

Public Pension Plans and Inflation: Assumptions Used at the State and Local Level in the United States and Other Selected Jurisdictions

In the wake of the 2007 to 2009 global economic downturn, public pension plans, how they are managed, their funding levels, their annual costs, and the assumptions they use, among other related topics, have received increased attention. While there are many challenges pension boards, administrators, actuaries (and other technical professionals), and elected and appointed officials must address regarding these plans, decisions on assumptions certainly have major impacts on the overall fiscal health of public pensions. Should assumptions be off, plans can appear more well- or less- funded than they really are with sponsoring governments and their employees possibly contributing too much or too little to the plans.

Key economic assumptions made by pension fund actuaries include estimating future investment returns (linked to discount rates)ⁱⁱ, employee compensation growth, cost-of-living adjustments, and assumptions about future inflation ratesⁱⁱⁱ, among others. The assumptions used to generate the “ideal” discount rate certainly have been the focus of many academic studies, think tank and association reports, and financial media outlets, but will not be the focus of this article. Instead, this article is a descriptive piece that aims to focus on the inflation assumptions used by public plans in the United States and in other illustrative jurisdictions selected from a range of countries and territories in the developed world. The accuracy of the inflation assumptions used can

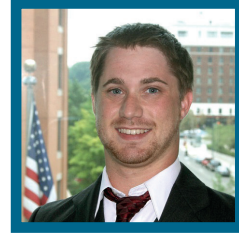
have a considerable impact on the underlying fiscal soundness and management of a retirement plan. More specifically, this article will highlight the inflation assumptions used by a selection of public pension plans, describe the past inflationary environment experienced by their sponsoring governments, and briefly cover the global inflationary outlook faced today.

Highlighting the importance of “anticipated inflation”^{iv}, Watson Wyatt Worldwide (now Towers Watson) offered in their 2009 Global Survey of Accounting Assumptions for Defined Benefit Plans (pg 4): “...it is common to determine an underlying long-term estimate of the level of price inflation, or Consumer Price Index (CPI), which then forms the basis for the assessment of the other economic assumptions (in particular, those assumptions that may be

directly linked to inflation, such as salary, social security, and pension increases)”^v.

STATE AND LOCAL PUBLIC PLANS IN THE US

Most state and local government (full time) employees in the US have access to and participate in a defined benefit pension plan^{vi}. Between 2001 and 2009, according to the Public Plans Database (PPD), these US state and local government pension plans used an average^{vii} inflation assumption of between 3.45% (2008) and 3.85% (2001)^{viii}. This was at a time when the World Bank World Development Indicators (WDI)^{ix} US Inflation Rate generally ranged from 1.60% (2002) and 3.80% (2008); in 2009 US inflation was -0.40%. The maximum assumptions used during the 2001-2009 time period averaged 5.42% and the minimum assump-



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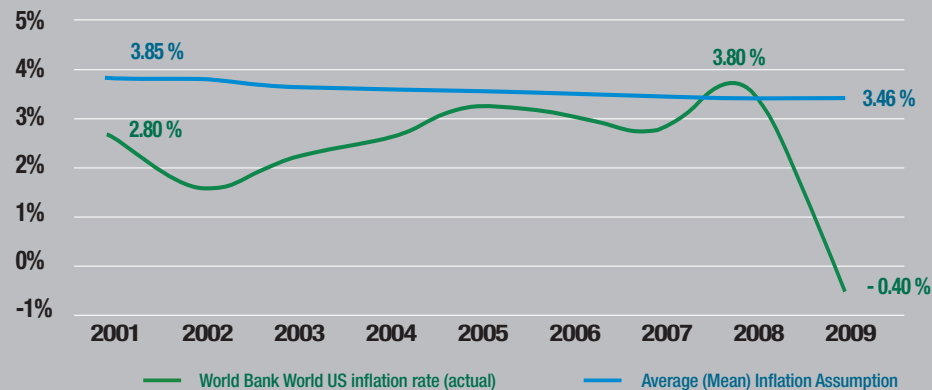


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1- THE REAL AND ASSUMED INFLATION ENVIRONMENT IN THE US: 2001-2009



Data source(s): World Bank World Development Indicators and Public Plans Database

tion used averaged 1.25%. Also, for the nine years analyzed, the largest plans (top 10% in assets) used inflation assumptions 0.33 to 0.57 percentage points lower than the smallest plans (bottom 10% in assets). See Figure 1. As can

be noted in this figure, over these years, average inflation assumptions used by state and local plans in US ranged from actual inflation by a difference of between 2.24 percentage points (2002; assumptions > actual) and 0.16 percentage points (2005; assumptions > actual), with an average difference during this time period of 1.13 percentage points (assumptions > actual). For a list of the public plans reflected in Figure 1 please see the PPD.

Examples of plans that have used assumptions on the upper end of the sample include: the Arizona Public Safety Personnel Retirement System (5% to 5.5% for all of the years analyzed); Duluth Teachers Retirement Fund (4.5% to 5% for all of the years analyzed); and the Alabama Employees' Retirement System (4.5% for all of the years analyzed). Examples of plans that have used assumptions on the lower end of the sample include: State Universities Retirement System of Illinois (1.25% to 1.5% for all of the years analyzed); New York

City Employees Retirement System (2.5% for all of the years analyzed); and California Public Employees' Retirement System (3% to 3.5% for all of the years analyzed).

