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## FAS 87 Assumptions

### INTRODUCTION

This article presents a brief summary of Watson Wyatt's Survey of FAS 87 Assumptions for non-US defined benefit plans as of December 31, 1996 and also includes some historical comparisons for selected countries. This is the eighth annual survey of assumptions used by major US (and a few non-US) corporations for their defined benefit plans outside of the US.

Survey responses were received from over 130 companies that had adopted FAS 87 for their foreign plans and the following 20 countries were covered:

Australia	Germany	Mexico	South Africa*
Austria	Hong Kong	Netherlands	Spain
Belgium	Ireland*	New Zealand*	Switzerland
Canada	Italy*	Philippines*	Taiwan
France	Japan	Portugal	United Kingdom

\*New to this year's survey

The above includes the major foreign countries where companies have defined benefit plans and also covers usage of a fairly wide spectrum of different local funding and actuarial approaches. In addition, the results from the US survey have been included for reference.

### MEASUREMENT DATES

The majority of the reported measurement dates are December 31, 1996 or within a few months of this date.

### BACKGROUND ECONOMIC DATA

#### *Europe*

The European recovery in the 1990s has been hampered by consistently high unemployment rates. In 1996, however, growth in the core European economies started to pick up strongly and there was gradual improvement across the EU as a whole. Generally this expansion is being achieved without significant inflationary pressures, and there is evidence that the high levels of unemployment will result in continued capacity for growth without inflation. Interest rates, while rising slightly, remain at relatively low levels.

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In Germany, interest rates remained stable during 1996. At the end of the year, yields on government long-term bonds (with maturity dates over 10 years) were running at 6.8%, effectively unchanged from the previous year. The same picture prevails for shorter dated bonds, where yields at the end of 1996 were 5.8%, compared with 6.0% a year earlier. Inflation in 1996 eased further to 1.5% and is expected to remain at a similar level for 1997, although in the medium term cyclical pressures are likely to cause inflation to pick up gradually.

Unemployment in France is a major problem rising to 12.7% at the end of 1996 and does not show any signs of falling in the near future. This has caused considerable strains on the French economy generally and on the social welfare system in particular. It remains to be seen how the newly elected socialist government will address the economy's structural problems. Inflation, however, has been contained and is stable at about 1.8%. Long-term interest rates at the end of 1996 were 5.85%.

The UK economy continued to grow in 1996, with a corresponding fall in unemployment, and with concerns over capacity constraints leading to action to head off the threat of inflation. Sterling appreciated strongly in value against the major trading partners over the course of the year. Long bond yields on government stock in 1996 closed at 7.6%. Interest rates fell over the first half of the year, but had begun to rise by the year end when base rates stood at 6.0%; in the first half of 1997, there were further increases to 6.5%. Inflation fell during 1996 to a low point of 2.1% in September, before creeping back up to 2.5% at the year-end, since when there has been little change.

### *Asia/Pacific*

The Hong Kong market in 1996 exceeded its 1995 comeback, posting a 35% return for the year (FTA- Hong Kong Index). This reflects the positive investor sentiment towards the 1997 handover of sovereignty.

Following the slump in 1995 real estate prices, the property sector rebounded strongly in 1996. This sparked a rise in bank mortgages, which boosted the financial sector. Investors who avoided the utilities did especially well. Consumer price inflation dropped 3% to 6.6%, its lowest level in ten years.

Japanese equities lost further ground in 1996 as Japan continued to be forced to manage its struggling economy and the dollar continued its assault on the Yen. After the economy enjoyed a brief period of growth in the first quarter of 1996, the Japanese market ended the year down 16% in US dollar terms. The slowdown was caused by the further contraction in corporate sector cash flow, which added to the deteriorating structural problems. Bond yields have plummeted in anticipation of falling interest rates, which have further weakened the Yen. However, this could provide some economic stimulus for at least the export side of the economy in 1997.

