

QUARTERLY ECONOMIC COMMENTARY

Summer 2007

**ALAN BARRETT
IDE KEARNEY
MARTIN O'BRIEN**

*The forecasts in this Commentary are based on
data available by mid-June 2007*

Special Articles

On the Likely Extent of Falls in Irish House Prices

by
Morgan Kelly

Valuing Ireland's Pension System

by
Shane Whelan

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*Price €75 per copy or €300 per year,
(including Medium-Term Review, 2005-2012)*

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As part of the remit of the *Quarterly Economic Commentary*, articles on various aspects of the Irish economy and Irish economic policy are regularly published along with the forecasts and commentary. Authors are invited to submit papers for consideration to either of the *QEC*'s co-editors, Alan Barrett and Ide Kearney at: ESRI, Whitaker Square, Sir John Rogerson's Quay, Dublin 2 (e-mail Alan.Barrett@esri.ie or I.Kearney@planet.nl). The following guidelines should be followed:

All articles should be up-to-date and policy-oriented. The content should involve the application of economic theory, data analysis or the application of lessons from the international literature. Review articles are also welcome where lessons for policy are explicitly addressed. Articles should normally comprise 4-10,000 words, excluding tables. All articles will be anonymously refereed by members of the editorial board or by an external referee chosen by the editors.

The *QEC* aims for a quick turnaround from submission to acceptance, with decisions usually made within two months. All accepted papers are published electronically as well as being included in the printed version, thereby ensuring a wide circulation well beyond subscribers to the *QEC*.

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SUMMARY TABLE

	2005	2006	2007	2008
OUTPUT				
(Real Annual Growth %)				
Private Consumer Expenditure	6.6	6.2	7.8	4.5
Public Net Current Expenditure	4.6	4.1	5.5	3.5
Private Investment	12.8	3.9	3.7	2.6
Exports	3.9	4.9	6.0	5.2
Imports	6.5	5.3	6.9	5.5
Gross Domestic Product (GDP)	5.5	6.0	4.9	3.7
Gross National Product (GNP)	5.3	7.4	4.8	3.7
GNP per capita (constant prices)	3.1	4.7	2.7	2.2
PRICES				
(Annual Growth %)				
Consumer Price Index (CPI)	2.5	4.0	4.9	3.0
Wage Growth	5.6	5.0	5.5	5.0
LABOUR MARKET				
Employment Levels (ILO basis (000s))	1,952	2,039	2,097	2,122
Unemployment Levels (ILO basis (000s))	89	93	103	111
Unemployment Rate (as % of Labour Force)	4.4	4.4	4.7	5.0
PUBLIC FINANCE				
Exchequer Balance (€m)	-500	2,265	-622	-1,057
General Government Balance (€m)	1,623	5,031	2,132	2,489
General Government Balance (% of GDP)	1.0	2.9	1.1	1.2
General Government Debt (% of GDP)	27.4	25.1	23.7	22.8
EXTERNAL TRADE				
Balance of Payments Current Account (€m)	-4,200	-5,737	-7,856	-9,026
Current Account (% of GNP)	-3.1	-3.8	-4.9	-5.3
EXCHANGE AND INTEREST RATES (end of year)				
US\$/€ Exchange Rate	1.24	1.25	1.34	1.35
STG£/€ Exchange Rate	0.68	0.68	0.68	0.69
Main ECB Interest Rate	2.25	3.50	4.25	

SUMMARY

According to the preliminary estimates contained in the *Quarterly National Accounts* for December 2006, real GNP grew by 7.4 per cent last year. The corresponding figure for real GDP was 6 per cent. These figures imply that the economy continued to perform very strongly last year and are consistent with other positive outcomes. For example, 87,000 extra jobs were created in 2006 and the Exchequer recorded a surplus of over €2 billion.

For 2007, we anticipate a moderation in the pace of economic growth. We expect the volume of GNP to grow by 4.8 per cent, with the volume of GDP to grow by 4.9 per cent. In 2008, we foresee a continuation of the easing in economic growth. Our forecast for real GNP growth next year is 3.7 per cent; our forecast for real GDP growth is also 3.7 per cent.

A large part of the reason for the higher rate of growth in 2006 relative to 2007 was a high rate of stock building in 2006, which added 1 per cent to the growth figure. The other main component was a higher rate of residential construction in 2006 relative to what is expected for 2007. Following a record number of completions in 2006 (over 93,000 units), we expect this figure to fall to 82,000 units this year. The slowdown in house building will continue into 2008, when we expect 76,000 units to be completed. This fall in house building, combined with a post-SSIA slowdown in consumption growth, lead to our lower growth forecast for 2008.

The slower pace of economic growth in 2007 and 2008 will be mirrored in, for example, the labour market and the public finances. We anticipate the rate of unemployment to increase to 4.7 per cent in 2007 and to 5 per cent in 2008. The large Exchequer surplus in 2006 (mentioned above) is expected to become a deficit of over €600 million in 2007 and of €1 billion in 2008.

CPI inflation is projected to average 4.9 per cent in 2007 and 3 per cent in 2008. This is partly based on the expectation of a further interest rate rise in September of this year. Thereafter, we have adopted a technical assumption of no further rate rises, although we stress that this is an assumption. Clearly, should further rate rises occur, our CPI forecast for 2008 will need to be adjusted upwards.

The growing importance of services exports relative to merchandise exports is highlighted in a discussion of Ireland's recent export performance. In the *General Assessment*, we discuss the potential difficulties that could arise if the current high rate of CPI inflation feeds into wage demands. We also discuss how the economy is now on a transition path as the boom in house building eases. We conclude that the scope for policy aimed at facilitating a smooth transition away from house building and towards other activities is limited in the short term. However, wage flexibility should ensure that the economy is insulated from the worst effects of the slowdown in house building.

FORECAST NATIONAL ACCOUNTS 2006

A: Expenditure on Gross National Product

	2005	2006	Change in 2006				
	€m	Forecast €m	€m		%		
			Value	Volume	Value	Price	Volume
Private Consumer Expenditure	74,114	80,799	6,685	4,614	9.0	2.6	6.2
Public Net Current Expenditure	22,952	25,128	2,176	947	9.5	5.1	4.1
Gross Fixed Capital Formation	43,582	47,959	4,377	1,704	10.0	5.9	3.9
Exports of Goods and Services (X)	131,001	140,147	9,146	6,456	7.0	2.0	4.9
Physical Changes in Stocks	98	2,022	1,924	916			
Final Demand				15,34			
	271,746	296,055	24,309	4	8.9	3.1	5.6
less:							
Imports of Goods and Services (M)	110,553	120,229	9,676	5,880	8.8	3.3	5.3
less:							
Statistical Discrepancy	30	32	2	-187			
GDP at Market Prices	161,163	175,794	14,631	9,650	9.1	2.9	6.0
less:							
Net Factor Payments (F)	-25,248	-25,513	-265	328	1.0	2.4	-1.3
GNP at Market Prices				10,01			
	135,914	150,281	14,367	4	10.6	3.0	7.4

B: Gross National Product by Origin

	2005	2006	Change in 2006	
	€m	Forecast €m	€m	%
Agriculture, Forestry, Fishing	3,399	3,450	51	1.5
Non-Agricultural: Wages, etc.	65,272	71,706	6,434	9.9
Other:	57,380	60,925	3,545	6.2
Adjustments: Stock Appreciation	-578	-200		
Statistical Discrepancy	30	32		
Net Domestic Product	125,503	135,913	10,410	8.3
less:				
Net Factor Payments	-25,248	-25,513	-265	1.0
National Income	100,254	110,400	10,146	10.1
Depreciation	16,896	17,962	1,066	6.3
GNP at Factor Cost	117,150	128,362	11,212	9.6
Taxes less Subsidies	18,764	21,919	3,155	16.8
GNP at Market Prices	135,914	150,281	14,367	10.6

C: Balance of Payments on Current Account

	2005	2006	Change in 2006
	€m	Forecast €m	€m
Exports (X) less Imports (M)	20,447	19,918	-529
Net Factor Payments (F)	-25,248	-25,513	-265
Net Transfers	601	-142	-743
Balance on Current Account	-4,200	-5,737	-1,537
as % of GNP	-3.1	-3.8	-0.7