PUBLIC PLANS FROM OTHER SELECTED JURISDICTIONS

The following observations summarize the preliminary results of a multidisciplinary research project on "Public Pension Plans and Inflation" conducted jointly by the authors of this article. The conclusions of a comprehensive study developing cross-country comparisons within a broader geographic framework will be published at a later date.

The Ontario Pension Board administers the Public Service Pension Plan for public employees of the provincial government. In the past ten years, according to the Board's Annual Reports, OPB's inflation assumption has remained mostly steady at 3% in 2002 and then dropping to 2.5% from 2003-2011^x. According to the World Bank

WDI for Canada over the same time period the lowest reported rate of inflation in the country was 0.3% in 2009 while the highest was 2.9% in 2011^{xi}. Average inflation in Canada between 2002-2011 was 2.07%, about half a percentage point below the OPB's average assumed rate of 2.54% over the same time period.

Public service pensions in the Republic of Ireland are administered by the National Pensions Reserve Fund which was established in 2001. The fund is managed by the National Pensions Reserve Fund Commission, whose duties, among others, are to determine and implement the fund's investment policy. Since NPRF was established in 2001 it has built in an annual inflation assumption benchmark of 2.1%, according to its 2011 Annual Report and Financial Statements^{xii}. Between 2001 and 2011 the World Bank WDI reports that inflation in Ireland ranged from a low of -4.5% in 2009 to a high of 4.9% in 2007^{xiii}. Average inflation in the Republic for this time period was 2.29%, or about a fifth of a percentage point above the rate assumed by NPRF.

In Australia, the two largest state funds are for employees in the states of New South Wales, who are covered by the State Super fund

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- i) Actuarial Standards Board, "Selection of Economic Assumptions for Measuring Pension Obligations," September 2007, http://www.actuarialstandardsboard.org/pdf/asops/asop027_109.pdf, pg 3.
- ii) Discount Rate: "...is used to determine the present value of expected future plan payments. Generally, the appropriate discount rate is the same as the investment return assumption." [pg 5] Actuarial Standards Board (2007), op. cit.
- iii) Inflation: "General economic inflation, defined as price changes over the whole of the economy" [pg 2]

FONDS DE PENSION PUBLICS ET HYPOTHÈSES D'INFLATION

Cet article résume les premières conclusions d'un projet de recherche euro-américain (NASRA, WPC et SLGE¹) portant sur les hypothèses d'inflation des grands fonds de pension publics. Il souligne les différences entre ces hypothèses et l'inflation réelle observée au cours des dix dernières années. L'étude complète sera publiée ultérieurement.

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(1) NASRA : National Association for State Retirement Administrators. www.nasra.org
WPC : World Pensions Council. www.worldpensions.org
SLGE : The Center for State & Local Government Excellence. <http://slge.org>

FIGURE 2 - A SAMPLE OF LONGER-TERM INFLATION FORECASTS

| Source | Years | Forecast |
|--|------------------------------------|---------------------------|
| Bank of Canada: Rates & Statistics; Indicators; Indicators of Capacity and Inflation Pressures for Canada (website) ^{xviii} | 2-3 years and 6-10 years from 2013 | 2% |
| Bank of England: Inflation Report (May 2013) ^{ix} | After 2015 | 2% |
| European Central Bank: Statistics; Prices, output, demand and labour; Survey indicators ; ECB survey of professional forecasters SPF; Inflation forecasts (website) ^x | Five years ahead from 2013 | 2% |
| International Monetary Fund: World Economic Outlook (April 2013) ^{xi} | 2018 | 2.1% (advanced economies) |
| Reserve Bank of Australia: Statement of Monetary Policy (May 2013) ^{xii} | Mid-2015 | 2-3% |
| Federal Reserve: Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents (June 2013) ^{xiii} | After 2015 (Long Run) | 2% |

► and Victoria, under the ESSSuper fund. Collectively the populations of New South Wales and Victoria make up approximately 57% of the total country population^{xiv}.

For the past ten years, according to State Super Annual Reports, the annual inflation assumption for the State Super fund has been 2.5%^{xv}. The inflation assumption used by the ESSSuper fund between 2004 and 2012 averaged 2.6%, with the assumption used for all but one of these years being 2.5% and an assumption of 3.0% being used in 2008, as noted in ESSSuper Annual Reports^{xvi}. Between 2001-2011 the World Bank WDI reports that actual inflation in Australia ranged from a low of 1.8% in 2009 and a high of 4.4% in 2008. The average for the time period was 2.9%, 0.4 percentage points higher than the assumed rate used by the State Super fund and 0.3 percentage points higher than the rate used by the ESSSuper fund.