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The smaller Asian markets had a very mixed year. Despite leading indicators predicting a boom in Korea in 1996, Korean companies suffered the effects of an increasingly difficult export environment. Blue chip stocks took a beating, and negative investor sentiment filled the market.

Thailand struggled with its uncertain developments in government and weaknesses in the financial sector. The Thai stock market ended the year down 40%. The region's success story was found in Malaysia, which rallied in the first and fourth quarters of 1996, ending the year up 26% in US dollar terms. The foreign exchange markets received assistance from the Malaysian central bank during the fourth quarter, as the Ringgit increased in strength.

### *Latin America*

Mexico's economy experienced a 5% GDP growth during FY 96 along with a 23% peso appreciate in real terms. Recent forecasts have estimated that GDP will grow at least 6% during FY 97. After 3 years of very low returns (below inflation) the Mexican stock market was up over 40% during the first semester of 1997. Such increment is mainly the result of a 6.5 billion foreign investment. Finally, it is important to mention that during half of FY 97 salaries are expected to have an average growth of 6% to 7% above inflation to partially compensate the loss of purchasing power experienced during FY 95.

### *USA and Canada*

In the U.S., equity markets had another outstanding year with large-capitalization stocks once again leading the way. The DJIA neared 6500 at year-end, reflecting a 29.1% increase (including dividend income) from the end of 1995. The S&P 500 and Russell 1000 returned 23.1% and 22.5%, respectively. When taken with the 35% returns for 1995, the equity markets are up over 50% for the past two years. Clearly, performance of this level has not been seen since the mid-1950s. Growth stocks outpaced value for the year as the Russell 1000 Growth Index returned 23.1% versus the 21.6% return for the Russell 1000 Value. Capital Goods, Consumer Staples, Financial Services, and Technology were the top performing industries.

The Russell 2000 small capitalization index ended the year up 16.5%, or over 5% behind the large stock indices. Small value outperformed small growth as the Russell 2000 Value Index returned 21.4% versus an 11.3% return for the Russell 2000 Growth. Energy, Capital Goods, and Financial Services paced the small sector of the market.

Canadian stocks as represented by the TSE 300 delivered a 28.4% return. The TSE Consumer Products Stock Index returned 19.6% while the TSE Real Estate Stock Index gained 41.7%. The Canadian bond market had another good year posting returns of 13.3% for long bonds (SM long-term), 12.5% for intermediate bonds (SM mid-term) and 10.7% for short bonds (SM short-term).

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In the US bond Market, Treasury yields rose by approximately 70 basis points across the curve. As a result, the shorter duration mortgage and asset-backed sectors were the best performers of the year posting returns of 5.4% and 5.1%, respectively. The long end of the US Treasury market fared relatively poorly with the 30-year issue losing 3.5%. Overall, small capital losses partially offset yields providing a 3.6% return for the broad market as represented by the Lehman Brothers Aggregate Index over the year.

The following table gives useful information on bond yields and CPI in the 20 countries included in the survey:

	BOND YIELDS					
	Government		Corporate		CPI	
	12/31/95	12/31/96	12/31/95	12/31/96	12/31/95	12/31/96
	%	%	%	%	%	%
Australia	8.12	7.36	8.25	7.68	5.10	1.50
Austria	5.74	5.44	-	-	1.80	2.30
Belgium	6.64	5.91	7.25	6.32	1.50	2.50
Canada	7.10	6.40	8.30	7.35	1.70	2.20
France	6.51	5.76	6.81	5.80	2.10	1.70
Germany	5.88	5.69	5.24	5.60	1.80	1.40
Hong Kong	5.77	5.59	-	-	6.60	6.70
Ireland	-	6.80	-	7.55	-	1.90
Italy	-	7.48	-	6.41	-	2.60
Japan	3.06	2.75	2.76	2.51	-0.30	0.60
Mexico	44.70	27.37	-	-	52.00	27.70
Netherlands	6.32	5.70	6.47	6.09	1.90	2.50
New Zealand	-	7.14	-	8.12	-	2.55
Philippines	-	10.25	-	-	-	5.10
Portugal	8.93	5.40	8.90	6.10	3.40	3.30
South Africa	-	16.86	-	-	-	9.40
Spain	9.35	6.69	9.91	7.14	4.3	3.20
Switzerland	3.79	3.72	4.10	3.85	1.90	0.80
Taiwan	6.50	5.65	-	-	4.60	2.50
UK	7.45	7.51	8.37	8.23	3.20	2.50
15 years	7.79	7.65	-	-	-	-
UK	5.59	6.41	6.86	7.36	2.50	3.30
30 years	5.97	6.65	-	-	-	-