FORECAST NATIONAL ACCOUNTS 2007

A: Expenditure on Gross National Product

	2006	2007	Change in 2007				
	Forecast €m	Forecast €m	€m		Value	% Price	
			Value	Volume			
Private Consumer Expend Private							
Consumer Expenditure	80,799	89,673	8,874	6,262	11.0	3.0	7.8
Public Net Current Expenditure	25,128	28,143	3,015	1,382	12.0	6.2	5.5
Gross Fixed Capital Formation	47,959	50,496	2,537	1,764	5.3	1.6	3.7
Exports of Goods and Services (X)	140,147	150,325	10,178	8,462	7.3	1.2	6.0
Physical Changes in Stocks	2,022	910	-1,112	-1,112			
Final Demand	296,055	319,547	23,492	16,988	7.9	2.1	5.7
less:							
Imports of Goods and Services (M)	120,229	130,733	10,504	8,286	8.7	1.7	6.9
less:							
Statistical Discrepancy	32	32	0	0			
GDP at Market Prices	175,794	188,782	12,988	8,702	7.4	2.3	4.9
less:							
Net Factor Payments (F)	-25,513	-27,498	-1,985	-1,519	7.8	1.7	6.0
GNP at Market Prices	150,281	161,284	11,003	7,177	7.3	2.4	4.8

B: Gross National Product by Origin

	2006	2007	Change in 2007	
	Forecast €m	Forecast €m	€m	%
Agriculture, Forestry, Fishing	3,450	3,536	86	2.5
Non-Agricultural: Wages, etc.	71,706	77,965	6,259	8.7
Other:	60,925	63,976	3,051	5.0
Adjustments: Stock Appreciation	-200	-200		
Statistical Discrepancy	32	32		
Net Domestic Product	135,913	145,309	9,396	6.9
less:				
Net Factor Payments	-25,513	-27,498	-1,985	7.8
National Income	110,400	117,811	7,411	6.7
Depreciation	17,962	19,211	1,249	7.0
GNP at Factor Cost	128,362	137,022	8,660	6.7
Taxes less Subsidies	21,919	24,262	2,343	10.7
GNP at Market Prices	150,281	161,284	11,003	7.3

C: Balance of Payments on Current Account

	2006	2007	Change in 2007
	Forecast €m	Forecast €m	€m
Exports (X) less Imports (M)	19,918	19,592	-326
Net Factor Payments (F)	-25,513	-27,498	-1,985
Net Transfers	-142	50	192
Balance on Current Account	-5,737	-7,856	-2,119
as % of GNP	-4	-5	-1.1

FORECAST NATIONAL ACCOUNTS 2008

A: Expenditure on Gross National Product

	2007	2008	Change in 2008				
	Preliminary €m	Forecast €m	€m		Value	% Price	Volume
Private Consumer Expenditure	89,673	95,582	5,909	4,035	6.6	2.0	4.5
Public Net Current Expenditure	28,143	30,676	2,533	985	9.0	5.3	3.5
Gross Fixed Capital Formation	50,496	53,577	3,081	1,324	6.1	3.4	2.6
Exports of Goods and Services (X)	150,325	160,518	10,193	7,838	6.8	1.5	5.2
Physical Changes in Stocks	910	728	-182	0			
Final Demand	319,547	341,082	21,535	14,130	6.7	2.2	4.4
less:							
Imports of Goods and Services (M)	130,733	140,527	9,794	7,155	7.5	1.9	5.5
less:							
Statistical Discrepancy	32	32	0	12			
GDP at Market Prices	188,782	200,522	11,741	6,962	6.2	2.4	3.7
less:							
Net Factor Payments (F)	-27,498	-29,067	-1,569	-1,023	5.7	1.9	3.7
GNP at Market Prices	161,284	171,455	10,172	5,939	6.3	2.5	3.7

B: Gross National Product by Origin

	2007	2008	Change in 2008	
	Preliminary €m	Forecast €m	€m	%
Agriculture, Forestry, Fishing	3,536	3,625	88	2.5
Non-Agricultural: Wages, etc.	77,965	82,954	4,989	6.4
Other:	63,976	67,451	3,475	5.4
Adjustments: Stock Appreciation	-200	-200		
Statistical Discrepancy	32	32		
Net Domestic Product	145,309	153,861	8,552	5.9
less:				
Net Factor Payments	-27,498	-29,067	-1,569	5.7
National Income	117,811	124,794	6,983	5.9
Depreciation	19,211	20,349	1,139	5.9
GNP at Factor Cost	137,022	145,143	8,122	5.9
Taxes less Subsidies	24,262	26,312	2,050	8.4
GNP at Market Prices	161,284	171,455	10,172	6.3

C: Balance of Payments on Current Account

	2007	2008	Change in 2008
	€m	Forecast €m	€m
Exports (X) less Imports (M)	19,592	19,991	399
Net Factor Payments (F)	-27,498	-29,067	-1,569
Net Transfers	50	50	0
Balance on Current Account	-7,856	-9,026	-1,170
as % of GNP	-4.9	-5.3	-0.4

The main developments of note are as follows:

- Growth in the Euro Area will remain strong in 2007 and 2008, with growth rates expected to be 2.7 per cent and 2.3 per cent respectively;
- Growth in Germany underpins the Euro Area figures, with growth of 2.9 per cent expected in 2007, followed by growth of 2.2 per cent in 2008;
- This strong performance in the Euro Area relative to recent years implies that the international environment is particularly favourable to Ireland at present;
- The strong pace of economic expansion will result in at least one more increase in interest rates in 2007;
- Fears of a recession in the US are receding, with little evidence that the contraction in housing activity has had major spillovers to elsewhere in the economy.

Euro Area

The Euro Area continues to perform strongly and the recovery that began in 2006 is expected to be maintained into 2008. Growth in 2006 was 2.8 per cent and is expected to be 2.7 per cent in 2007 and 2.3 per cent in 2008. The improved performance is being reflected in the labour market, with unemployment falling to close to 7 per cent, the lowest level in fifteen years. This improvement is contributing to increased growth in consumer spending, with growth rates of 2 per cent and 2.3 per cent forecast for 2007 and 2008 respectively. These figures represent a considerable improvement on the 2004 and 2005 consumption growth rates of 1.5 per cent and 1.6 per cent respectively.

Continued growth at the rates currently being experienced leads to increased concerns over the inflationary outlook. Following a number of years of wage restraint, the tightening in the labour market could lead to increased wage demands. More generally, continued growth implies a reduction in spare capacity and hence the potential for rising price levels. Strong growth in the money supply has also been observed, again with possible implications for price levels. These trends are clearly influencing the thinking of the European Central Bank (ECB) with regard to its interest rate strategy. Having increased rates once again in early June, the ECB President continued to describe rates as being “on the accommodative side”, thereby suggesting the possibility remains of further rate rises. Most commentators appear to believe that a further 25 basis points rise in September is likely and we have factored this into our analysis. Thereafter the situation becomes difficult to forecast and we have chosen to adopt a technical assumption of no further rate rises through 2008.

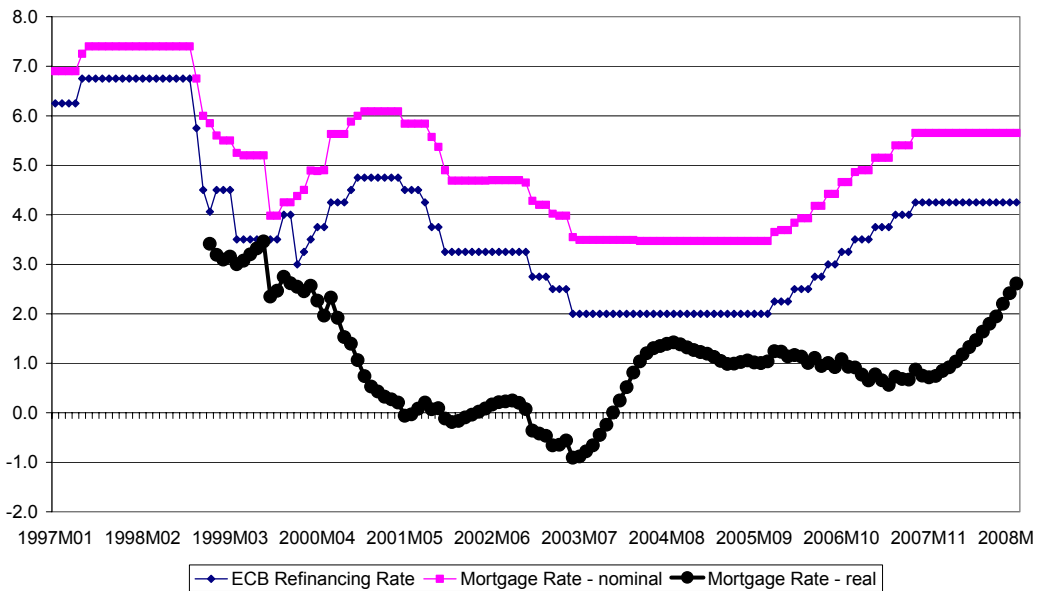
Turning to individual economies within the Euro Area, Germany’s recent strong performance underpins that of the Euro Area generally. Growth in 2006 is now estimated to have been 3 per cent, a remarkable rebound from the 2004 and 2005 growth rates of 0.8 per cent and 1.1 per cent respectively. Exports grew by 12.9 per cent in 2006 and are expected to grow by 9.4 per cent in 2007. When combined with high investment growth rates in both 2006 and 2007

(6.4 per cent and 4.9 per cent respectively), the export/investment story behind German growth in 2006 and 2007 is clear. Looking forward to 2008, there is an expectation that consumption will also grow at a healthier pace.

