 6.72 | 5.63 |
| 2032 | 11.08 | 9.90 | 946,759 | 93,729 | 104,942 | (11,213) | 39,292 | 619,407 | 6.72 | 5.65 |
| 2033 | 11.09 | 9.90 | 988,698 | 97,881 | 109,682 | (11,801) | 41,138 | 648,744 | 6.72 | 5.66 |
| 2034 | 11.10 | 9.90 | 1,032,270 | 102,195 | 114,562 | (12,367) | 43,092 | 679,469 | 6.72 | 5.68 |
| 2035 | 11.10 | 9.90 | 1,077,823 | 106,704 | 119,607 | (12,903) | 45,143 | 711,709 | 6.72 | 5.70 |
| 2036 | 11.09 | 9.90 | 1,125,460 | 111,421 | 124,840 | (13,419) | 47,296 | 745,586 | 6.72 | 5.72 |
| 2037 | 11.09 | 9.90 | 1,174,978 | 116,323 | 130,261 | (13,938) | 49,559 | 781,207 | 6.72 | 5.75 |
| 2038 | 11.08 | 9.90 | 1,226,723 | 121,446 | 135,870 | (14,424) | 51,935 | 818,718 | 6.72 | 5.78 |
| 2039 | 11.07 | 9.90 | 1,280,560 | 126,775 | 141,707 | (14,932) | 54,439 | 858,226 | 6.72 | 5.81 |
| 2040 | 11.06 | 9.90 | 1,336,186 | 132,282 | 147,807 | (15,525) | 57,071 | 899,772 | 6.72 | 5.83 |
| 2045 | 11.13 | 9.90 | 1,645,065 | 162,861 | 183,065 | (20,204) | 72,251 | 1,138,870 | 6.72 | 5.96 |
| 2050 | 11.29 | 9.90 | 2,014,667 | 199,452 | 227,357 | (27,905) | 90,885 | 1,431,573 | 6.72 | 6.03 |
| 2055 | 11.43 | 9.90 | 2,463,571 | 243,894 | 281,686 | (37,792) | 113,256 | 1,782,723 | 6.72 | 6.07 |
| 2060 | 11.49 | 9.90 | 3,021,575 | 299,136 | 347,272 | (48,136) | 140,276 | 2,207,491 | 6.72 | 6.10 |
| 2065 | 11.43 | 9.90 | 3,723,098 | 368,587 | 425,502 | (56,915) | 174,003 | 2,739,396 | 6.72 | 6.18 |
| 2070 | 11.36 | 9.90 | 4,588,166 | 454,228 | 521,373 | (67,145) | 217,219 | 3,421,353 | 6.72 | 6.30 |
| 2075 | 11.40 | 9.90 | 5,633,966 | 557,763 | 642,185 | (84,422) | 271,914 | 4,282,683 | 6.72 | 6.39 |
| 2080 | 11.50 | 9.90 | 6,896,361 | 682,740 | 793,321 | (110,581) | 339,313 | 5,342,094 | 6.72 | 6.45 |

Source: Actuarial Report on the Canada Pension Plan, 23rd, as at 31 December 2006.