Sources:

Bond Yields: Hong Kong, Philippines, Taiwan, Mexico, Portugal (Government) and South Africa – Economist – *Emerging-Market Indicators – Short-Term Interest Rates* ■ Ireland, New Zealand and Portugal (Corporate) – Local Watson Wyatt Office ■ All others – Economist – *Financial Indicators*

CPI: Hong Kong, Philippines, Taiwan, Mexico and South Africa – Economist – *Emerging Market Indicators* ■ Ireland and New Zealand – Local Watson Wyatt Office ■ All others – Economist – *Financial Indicators*

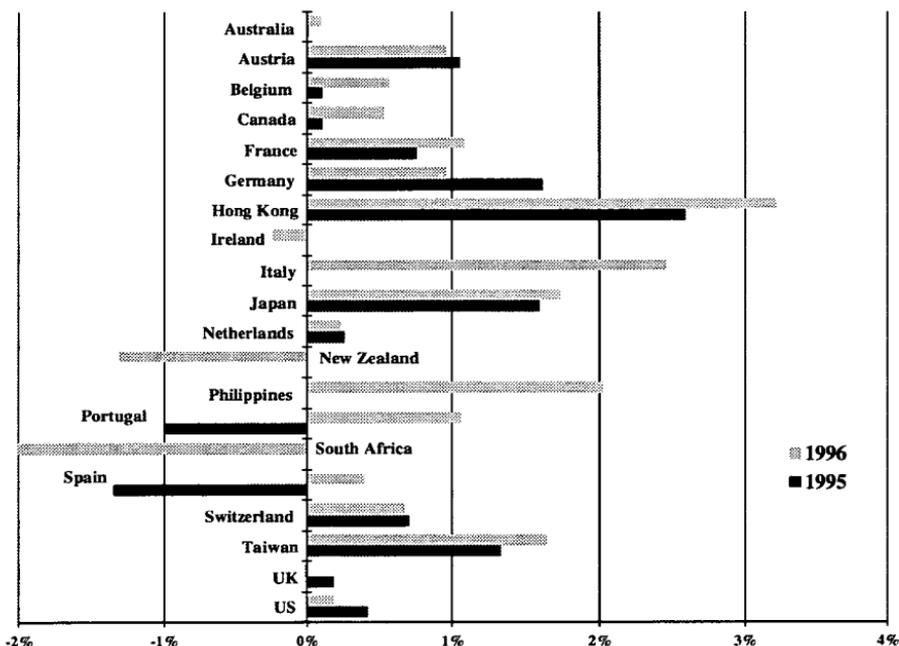
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## **DISCOUNT RATES**

Discount rates eased almost across the board following reductions in long-term interest rates in most of the world's economies. It is clear from the Survey that companies are taking different approaches to recognize the higher inflation in Mexico, thereby making the "average rate" somewhat misleading. The range of rates in Hong Kong looks rather extreme. The following table shows the distribution of rates and the average for last year.