France is growing at a slower pace relative to Germany, although the volatility of its growth path is lower also. Real GDP growth is estimated to have been 2.1 per cent in 2006 and is forecast to be 2.2 per cent in each of 2007 and 2008. Part of the reason for the slower pace of growth in France relative to Germany is that French exports are growing at just half the rate of German exports. This, in turn, may be related to a divergence in competitiveness between the two largest Euro Area economies. Growth in compensation per employee in France averaged 3.5 per cent per annum between 2004 and 2006; the corresponding figure for Germany was 0.4 per cent.¹

Italy, like Germany, also rebounded in 2006 with growth rising to 1.9 per cent, following a dismal performance in 2005 when growth was just above zero (0.2 per cent). Part of Italy's improved performance was related to that of Germany, as Italian exports to Germany grew. Italian exports in general rose by 5.5 per cent in 2006, well ahead of the other components of demand. In 2007 and 2008, this strong export performance is expected to continue and will contribute to real GDP growth rates of 2 per cent in 2007 and 1.7 per cent in 2008.

Figure 1: Interest Rates



United Kingdom

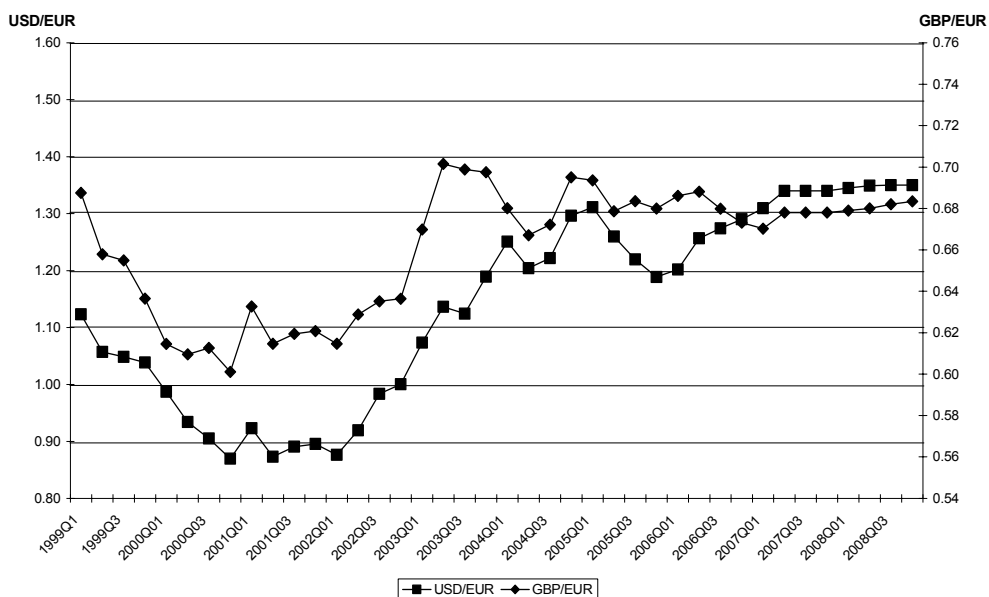
Real GDP is estimated to have grown by 2.8 per cent in the United Kingdom (UK) in 2006. Similar growth rates are forecast for 2007

¹ A comparison of wage trends in Ireland relative to elsewhere is provided in the *Incomes* section below.

and 2008 (2.7 per cent for 2007 and 2.5 per cent for 2008). Investment grew strongly in 2006, at a rate of 6.5 per cent, and is expected to continue to do so in 2007 and 2008, with growth rates of 7.6 per cent and 5.3 per cent forecast.

Although immigration has acted to dampen wage pressures in the UK economy, concerns over the inflationary outlook have led the Bank of England to continue with a series of interest rate increases. Consumer prices inflation reached 3.1 per cent in March. Although it is expected that inflation will ease in the coming months, the possibility remains that wage negotiations will be influenced by the spike in inflation (if the recent high level is indeed a spike). For this reason, it is thought likely that the Bank of England will remain mindful of the need to anchor inflation expectations and hence the possibility exists of further interest rate rises. In this way, the UK is part of a group of countries/regions where monetary tightening is happening (for example, the Euro Area, Japan and New Zealand).

Figure 2: Exchange Rates



United States

Following a number of years of economic growth in excess of 3 per cent, the United States is currently experiencing a slower rate of growth. For the year 2007, the OECD expects real GDP growth of 2.1 per cent, significantly lower than the 2006 figure of 3.3 per cent. The reason for the slowdown is a dramatic reduction in house building activity, with residential investment expected to fall by 16 per cent in 2007.

When the decline in housing activity began in 2006, concerns arose that there would be spillovers to other sectors of the economy through, for example, employment falls and hence falls in consumer spending. To date, such concerns have generally not been realised. The labour market continues to perform strongly, with unemployment falling to 4.4 per cent in March 2007, its lowest level

in four years. Partly in response to the strong labour market, consumption has remained strong and is expected to grow by just over 3 per cent in 2007.

This apparent resilience in the US economy to the reduction in housing construction leads the OECD to forecast a higher rate of growth in 2008 relative to 2007 (2.5 per cent versus 2.1 per cent). The fall in housing construction is expected to level off, whereby investment will again make a positive contribution to growth.

An important implication of the US recovery is that it has led to an increasing expectation of interest rates being left unchanged by the Federal Reserve for the remainder of 2007. Until recently, there had been a view that the slowing of the economy would prompt the Fed into lowering rates. The recovery, and ongoing concerns over inflationary pressures, has reduced the chances of any rate cut in 2007.

Asia

The Japanese economy continues to grow at a healthy pace. Real GDP grew by 2.2 per cent in 2006 and is expected to grow by 2.4 per cent and 2.1 per cent in 2007 and 2008 respectively. Export growth has been particularly strong, with a growth rate of 9.5 per cent recorded in 2006. This contributed to the Japanese current account surplus reaching almost 4 per cent of GDP in 2006. Although the recovery is now well established, price inflation has not taken hold and prices are actually falling according to a number of measures. In this context, it is somewhat surprising that the Bank of Japan has raised interest rates as recently as February and financial markets expect further rises by early 2008.

India and China continue to grow at remarkably strong rates. In 2006, China grew by 10.7 per cent and similar rates of growth are expected in 2007 and 2008. Real GDP growth in India was 9 per cent in 2006. The pace of growth is expected to moderate in 2007 and 2008 but the forecast growth rates of 8.5 per cent and 8 per cent in 2007 and 2008 respectively will still see India among the fastest growing economies in the world.

NIESR (2007)² note that India, on a purchasing power parity basis, is now as large as Japan, accounting for 6.3 per cent of global output. On the same basis, China accounts for 15 per cent of global output, second only to the US which has a share of almost 20 per cent. NIESR (2007) also point out a notable difference between India and China. While China accounted for 7.5 per cent of world trade in 2005, India is much less integrated into world markets and accounted for just 1 per cent of world trade in 2005. For this reason, India has a lower impact on global prospects relative to China.

² National Institute for Economic and Social Research *National Institute Economic Review*, April 2007.