***Table A2.4.*** *Prediction of pension expenditures per type of profit in relation to contribution income.*

| Year | Retirement | Disability | Survivor | Children | Death | Administrative Expenses | Total |
|---|---|---|---|---|---|---|---|
| 2007 | 19,460 | 3,213 | 3,636 | 493 | 269 | 594 | 27,665 |
| 2008 | 20,682 | 3,332 | 3,738 | 504 | 280 | 614 | 29,149 |
| 2009 | 22,028 | 3,470 | 3,832 | 517 | 290 | 636 | 30,773 |
| 2010 | 23,449 | 3,629 | 3,934 | 532 | 301 | 659 | 32,504 |
| 2011 | 24,927 | 3,794 | 4,035 | 548 | 311 | 684 | 34,299 |
| 2012 | 26,530 | 3,943 | 4,128 | 562 | 322 | 710 | 36,195 |
| 2013 | 28,266 | 4,110 | 4,227 | 576 | 334 | 737 | 38,249 |
| 2014 | 30,087 | 4,292 | 4,332 | 590 | 345 | 767 | 40,414 |
| 2015 | 32,036 | 4,486 | 4,444 | 607 | 356 | 799 | 42,729 |
| 2016 | 34,126 | 4,686 | 4,564 | 625 | 368 | 834 | 45,202 |
| 2017 | 36,368 | 4,891 | 4,691 | 644 | 379 | 869 | 47,843 |
| 2018 | 38,760 | 5,098 | 4,824 | 665 | 392 | 905 | 50,643 |
| 2019 | 41,303 | 5,301 | 4,963 | 687 | 405 | 942 | 53,601 |
| 2020 | 44,012 | 5,501 | 5,109 | 711 | 417 | 981 | 56,731 |
| 2021 | 46,874 | 5,703 | 5,264 | 735 | 429 | 1,021 | 60,026 |
| 2022 | 49,877 | 5,899 | 5,428 | 761 | 441 | 1,062 | 63,468 |
| 2023 | 53,030 | 6,097 | 5,605 | 788 | 455 | 1,105 | 67,08 |
| 2024 | 56,322 | 6,300 | 5,795 | 817 | 468 | 1,149 | 70,852 |
| 2025 | 59,731 | 6,497 | 6,002 | 848 | 482 | 1,196 | 74,756 |
| 2026 | 63,229 | 6,690 | 6,224 | 879 | 497 | 1,245 | 78,763 |
| 2027 | 66,780 | 6,886 | 6,465 | 910 | 511 | 1,296 | 82,848 |
| 2028 | 70,404 | 7,082 | 6,726 | 940 | 527 | 1,350 | 87,029 |
| 2029 | 74,110 | 7,297 | 7,009 | 973 | 544 | 1,406 | 91,339 |
| 2030 | 77,876 | 7,542 | 7,316 | 1,006 | 561 | 1,466 | 95,767 |
| 2031 | 81,695 | 7,826 | 7,644 | 1,040 | 576 | 1,526 | 100,308 |
| 2032 | 85,55 | 8,140 | 7,996 | 1,074 | 592 | 1,59 | 104,942 |
| 2033 | 89,465 | 8,473 | 8,371 | 1,107 | 608 | 1,658 | 109,682 |
| 2034 | 93,473 | 8,825 | 8,772 | 1,141 | 624 | 1,727 | 114,562 |
| 2035 | 97,600 | 9,194 | 9,197 | 1,175 | 640 | 1,800 | 119,607 |
| 2036 | 101,876 | 9,576 | 9,647 | 1,209 | 656 | 1,876 | 124,84 |
| 2037 | 106,283 | 9,991 | 10,118 | 1,242 | 672 | 1,955 | 130,261 |
| 2038 | 110,828 | 10,431 | 10,610 | 1,276 | 687 | 2,038 | 135,87 |
| 2039 | 115,545 | 10,902 | 11,123 | 1,310 | 702 | 2,124 | 141,707 |
| 2040 | 120,491 | 11,386 | 11,656 | 1,345 | 716 | 2,213 | 147,807 |
| 2045 | 149,484 | 14,003 | 14,577 | 1,516 | 777 | 2,708 | 183,065 |
| 2050 | 187,004 | 16,692 | 17,844 | 1,706 | 816 | 3,295 | 227,357 |
| 2055 | 233,787 | 19,688 | 21,426 | 1,942 | 833 | 4,009 | 281,686 |
| 2060 | 290,578 | 23,198 | 25,525 | 2,236 | 839 | 4,896 | 347,272 |
| 2065 | 357,649 | 27,867 | 30,547 | 2,583 | 848 | 6,008 | 425,502 |
| 2070 | 439,017 | 34,210 | 36,932 | 2,960 | 868 | 7,387 | 521,373 |
| 2075 | 542,254 | 41,723 | 44,897 | 3,364 | 893 | 9,054 | 642,185 |
| 2080 | 673,038 | 50,086 | 54,413 | 3,812 | 910 | 11,062 | 793,321 |

Source: Actuarial Report on the Canada Pension Plan, 23rd, as at 31 December 2006.