	<b>1996</b>	<b>1995</b>	<b>Lowest</b>	<b>Highest</b>
Australia	7.78%	8.26%	6.50%	9.00%
Austria	6.40%	6.80%	5.50%	7.00%
Belgium	6.89%	7.36%	6.00%	7.50%
Canada	7.88%	8.41%	7.00%	9.00%
France	6.89%	7.56%	6.00%	8.00%
Germany	6.57%	6.86%	6.00%	7.50%
Hong Kong	8.82%	8.38%	7.50%	11.00%
Ireland	7.31%		7.00%	7.50%
Italy	8.88%		7.50%	9.50%
Japan	4.25%	4.36%	3.00%	5.75%
Mexico	15.13%	13.49%	5.00%	25.40%
Netherlands	6.33%	6.73%	6.00%	7.00%
New Zealand	5.83%		5.50%	6.00%
Philippines	12.29%		11.00%	15.00%
Portugal	7.16%	7.90%	6.00%	8.00%
South Africa	14.86%		14.00%	15.00%
Spain	7.54%	8.56%	6.00%	9.50%
Switzerland	4.53%	4.80%	4.00%	5.00%
Taiwan	7.30%	7.83%	7.00%	8.00%
UK	8.21%	8.56%	6.75%	9.00%
US	7.55%	7.28%	5.75%	8.50%

The purpose of the following chart is to explore how closely the discount rate has been following long-term corporate bond rates, as the latter has become a benchmark for establishing the discount rate. The chart shows the average discount rate LESS the long-term corporate bond rate for 1995 and 1996. We have excluded Mexico because of the special situation there. In those countries where no corporate bond data was available, we used government bond data as shown earlier, which in some instances means short-term interest rates.



It is interesting to note that in 1995 there were six countries, and in 1996 nine countries where the measured difference was greater than +/- 1%. Also there were two countries in 1995 and four countries in 1996, where the measured difference was negative (i.e., the average discount rate was lower than the bond rate).

### **RATES OF RETURN**

The survey disclosed the following percentages of funded plans in those countries where both funded and book reserved plans occur:

Austria	30%	Japan	86%
France	56%	Mexico	89%
Germany	55%	Spain	25%
Italy	75%		

As expected, in most cases the rate of return changed very little, but there are some wide ranges, which need further explanation. Mexico is a special case. The following table shows the distribution of rates and the average for last year.

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	1996	1995	Lowest	Highest
Australia	8.52%	8.94%	8.00%	10.00%
Austria	7.42%	7.08%	6.75%	8.00%
Belgium	7.49%	7.60%	4.75%	8.75%
Canada	8.95%	9.09%	7.00%	11.00%
France	7.25%	7.93%	6.00%	8.50%
Germany	7.10%	6.98%	6.50%	8.00%
Hong Kong	9.86%	9.50%	9.00%	12.00%
Ireland	8.00%		7.50%	8.50%
Italy	7.67%		4.50%	9.50%
Japan	4.94%	5.64%	3.00%	7.50%
Mexico	16.19%	16.00%	6.00%	26.00%
Netherlands	7.47%	7.43%	6.00%	8.50%
New Zealand	6.46%		5.75%	7.00%
Philippines	12.75%		11.00%	15.00%
Portugal	7.28%	7.90%	6.00%	8.00%
South Africa	15.93%		14.00%	16.50%
Spain	7.00%	8.20%	6.00%	8.50%
Switzerland	5.48%	5.79%	4.00%	6.50%
Taiwan	7.30%	7.86%	7.00%	8.00%
UK	9.20%	9.36%	7.75%	11.00%
US	9.09%	9.09%	8.00%	10.50%

The following table shows the range of results of "real returns":

Real Rate	1995	1996
Less than 3%	1	0
3% to 4%	4	4
4% to 5%	1	5
5% to 6%	5	5
Over 6%	4	6

While it would be desirable to use the best possible estimate of a long-term CPI to develop this data, for simplicity and convenience we have used the reported current CPI rates that appear earlier. Therefore, when interpreting these results, it is important to take into account that they are benchmarked against a current CPI as opposed to a long-term CPI.

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## SALARY INCREASE

This table shows the distribution of the salary increases, together with the average for last year.

The salary increase is very much company and plan specific, once the underlying country level of inflation is taken into account.

There appears to be a modest reduction from last year.