TABLE 1: Short-term International Outlook

Country	GDP Output Growth			Consumer Price Inflation			Hourly Earnings Growth			Unemployment Rate %			Current Account Balance % of GDP		
	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
UK	2.8	2.7	2.5	2.3	2.4	2.0	3.7	4.4	4.8	5.5	5.5	5.5	-3.4	-3.2	-2.7
Germany	3.0	2.9	2.2	1.8	1.8	1.7	1.0	2.2	3.2	8.1	6.9	6.3	5.1	6.7	7.0
France	2.1	2.2	2.2	1.9	1.3	1.7	3.2	3.0	3.0	9.0	8.4	8.0	-1.2	-1.0	-1.0
Italy	1.9	2.0	1.7	2.2	2.0	2.1	3.1	2.7	3.8	6.9	6.3	6.0	-2.4	-2.5	-2.6
Euro Area	2.8	2.7	2.3	1.7	2.0	2.0	2.6	2.9	3.5	7.8	7.1	6.7	0.1	0.4	0.4
USA	3.3	2.1	2.5	2.9	2.6	2.2	4.7	3.9	3.8	4.6	4.6	4.8	-6.5	-6.1	-6.2
Japan	2.2	2.4	2.1	-0.9	-0.4	0.2	-0.3	3.4	4.1	4.1	3.8	3.6	3.9	4.8	5.4
China	10.7	10.4	10.4	1.6	1.8	1.5							9.5	10.2	10.6
OECD	3.2	2.7	2.7	2.2	2.1	2.0				5.9	5.6	5.5			
Ireland	6.0	4.9	3.7	4.0	4.9	3.0	5.0	5.5	5.0	4.4	4.7	5.0	-3.3	-4.2	-4.5

Source: OECD *Economic Outlook*, No. 81, May 2007; *National Institute Economic Review*, No. 200, April 2007.

International Context for Ireland

Growth in the global economy continues to be strong. The world economy grew by 5.3 per cent in 2006 and is expected to grow by 5 per cent in 2007 and by 4.8 per cent in 2008. Unlike the earlier years of this decade, global growth is now more balanced by region. Although growth has eased in the US, both the Euro Area and Japan are now growing more strongly. World trade is also expected to continue to grow strongly, with growth rates of 7.5 per cent and 8.3 per cent forecast for 2007 and 2008 respectively.

While strong global growth is clearly good for Ireland, it brings with it some difficult features. First, interest rates are increasing in the Euro Area and elsewhere also, so the recent era of cheap money appears to be ending. Second, strong global growth is believed to be feeding into commodity price increases through demand effects. Third, large imbalances continue to exist across some regions. The US current account deficit remains large and questions persist over whether or not it is sustainable in the short to medium term. Although the likelihood of a significant adjustment over our forecast horizon appears to be low, the existence of large global imbalances remains a concern.

The Domestic Economy

General

The CSO released preliminary quarterly accounts for the fourth quarter of 2006 in March 2007 with GDP growth estimated at 6.0 per cent and GNP at a much higher 7.4 per cent. These preliminary estimates include a number of important differences to our Spring *Commentary* estimates for 2006.³ Across all expenditure categories – consumption, investment, exports and imports – the preliminary CSO figures are lower than our Spring estimates. Nevertheless, the GDP growth rate is broadly similar. This is because of a very large increase in stock building (chiefly industrial stocks) in the final quarter of 2006, which on an annualised basis accounts for 1 percentage point of the overall 6 per cent growth rate. Furthermore, the preliminary estimates imply a volume fall of 1.3 per cent in net factor income flows, which drives a significant positive gap between GNP and GDP.

These changes have knock-on effects on our forecast numbers for 2007 and 2008. Our revised figures for 2007 include a negative contribution from changes in stocks, as the very high level of stocks built up towards the end of 2006 are run down. This reduces the GDP growth rate by 0.6 of a percentage point. The corollary to that is a higher exports growth figure, as these industrial stocks are exported in 2007. In addition we have revised upwards our forecast for government expenditure, given the current very fast pace of growth in both current and capital spending. Finally we have revised

³ The Spring *Commentary* estimates for 2006 were largely based on *Quarterly National Accounts* figures out to Q3 2006.

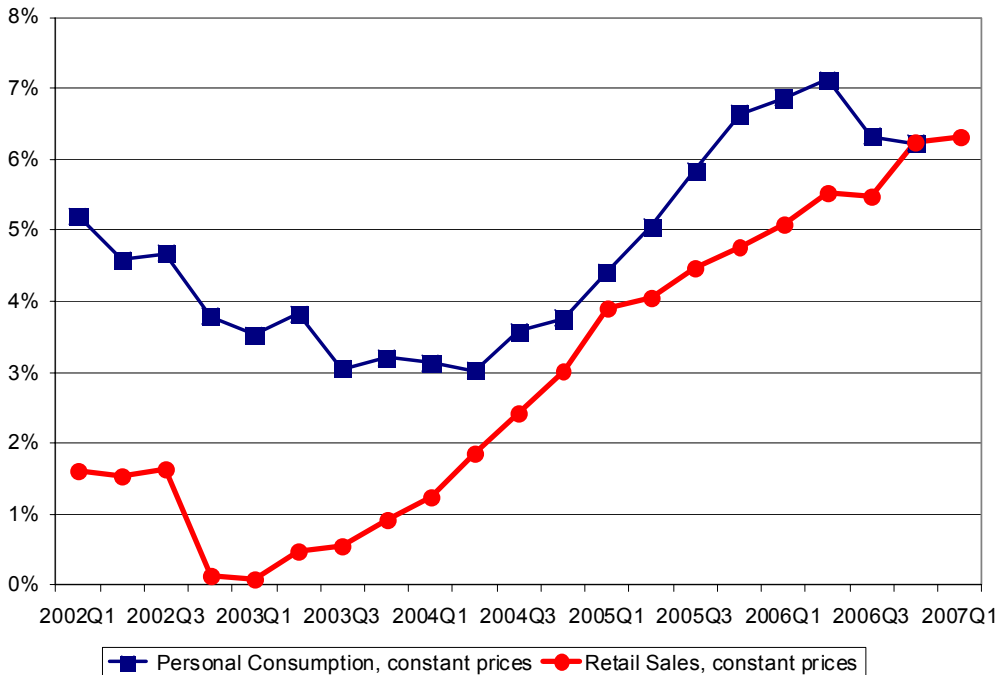
downwards our forecast for investment, because the most recent indicators all point to a sharper deceleration in the housing market than anticipated in the Spring *QEC*.

We expect GDP to grow by 4.9 per cent in 2007, slowing to 3.7 per cent in 2008. While this should allow employment to increase by up to 83,000 over the two years it could see the unemployment rate move up to 5.0 per cent by 2008. The emerging deficit on the current account of the balance of payments is expected to widen further, partly driven by unfavourable movements in the terms of trade. The slowdown in economic activity relative to 2006, coupled with very strong growth in expenditure in 2007, means that the exchequer balance moves into deficit, equivalent to -0.6 per cent of GNP in 2008. This represents a sharp deterioration on the 1.5 per cent surplus recorded in 2006.

Consumption

According to the latest *Quarterly National Accounts* personal consumption grew by 9 per cent in value terms and 6.2 per cent in volume terms in 2006. As can be seen from Figure 3, the latest figures suggest a marginal slowing in the growth rate towards the latter half of 2006. Nevertheless, the figures still represent a continuation of the surge in consumption growth which began in 2005.

Figure 3: Annual Growth Rates in Personal Consumption and Retail Sales



Most indicators suggest continued strong growth in consumption in the early months of 2007, although there are some indications of a slowdown on the horizon. In the year ended March 2007, Irish residents made more than 7 million overseas trips, an increase of over 13 per cent on the same period last year. Volume retail sales were growing at an annualised rate of 6.4 per cent in the year ended April 2007; excluding the motor trade, this figure was even higher at 7.1 per cent. This implied slowdown in the motor trade is reflected in the purchase of new private cars, where the growth rate has been slowing in recent months. In the year to April 2007 the annualised growth rate was 3.2 per cent compared with 8.7 per cent in the year ended April 2006. In addition, according to the latest Central Bank statistics, the rate of increase in private sector credit has slowed from an average €4.9 billion per month in the first four months of 2006 to €3.9 billion in the first four months of 2007. These trends are reflected in the behaviour of the IIB/ESRI *Consumer Sentiment Index*. While the balance of sentiment in recent months remains above the trough in sentiment recorded in 2003, there is a downward trend discernable in recent months relative to the recent peaks recorded in early 2005 and early 2006.

Despite this mixed evidence on the future strength of consumption growth, we forecast volume growth of 7.8 per cent in consumption in 2007. This is driven by our expectation that over €2.4 billion of SSIA monies will be spent on consumption items in 2007, equivalent to almost 3 per cent of the total growth in the value of consumption expenditure of 11 per cent.⁴ Apart from this once-off effect, we expect that continuing strong employment gains and relatively high wage increases will see personal disposable incomes rising by 9.7 per cent in 2007, which will further underpin strong growth in consumption this year. Looking ahead to 2008, we expect consumption expenditure growth to slow sharply from 11 per cent to 6.6 per cent, with volume growth of 4.5 per cent.