***Table A2.5.*** *Income, expenditures and assets of the Quebec pension scheme (in millions of current dollars).*

| | Cash inflows | | | Cash outflows | | | Reserve | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Contributions ($) | Investment income ($) | Total ($) | Benefits ($) | Administration fees ($) | Total ($) | In dollars and in propotion to cash outflows of the following year ($) | | Pay-as-you-go contribution rate (%) |
| 2007 | 9,278 | 2,185 | 11,463 | 8,737 | 103 | 8,840 | 35,132 | 3.8 | 9.4 |
| 2008 | 9,620 | 2,392 | 12,012 | 9,183 | 105 | 9,288 | 37,856 | 3.9 | 9.6 |
| 2009 | 9,978 | 2,611 | 12,589 | 9,679 | 108 | 9,787 | 40,658 | 3.9 | 9.7 |
| 2010 | 10,360 | 2,799 | 13,158 | 10,214 | 111 | 10,325 | 43,492 | 4 | 9.8 |
| 2011 | 10,762 | 2,989 | 13,751 | 10,756 | 114 | 10,870 | 46,373 | 4 | 10 |
| 2012 | 11,192 | 3,229 | 14,421 | 11,338 | 118 | 11,457 | 49,338 | 4.1 | 10.1 |
| 2013 | 11,641 | 3,479 | 15,120 | 11,966 | 122 | 12,088 | 52,370 | 4.1 | 10.3 |
| 2014 | 12,118 | 3,739 | 15,858 | 12,648 | 126 | 12,774 | 55,453 | 4.1 | 10.4 |
| 2015 | 12,634 | 4,009 | 16,643 | 13,371 | 130 | 13,502 | 58,595 | 4.1 | 10.6 |
| 2016 | 13,140 | 4,267 | 17,406 | 14,156 | 135 | 14,290 | 61,711 | 4.1 | 10.8 |
| 2017 | 13,662 | 4,465 | 18,126 | 14,980 | 139 | 15,120 | 64,717 | 4 | 10.9 |
| 2018 | 14,202 | 4,652 | 18,853 | 15,849 | 144 | 15,992 | 67,578 | 4 | 11.1 |
| 2020 | 15,319 | 4,986 | 20,305 | 17,671 | 152 | 17,823 | 72,753 | 3.9 | 11.5 |
| 2025 | 18,402 | 5,649 | 24,051 | 22,637 | 173 | 22,810 | 81,571 | 3.4 | 12.3 |
| 2030 | 22,063 | 5,864 | 27,928 | 27,746 | 195 | 27,941 | 83,971 | 2.9 | 12.5 |
| 2035 | 26,639 | 5,668 | 32,307 | 33,327 | 226 | 33,553 | 80,483 | 2.3 | 12.4 |
| 2040 | 32,143 | 4,875 | 37,018 | 40,400 | 264 | 40,664 | 67,812 | 1.6 | 12.5 |
| 2045 | 38,482 | 2,929 | 41,411 | 48,990 | 298 | 49,289 | 37,632 | 0.7 | 12.7 |
| 2050 | 45,887 | * | * | 58,853 | 343 | 59,196 | * | * | 12.8 |
| 2055 | 54,714 | * | * | 70,733 | 389 | 71,122 | * | * | 12.9 |
| 2060 | 65,430 | * | * | 84,356 | 440 | 84,796 | * | * | 12.8 |

Source: Toward a Stronger and Fairer Québec Pension Plan. Working Paper. Régie des rentes du Québec. 2008.

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