	1996	1995	Lowest	Highest
Australia	5.17%	5.63%	4.00%	6.50%
Austria	4.10%	3.97%	3.00%	5.00%
Belgium	4.36%	4.75%	3.00%	6.00%
Canada	4.90%	5.32%	3.50%	7.90%
France	3.40%	3.97%	2.00%	5.50%
Germany	3.76%	3.85%	2.50%	6.50%
Hong Kong	8.23%	7.58%	7.50%	10.50%
Ireland	4.88%		4.00%	6.00%
Italy	5.81%		5.00%	7.00%
Japan	3.53%	3.71%	2.30%	5.30%
Mexico	13.84%	10.45%	2.00%	25.00%
Netherlands	4.28%	4.21%	2.50%	6.50%
New Zealand	4.25%		3.00%	5.00%
Philippines	10.25%		9.50%	12.00%
Portugal	4.91%	6.00%	3.50%	7.00%
South Africa	12.43%		10.00%	13.50%
Spain	5.33%	6.21%	3.75%	7.00%
Switzerland	3.28%	3.56%	2.50%	4.50%
Taiwan	7.10%	7.43%	6.50%	8.50%
UK	5.70%	6.05%	4.00%	7.50%
US	4.73%	4.78%	2.50%	8.40%

The following table shows the range of results for "real salary increases":

<u>Real Salary Increase</u>	1995	1996
Under 1%	2	0
1.0% to 1.5%	0	1
1.5% to 2.0%	3	7
2.0% to 2.5%	4	3
2.5% to 3.0%	3	3
Over 3.0%	3	6

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While it would be desirable to use the best possible estimate of a long-term CPI to develop this data, for simplicity and convenience we have used the reported current CPI rates that appear on earlier. Therefore, when interpreting these results, it is important to take into account that they are benchmarked against a current CPI as opposed to a long-term CPI.

### **HISTORICAL DATA**

The following six charts provide historical information on the discount rate and government bond rate for six important countries: Australia, Canada, Germany, Japan, Netherlands and the UK over the period 1989 to 1996.

It is curious that even since 1993, when the SEC set out its approach to selecting the discount rate, the survey shows that some companies are using discount rates below the government bond rate. This might arise from issues of materiality and a less than strict application of FAS 87, but we have not explored the matter. It might also arise from a continuing practice, in some cases, of using local funding assumptions for FAS87 purposes.

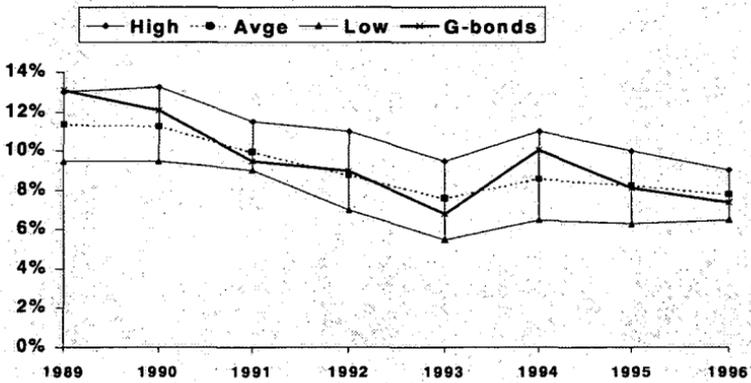
The December 31, 1997 survey is about to be started. I would be happy to answer any questions that readers may have.

My thanks to colleagues Angela Tamburino for managing the survey process and Mani Sundaresan for his review and preparation of the charts.