Investment

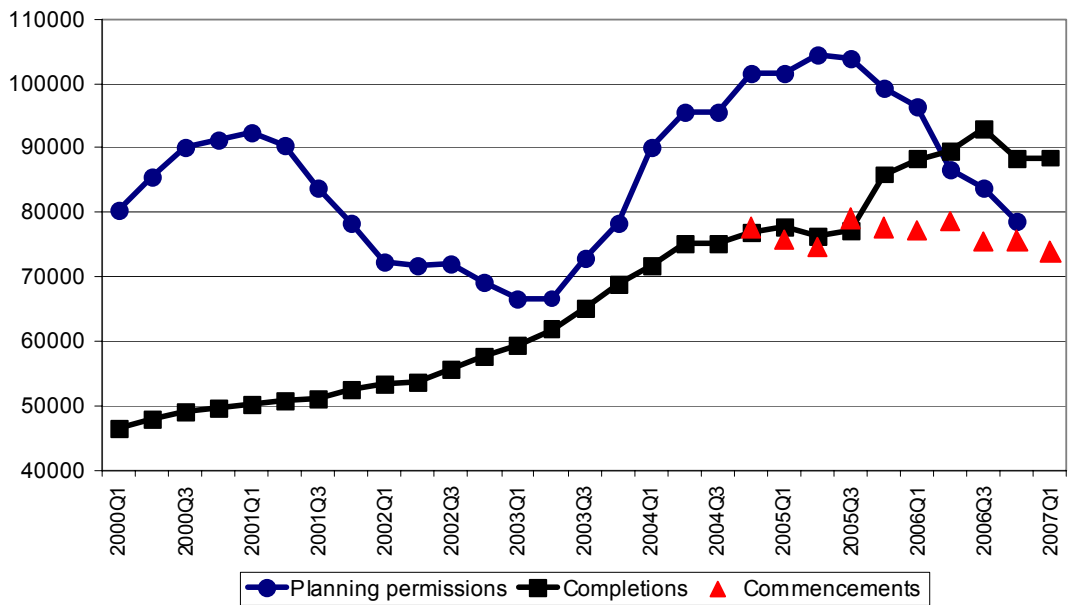
Investment grew by 3.9 per cent in volume terms in 2006, according to preliminary CSO estimates. This is almost half the growth rate estimated in the Spring *Commentary*, with the difference being almost entirely due to a very large fall in investment in machinery and equipment of 6.5 per cent in volume terms. There was a 3.1 per cent increase in volume of housing investment and a very large increase of 16.2 per cent in the volume of investment in other building and construction.

Total housing completions in 2006 reached a record level of 93,419 units, according to the Department of the Environment, Heritage and Local Government (88,419 based on CSO adjusted figures). In more recent months most indicators suggest that this rate of activity has slowed significantly. In the first four months of 2007 the total number of completions was 25,982, a fall of almost 8 per cent on the same figure in 2006. Furthermore, data on both planning

⁴ For more detail see *Quarterly Economic Commentary*, Summer 2006.

permissions and commencements suggest a downturn in the future rate of house completions (see Figure 4). The abolition of stamp duty for first time buyers is expected to have a limited effect on overall demand in the coming months. Accordingly, we have revised downwards our figures for completions in 2007 to 82,000, falling further to 76,000 in 2008. We expect some continued increase in investment in home improvements in 2007, buoyed by SSIA funds, so that overall housing investment is expected to fall by 4.7 per cent in volume terms in 2007, and to fall more sharply in 2008, by 6.1 per cent. In relation to prices, the most recent data from the permanent tsb/ESRI house price index points to a fall of 1.3 per cent in house prices nationally in the first four months of 2007. We expect this trend to continue in the coming months and have included an estimated fall of 3 per cent in nominal house prices for 2007. For 2008, we expect house prices to stabilise at their 2007 level. Combined with estimated continued growth in the deflator for home improvements, this implies a fall in the housing investment deflator of 1.7 per cent in 2007, followed by a slight increase of 1.1 per cent in 2008.

Figure 4: Housing Statistics,⁵ Planning Permissions, Commencements and Completions



Source: Dept. of the Environment, Heritage and Local Government and CSO.

⁵ The figure for 2005 is adjusted upwards to include an estimated 5,000 extra completions not included in DEHLG sources, Q1 2006 and Q2 2006 reduced by 2000 and 3000 respectively as per DEHLG estimates.

TABLE 2: Gross Fixed Capital Formation

	2005 €m	% Change in Volume	2006 Value	2006 €m	% Change in Volume	2007 Value	2007 €m	% Change in Volume	2008 Value	2008 €m
Housing	20,890	3.1	11.2	23,226	-4.7	-6.4	21,739	-6.1	-5.1	20,635
Other Building	11,279	16.2	24.4	14,027	10.0	17.7	16,510	10.0	17.7	19,432
Building and Construction	32,169	7.8	15.8	37,253	1.0	2.7	38,249	0.7	4.8	40,067
Machinery and Equipment	11,413	-6.5	-6.2	10,706	12.0	14.4	12,247	8.0	10.3	13,510
Total	43,582	3.9	10.0	47,959	3.7	5.3	50,496	2.6	6.1	53,577

In the Spring *Commentary* we estimated that house prices were overvalued by 15 per cent based on the demand for primary dwellings. However, this calculation does not include the dramatic increase in the demand for second dwellings in recent years⁶ which we argued may help explain this “overvaluation”. To the extent that this demand for second dwellings includes speculative investment, this introduces a degree of volatility to the housing market in the coming months. Our forecasts here imply a 14 per cent fall in housing completions between 2006 and 2008 together with a fall in real house prices⁷ of over 8 per cent. Given the current degree of uncertainty surrounding the housing market, this represents a relatively “soft landing” scenario.

We have not changed our forecast of volume growth in investment in other building and construction. It is expected to continue to grow strongly this year and next, following very strong growth in 2006. This is partly driven by strong public sector investment under the National Development Plan (NDP), together with continued strong growth in commercial building and construction. We estimate that the NDP will add €1.4 billion to total investment in 2007 and €1.6 billion in 2008, equivalent to over half of the total increase in other building and construction investment. However, we have revised upwards our estimated deflator to 7 per cent⁸ based on the most recent *Quarterly National Accounts* estimates for 2006.

The value of investment in machinery and equipment fell by an estimated 6.2 per cent in 2006. A large part of this was due to a fall of 44 per cent in the purchase of aircraft in 2006 following large purchases in 2005. However, even excluding the impact of aircraft purchases, investment in machinery and equipment grew by only 0.5 per cent in value terms. The timing of planned aircraft purchases remains uncertain; based on current published figures we estimate that they could add as much as 5 per cent to the value of investment in machinery and equipment in 2007. Accordingly, we forecast strong growth of 14.4 per cent in the value of machinery and equipment investment in 2007, with volume growth of 12 per cent, thereby implying a recovery in the growth rate of non-aircraft investments. It should be noted that there is a great deal of uncertainty attaching to this forecast, which tends to be very volatile from year to year. For 2008, we forecast volume growth of 8 per cent and value growth of 10.3 per cent.

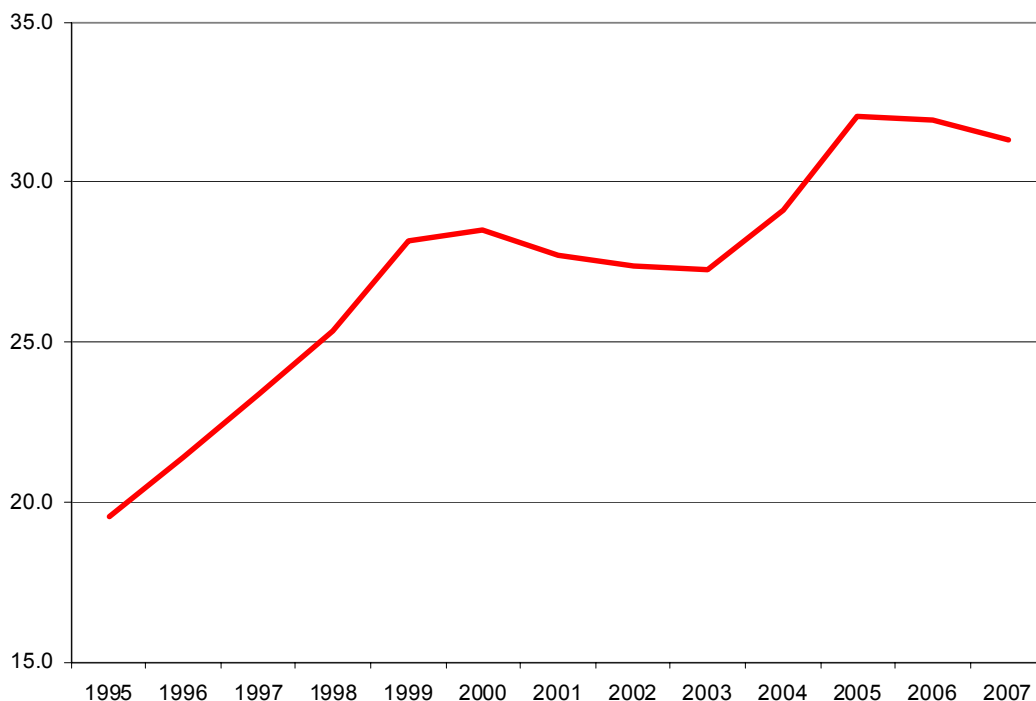
These forecasts imply an overall growth in volume investment of 3.7 per cent in 2007 and 2.6 per cent in 2008. These are very low growth rates relative to recent years and, if realised, will imply that the rapid rise in the share of investment in GNP of recent years will finally stabilise.