For public sector retirements schemes in France ("caisses de retraite de la fonction publique" a generic denomination encompassing a variety of schemes), according to research conducted by the WPC^{xvii}, inflation assumptions for the period

considered (2002-2011) ranged from a low of 0.9% on average in 2010 to a high of 2.1% on average in 2011 with an overall average of 1.6% for the period. During this time, World Bank WDI figures show actual (CPI) inflation ranging from a low of 0.1% in 2009 and a high of 2.8% in 2008 with an average of 1.8% between 2002 and 2011; the difference between real and assumed inflation has been generally smaller than 0.2 percentage points on average for the period considered and routinely corrected by the statutory "rattrapage" annuity adjustment mechanism. That catch-up mechanism worked generally well for the period considered except for 2008, an exceptional year on two counts: unexpectedly high inflation and changes in pension regulation.

LOOKING FORWARD: THE GLOBAL INFLATION OUTLOOK

As discussed previously, the inflation rates realized affect many components of pension plans both directly and indirectly. With the assumptions used and actual inflation experienced over the past decade noted, it is important

to look at where inflation may be headed in the longer-term. Several central banks and the IMF project longer-term inflation to be approximately 2% in their forecasts, as seen in Figure 2. Going forward, it will be important to see how close these forecasts match actual inflation and, relatedly, how close actual inflation aligns with the assumptions used by pension plans in developed nations. Also, more particularly, for developed countries experiencing increased inflationary pressures for the first time in decades, such as the United Kingdom over the past three years, it will be important to study the adverse impacts on the purchasing power of salaries and pension benefits and how public retirement schemes can adjust to such circumstances. ■

^{viii} These data may include consumer price indexes, the implicit price deflator, forecasts of inflation, and yields on government securities of various maturities. [pg 4] Actuarial Standards Board [2007], op. cit.

^{ix} Arthur, T. G., and P. A. Randall, "Actuaries, pension funds and investment," *Journal of the Institute of Actuaries* 117, no. 01 (1990), p. 6.

^x Watson Wyatt Worldwide, "2009 Global Survey of Accounting Assumptions for Defined Benefit Plans," 2009, <http://www.watsonwyatt.com/research/pdfs/WT-2009-13160.pdf>, pg 4.

^{xi} U.S. Bureau of Labor Statistics, "Table 2. Retirement benefits: Access, participation, and take-up rates, State and local government workers, National Compensation Survey, March 2012," 2012, <http://www.bls.gov/nsc/ebs/benefits/2012/ownership/govt/table02a.pdf>

^{xii} This article uses mean averages.

^{xiii} Center for Retirement Research at Boston College and Center for State and Local Government Excellence, *Public Pension Database*, <http://slge.org/research/public-plans-database>, 2013. The Public Pension Database, among other things, tracks the underlying financial data of about 85% of all US state and local government public plan assets and members.

^{xiv} World Bank, *World Development Indicators - Inflation, consumer prices (annual %)*, 2013, <http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG>

^{xv} Ontario Pension Board, *Annual Reports, 2003-2011*, http://www.opb.ca/portal/opb.portal?_pageLabel=AboutOPB&_nfpb=true&path=/OPBPublicRepository/OPB/Public/AboutOPB/AnnualReports/en/Annual%20Reports

^{xvi} World Bank (2013), op. cit.

^{xvii} National Pensions Reserve Fund Commission, *Annual Report and Financial Statements, 2011*, <http://www.nprf.ie/Publications/2012/NPRFReport2011.pdf>, pg. 7.

^{xviii} World Bank (2013), op. cit.

^{xix} Australian Bureau of Statistics, "Population by Age and Sex, Regions of Australia," 2011, 2012, <http://www.abs.gov.au/ausstats/abs@.nsf/Products/3235.0-2011-Main+Features-Main+Features#PARALINK0>

^{xx} State Super, *Annual Reports, 2002-2012*, <http://www.statessuper.nsw.gov.au/>

^{xxi} ESSSuper, *Annual Reports, 2004-2012*, <http://www.esssuper.com.au/>

^{xxii} World Pensions Council (WPC) has developed the estimated averages using a variety of sources: public retirement schemes, civil service labor unions and government communications.

^{xxiii} Bank of Canada, "Indicators of Capacity and Inflation Pressures for Canada," 2013, <http://www.bankofcanada.ca/rates/indicators/capacity-and-inflation-pressures/>

^{xxiv} Bank of England, "Inflation Report," 2013, <http://www.bankofengland.co.uk/publications/Documents/inflationreport/2013/ir13may.pdf>

^{xxv} European Central Bank, "Inflation forecasts," 2013, http://www.ecb.int/stats/prices/indic/forecast/html/table_hist_hicp.en.html

^{xxvi} International Monetary Fund, "World Economic Outlook," 2013, <http://www.imf.org/external/pubs/ft/weo/2013/01/pdf/text.pdf>

^{xxvii} Reserve Bank of Australia, "Statement of Monetary Policy," 2013, <http://www.rba.gov.au/publications/smp/2013/may/pdf/eco-outlook.pdf>

^{xxviii} Federal Reserve, "Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, June 2013," 2013, <http://www.federalreserve.gov/monetarypolicy/files/fomcprojtab20130619.pdf>