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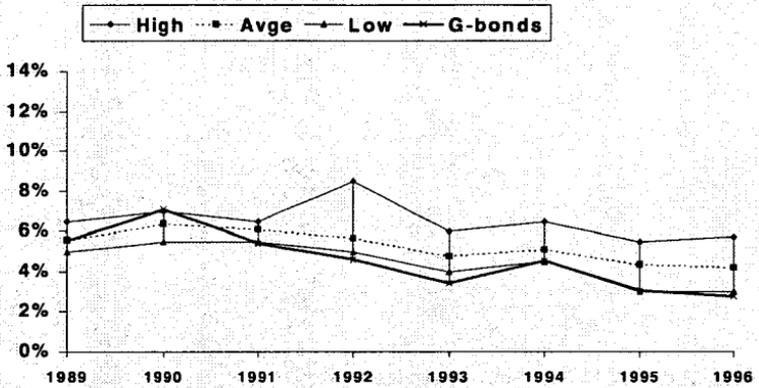
## FAS 87 ASSUMPTIONS SURVEY

### Australia - Discount Rates



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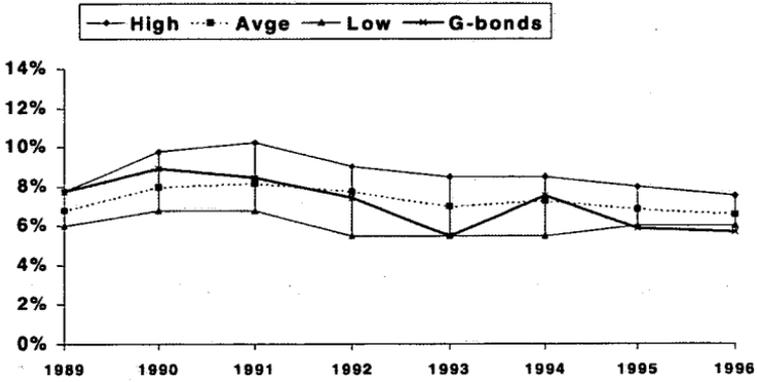
## FAS 87 ASSUMPTIONS SURVEY Japan - Discount Rates



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# FAS 87 ASSUMPTIONS SURVEY

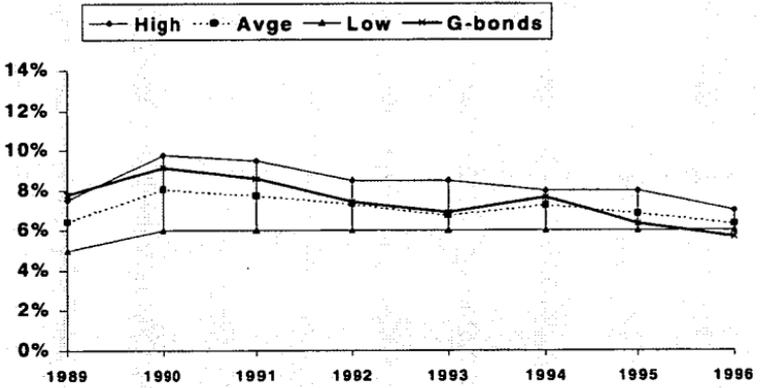
## Germany - Discount Rates



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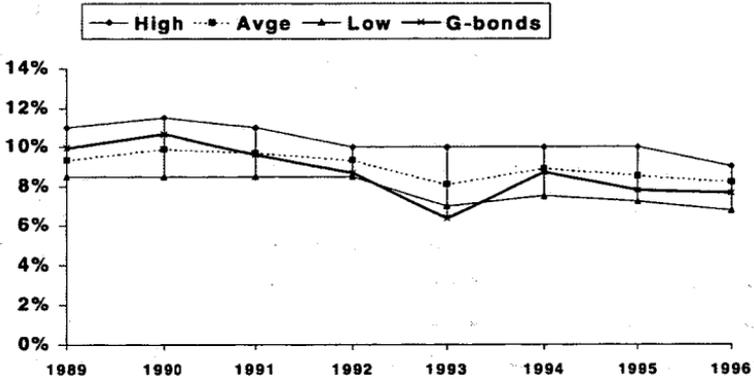
# FAS 87 ASSUMPTIONS SURVEY

## Netherlands - Discount Rates



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## FAS 87 ASSUMPTIONS SURVEY U. K. - Discount Rates



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## FAS 87 ASSUMPTIONS SURVEY Canada - Discount Rates