⁶ Recent Census figures suggest that vacant dwellings and holiday homes accounted for almost 40 per cent of total house completions between 2002 and 2006.

⁷ Deflated using the personal consumption deflator.

⁸ Up from 6 per cent in 2007 and 5 per cent in 2008, *Spring QEC*.

Figure 5: Investment as a Share of GNP



Government Spending and Public Finances

The May Exchequer returns indicate that tax revenues increased by 9.5 per cent in the first five months of 2007 relative to the same period last year. This is compared to a growth rate of 16.7 per cent in the equivalent period in 2006. This slowdown in the pace of revenue growth between 2006 and 2007 has been mirrored in all of the monthly returns to date in 2007. The slowdown relative to 2006 was reflected across all revenue heads with the exception of income tax. However, the latter was boosted by the inclusion of the SSIA exit tax yield.

We expect this slowdown to continue throughout 2007 and 2008, with forecast growth in exchequer tax revenues of 7.7 per cent and 6.9 per cent respectively, equivalent to an actual increase of €3.6 billion in 2007 and €3.4 billion in 2008. This contrasts with an increase of €6.3 billion in 2006, and if realised would imply a fairly dramatic reduction in tax buoyancy relative to 2006. Put more technically, in 2006 the elasticity of exchequer tax revenues with respect to GDP was 1.8, while our forecast numbers imply an elasticity of 1.1 for 2007 and 2008, close to the long-run value of this elasticity. The key reason for this is the fall in the contribution of capital taxes to the growth in revenues. In 2006 capital taxes accounted for over €2.2 billion of the total increase in tax revenues; in our 2007 and 2008 forecasts the increases in capital taxes average below €800 million. This is driven by our forecast slowdown in residential construction in 2007 and 2008.

In terms of voted expenditure the May Exchequer returns indicate a significant acceleration in the pace of growth of both

capital and current expenditures. Total voted expenditure increased by €3,124 million (23 per cent) in the first five months of 2007 relative to 2006, compared to just €980 million (7.7 per cent) in the first five months of 2006. The 2007 figure includes an increase of €841 million in voted capital expenditure, but also reflects a significant increase in current expenditure, 17.8 per cent in the first five months of 2007 compared with 8.1 per cent in 2006. Even though there has been a clear acceleration in the pace of expenditure growth in recent months, these expenditures are close to the official profile of monthly issues. As such this acceleration was anticipated and is, therefore, compatible with the official full-year target growth in expenditure of 13.8 per cent, albeit with a significant slowing in the pace of expenditure growth in the second half of the year.

In Table 3 we use these official forecasts of current and capital expenditures, and capital receipts. Together with our independent forecast of tax revenues this gives an Exchequer Balance of -€622 million in 2007, widening to -€1,057 million in 2008, a deterioration of €3.3 billion in just two years. In terms of the General Government Balance, these figures imply a fairly dramatic reduction of the balance from 2.9 per cent of GDP in 2006 to 1.1 per cent in 2007, reflecting the stimulatory nature of Budget 2007.

TABLE 3: Public Finances

	2006	% Change	2007	% Change	2008
Current Revenue	46,145	7.7	49,695	6.9	53,133
Current Expenditure	36,994	12.7	41,701	6.5	44,426
Current Surplus	9,151	-12.6	7,994	8.9	8,707
Capital Receipts	1,871	-20.7	1,483	-0.4	1,477
Capital Expenditure	8,758	15.3	10,100	11.3	11,241
Capital Borrowing	-6,886	25.1	-8,617	13.3	-9,764
Exchequer Balance	2,265		-622		-1,057
as % of GNP	1.5		-0.4		-0.6
General Government Balance	5,031		2,132		2,489
as % of GDP	2.9		1.1		1.2
Gross Debt as % of GDP	25.1		23.7		22.8
Net Debt as % of GDP*	12.8		9.9		7.3

* Net of Pensions Fund and Social Insurance Fund.

Exports

The most recent *Quarterly National Accounts* data indicate that exports grew by 4.9 per cent in volume terms and 7 per cent in value terms for the year ending Q4 2006. According to the more detailed breakdown provided in the *Balance of Payments*, which only provides data in current prices, annualised export growth in 2006 was dominated by a robust expansion in services exports, with non-tourism services exports growing by 18 per cent and tourism exports by 9.5 per cent. Merchandise exports growth was significantly lower at 1.3 per cent.

TABLE 4: Exports of Goods and Services

	2005	% Change in 2006		2006	% Change in 2007		2007	% Change in 2008		2008
	€m	Volume	Value	€m	Volume	Value	€m	Volume	Value	€m
Merchandise	83,692	0.8	1.3	84,799	3.1	2.4	86,834	3.0	2.5	89,005
Tourism	3,813	6.7	9.5	4,175	4.9	8.0	4,509	5.9	8.0	4,870
Other Services	42,304	13.6	18.0	49,898	10.4	15.0	57,383	8.7	13.0	64,842
Exports of Goods and Services	129,809	4.9	7.0	138,872	6.0	7.1	148,726	5.2	6.7	158,717
FISIM Adjustment	1,192			1,275			1,599			1,801
Adjusted Exports	131,001	4.9	7.0	140,147	6.0	7.3	150,325	5.2	6.8	160,518

In previous *Commentaries* we have noted that there has been a mild recovery in merchandise exports since the years of negative growth rates in 2003 and 2004. This recovery was clearly seen in the growth rates in the first three quarters *Balance of Payments* data in 2006, which climbed steadily on an annualised basis. However, the data for the year ending Q4 2006 show that this pace of growth faltered towards the end of the year. Year-on-year growth in the value of merchandise exports in Q3 2006 was 4.5 per cent; in Q4 this was -4.5 per cent. It is uncertain whether this poor performance in the closing months of 2006 reflects a clear downward trend, but for the moment we are treating it as temporary for the following reasons. First evidence from the most recent *External Trade* statistics shows that the value of merchandise exports grew by 5.7 per cent in Q1 2007 relative to the same quarter last year. Second, the performance of merchandise exports for 2006 as a whole was surprisingly poor given the strong growth in the volume of manufacturing output of 5.3 per cent.⁹ In light of the large build-up of industrial stocks in Q4 included in the latest *Quarterly Accounts*, this leads us to believe that merchandise exports will rebound this year as firms run down these large stocks built up towards the end of 2006. Third, we expect the industrial sector to grow by 4.5 per cent and 3.5 per cent in volume terms in 2007 and 2008, and coupled with the increasingly favourable short-term prospects for the economies of our major trading partners, this should sustain continued growth in merchandise exports, albeit at a modest pace. In 2007 and 2008 we expect growth in the volume of merchandise exports to be 3.1 and 3 per cent respectively. Given the recent declines in wholesale prices for manufacturing, we expect the merchandise export price deflator to fall by -0.7 per cent in 2007. Assuming no change in the dollar rate in 2008 we expect this downward trend in manufacturing export prices to continue in 2008.

In 2006 services accounted for 39 per cent of the total value of exports and services export growth continued to outperform that of merchandise. The composition of this growth differed across the various service sectors, with business and financial services among the strongest at 27.3 and 27.5 per cent growth respectively.¹⁰ Computer services maintained their position as the largest share of overall services exports at 30 per cent in 2006 although the growth in business services exports means it is now running a close second. Looking forward, we expect the pattern of more services-intensive export growth to continue, with growth in the value of services exports of 15 per cent and 13 per cent in 2007 and 2008 respectively. However, given our forecast acceleration in inflation in 2007, which feeds into the price of services exports, the respective volume growth rates are somewhat lower at 10.4 per cent and 8.7 per cent respectively. Tourism exports growth in value terms is forecast to hold steady at 8 per cent in 2007 and 2008 after seeing growth last year of 9.5 per cent due in part to the Ryder Cup, the highest rate since 2001.

⁹ Annualised growth in Industrial Production Index (Manufacturing Industries).

¹⁰ Growth in Royalties and Licences was the highest at 82.3 per cent but in absolute terms this sector still only accounted for 1.6 per cent of services exports in 2006.

Our forecast for 2007 is for 6 per cent growth in the volume of exports of goods and services. This is an upward revision on our Spring forecast of 5.6 per cent, and partially reflects the improved forecast for growth in the Euro Area. We expect export growth to ease slightly to 5.2 per cent in 2008, as the current spate of interest rate increases globally begin to curb growth in the UK and the Euro Area.

BOX: THE SHIFT FROM MERCHANDISE TO SERVICES EXPORTS

In recent *Commentaries* attention has been drawn to the relatively poor performance of exports compared to that experienced during the late 1990s and up to 2002. While merchandise exports have recovered following a contraction in 2003, the post-2002 growth rates are less than half those recorded in the pre-2002 period. Meanwhile growth in services exports has been robust over this period, outstripping that of merchandise exports. This trend is evidence of an underlying shift in the economy away from traditional manufacturing towards (in part) the services sector. While there are other factors that may affect exports, such as exchange rate movements, competitiveness pressures and the growth in the non-traded construction sector, the shift to services has the potential to be the most influential in the long run.¹¹

Table A shows exports as a proportion of GDP from 1998 to 2006 in total and for merchandise and services separately. Exports in total have decreased as a percentage of GDP over the period, particularly since their peak of 100 per cent of GDP in 2001. This decline has been driven by the reduction in merchandise export share, which at the end of 2006 stood at just over 50 per cent of GDP. Services export share has expanded dramatically, almost doubling by the end of 2006 over 1998 levels. Expressed as a share of total exports, services exports have doubled over the period.

Table A: Recent Trends, 1998-2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006*
	%	%	%	%	%	%	%	%	%
Exports % GDP									
Total	87	90	98	100	94	84	84	81	81
Merchandise	70	71	76	74	69	56	55	52	51
Services	16	18	21	24	24	27	29	29	29
% Total Exports									
Merchandise	81	80	79	75	74	68	65	64	61
Services	19	20	21	25	26	32	35	36	39
Openness (Trade/GDP)	163	165	183	185	170	151	153	150	150

Source: NIE 2005, QNA Q4 2006, BOP Q4 2006.

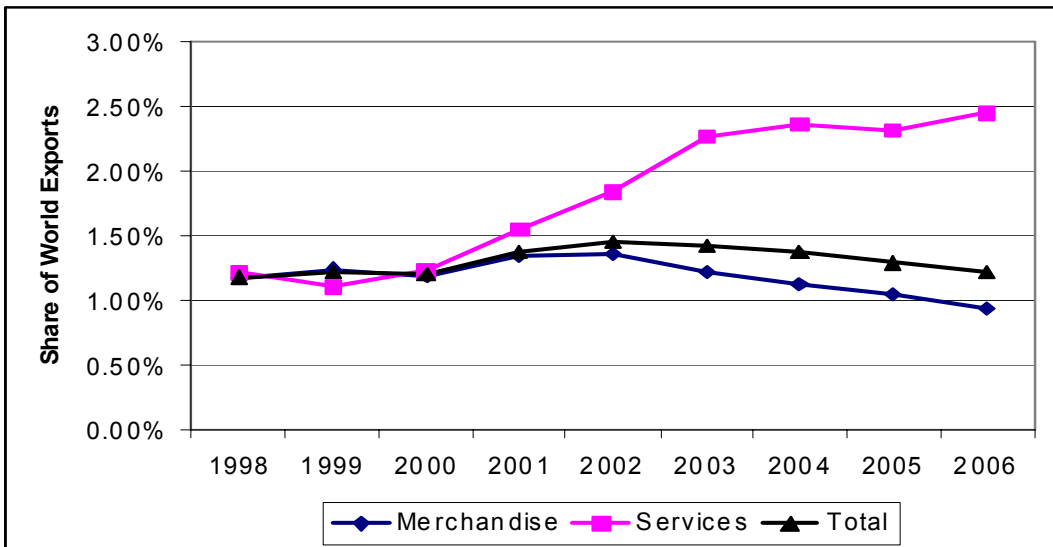
*Provisional

Given the nature of Ireland's industrial mix, with its relatively high proportion of exports accounted for by multi-national enterprises, the economy has in many ways "punched above its weight" on the international exports stage. At the peak of the export

¹¹ For a more general discussion see *Medium-Term Review 2005-2012 (MTR)*.

performance in 2002 Irish exports accounted for 1.36 per cent of total world exports. In 2006 this share had fallen to just over 0.9 per cent.¹² In the context of the value of world merchandise exports increasing by about 85 per cent over the same period it is clear that Ireland is facing stiffer competition in this sector. However this has been compensated for by the expansion in commercial services exports, as Ireland accounted for an estimated 2.45 per cent of world services exports in 2006 according to the World Trade Organisation. Despite this, for the world as a whole services' share of exports has remained steady around 19 per cent in recent years and its growth has been below that of merchandise exports more often than not. These trends lead to Ireland's share of total world exports declining in line with the overall decline in merchandise exports share.

Figure A: Ireland's Share of World Exports (1998-2006)



Source: World Trade Organisation statistics.

Many commentators have noted the general shift to services in the Irish economy at the expense of traditional manufacturing. Most services by their nature are less likely to be exported than manufactured goods and as such this shift could lead to a more closed economy. The nature of the services sector expansion in Ireland has however tempered this prospect. It is evident from Table B that the value growth in the services sector has been in those services that can be readily exported, as services exports growth has outstripped growth in total marketed services output in most recent years. The marketed services sector is quite diverse, covering everything from hairdressers to finance houses, and Ireland's services export growth is at the high value end of that spectrum. Growth in services sector exports has been driven by computer services (software), financial and business services. The availability of a highly skilled workforce and improvements in technology (particularly

¹² WTO Trade Statistics, expressed in current US dollars.

communications technology) contribute to this growth. It must also be noted that services exports tend to have a greater degree of domestic value added when compared to industrial exports, as there is less “leakage” in terms of the value consumed by imported inputs to their production (MTR, 2005). However, the growth in services exports has not been sufficient to counter the falling share of merchandise exports. The trend of export growth outstripping output growth cannot be seen for merchandise to the same extent as services.

As a result Ireland has become a more “closed” economy in recent years, with its degree of openness¹³ falling from a peak of 185 per cent of GDP in 2001 to 150 per cent of GDP in 2006 (see Table A). While this is still evidence of a very open economy with respect to others, the extent of the current decline in openness is one that has not been seen in recent decades. The last time Ireland experienced any decline in openness before 2002 was in 1990.

Table B: Growth in Marketed Services and Industrial Output Compared to Growth in Services and Merchandise Exports (Value), 1998-2006

	1999	2000	2001	2002	2003	2004	2005	2006*
	%	%	%	%	%	%	%	%
Marketed Services Output	12.2	18.2	13.5	11.0	12.8	8.5	11.1	8.3
Services Exports	24.6	36.1	32.1	8.2	18.1	14.3	8.7	17.3
Industrial Output (excl. construction)	16.6	13.2	9.7	11.2	-6.4	-2.2	1.1	6.5
Merchandise Exports	16.5	25.5	8.4	3.2	-12.5	2.8	3.9	1.3

Source: Own calculations based on National Accounts and Balance of Payments data. Marketed services output 2004-2006 derived from growth in total services output.

*Provisional.

The emerging trends show Ireland entering a different phase of its development than experienced before. While domestic factors have contributed more heavily to overall growth in recent years, Ireland will always be a small fish in a big pond. In order to have consistent and stable growth in our standard of living the traded sector will still have to contribute. The shift to services, among other factors, has changed the way in which this contribution is made. The challenge going forward is to ensure that the growth in services exports is sufficient to counteract a fall in merchandise exports such that Ireland’s degree of openness remains high.

Imports

The most recent data from the *Quarterly National Accounts* estimate import value and volume growth at 8.8 and 5.3 per cent respectively for the year ended Q4 2006. The *Balance of Payments* data show that this growth was mostly attributable to a strong increase in services imports, with tourism services imports growing by 11.3 per cent and non-tourism imports at 10.9 per cent. The growth in merchandise imports was significantly lower at 6.5 per cent.

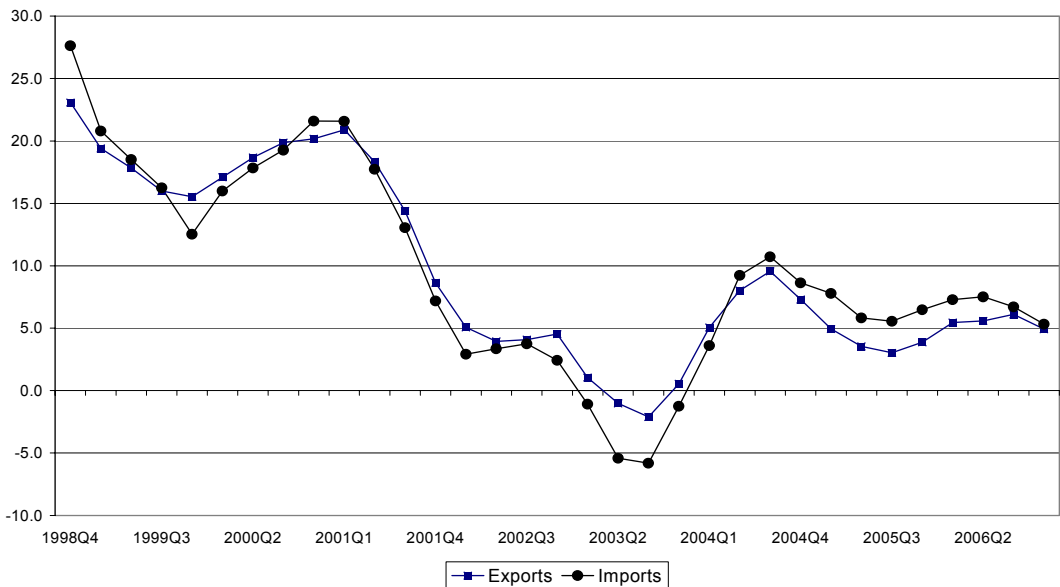
¹³ Openness = (Exports + Imports)/GDP.

TABLE 5: Imports of Goods and Services

	2005 €m	% Change in 2006		2006 €m	% Change in 2007		2007 €m	% Change in 2008		2008 €m
		Volume	Value		Volume	Value		Volume	Value	
Merchandise	54,086	3.2	6.5	57,592	5.4	6.5	61,335	5.4	6.5	65,322
Tourism	4,882	8.6	11.3	5,434	11.3	13.5	6,168	5.9	8.0	6,661
Other Services	51,325	7.9	10.9	56,920	7.7	11.0	63,181	5.5	8.5	68,552
Imports of Goods and Services	110,293	5.3	8.8	119,946	6.9	9.0	130,684	5.5	7.5	140,535
FISIM Adjustment	260			283			49			-7
Adjusted Imports	110,553	5.3	8.8	120,229	6.9	8.7	130,733	5.5	7.5	140,527

Export and import growth rates have moved in similar fashion in recent years. Despite this the annualised growth rates in the volume of imports as per the *Quarterly National Accounts* have been higher than that of exports since the Q2 of 2004. By the end of 2006 the difference in import and export growth rates had fallen to less than 0.5 per cent (Figure 6). Data from the *External Trade* statistics suggest that the value of total merchandise imports grew by 3.9 per cent in the year to March 2007. There has been significant growth in merchandise imports from the new EU member states, with imports from Slovakia and Poland more than doubling for the first two months of 2007 when compared to the same period a year earlier. In terms of services imports, data from the *Balance of Payments* indicate that the growth rate in imports of services has outstripped the growth rate in imports of merchandise goods since the end of 2003. Within services imports, the strongest growth in 2006 was in financial services (40.3 per cent) while tourism imports also showed robust growth (11.3 per cent).

Figure 6: Volume Growth Rates (from National Accounts, Annualised)



We forecast import volume growth of 6.9 per cent in 2007. This is driven by very strong growth in consumption, particularly in tourism imports where some of the SSIA funds will be spent. In 2008 this slows to 5.5 per cent. This fall is mainly due to a slowdown in services imports growth, particularly tourism, as the pace of consumption growth slows. The equivalent value growth rates are 8.7 per cent in 2007 and 7.5 per cent in 2008.

Balance of Payments

Our forecasts of merchandise exports and imports for 2007 and 2008 lead to a further narrowing of the merchandise trade surplus in those

years. The forecasts for merchandise export and import prices also point to a worsening in the terms of trade¹⁴ over the forecast horizon. Offsetting this is the continued narrowing of the service trade deficit. On balance however, we expect the trade surplus as a share of GNP to continue to decline to 11.2 per cent in 2007 and 10.6 per cent in 2008.

In relation to net factor flows the latest data from the *Balance of Payments* and the *Quarterly National Accounts* suggest that the net factor income deficit widened by just 1 per cent in the year ended Q4 2006. This relatively slow growth in net factor flows reflects both a 26 per cent fall in repatriated profits in 2006, and a further acceleration in the growth of factor flows into Ireland, which are estimated to have grown by a massive 35 per cent in 2006, mainly portfolio and other investment income. The more favourable export performance in 2007 and 2008 would suggest that net factor flows will increase over the forecast horizon as multi-national enterprises repatriate export driven profits. However net factor flows are very difficult to determine, particularly when one considers the variation in growth experienced through 2006.

The provisional CSO estimates for 2006 imply an effective current account deficit of 3.7 per cent of GNP. This is lower than our Spring estimate of 4.3 per cent and reflects the slower pace of growth in net factor flows and greater than expected growth in services exports. With the continuing decrease in the trade balance and a forecast growth of net factor flows of 6.7 per cent in 2007 and 6.9 per cent in 2008, the current account deficit expands to 4.7 per cent of GNP in 2007 and 5.1 per cent in 2008.

TABLE 6: Balance of Payments*

	2005 €m	Change %	2006 €m	Change %	2007 €m	Change %	2008 €m
Merchandise Trade Balance	29,606	-8.1	27,207	-6.3	25,499	-7.1	23,683
Service Trade Balance	-10,090	-17.9	-8,281	-9.9	-7,457	-26.2	-5,500
Trade Balance in Goods and Services on BOP basis	19,516	-3.0	18,926	-4.7	18,042	0.8	18,182
% of GNP	14.4		12.6		11.2		10.6
Total Debit Flows	67,764	22.9	83,285	15.8	96,405	16.0	111,807
Total Credit Flows	43,447	35.1	58,714	20.0	70,457	20.0	84,548
Net Factor Flows	-24,317	1.0	-24,571	5.6	-25,948	5.1	-27,259
Net Current Transfers	601	-123.6	-142	-135.2	50	0.0	50
Balance on Current Account	-4,200		-5,787		-7,856		-9,026
Capital Transfers	266	-16.5	222	35.1	300	0.0	300
Effective Current Balance	-3,934		-5,565		-7,556		-8,726
% of GNP	-2.9		-3.7		-4.7		-5.1

*This table includes adjustments to Balance of Payments basis.

¹⁴The terms of trade refer to the amount of imports a unit of exports can buy. If export prices rise more slowly than import prices then the terms of trade deteriorate since a larger volume of exports are needed to pay for a given volume of imports.

Measures of Growth

The most recent *Quarterly National Accounts* (QNA) estimate that GNP grew by 7.4 per cent in 2006, against a growth rate of 6.0 per cent in GDP. The difference is due to a volume fall in the growth of net factor income outflows. At present we are interpreting this gap with caution, and await the more comprehensive *National Income and Expenditure* (NIE) before attempting to assess this development. The reason for this is that revisions to these preliminary QNA estimates can be substantial. For instance, in the preliminary QNA estimates of GNP and GDP for 2005, published in March 2006, there was a similar positive gap between GNP and GDP. However, in the revisions contained in the NIE estimates published in July 2006 this gap had disappeared.

Our forecast numbers imply a significant slowdown in the rate of growth in GNP and GDP through 2007 and into 2008. We expect GDP to grow by 4.9 per cent in 2007 and 3.7 per cent in 2008; the equivalent figures for GNP are 4.8 per cent and 3.7 per cent respectively. More importantly, we expect that the terms of trade will deteriorate in 2007 and 2008, so that GNP adjusted for the terms of trade grows by only 4.2 per cent in 2007 and 3.3 per cent in 2008. And finally, adjusting our estimates for changes in population, including the impact of immigration, our forecasts imply GNP per capita growth of 2.7 per cent in 2007 and 2.2 per cent in 2008, down from 4.7 per cent in 2006.

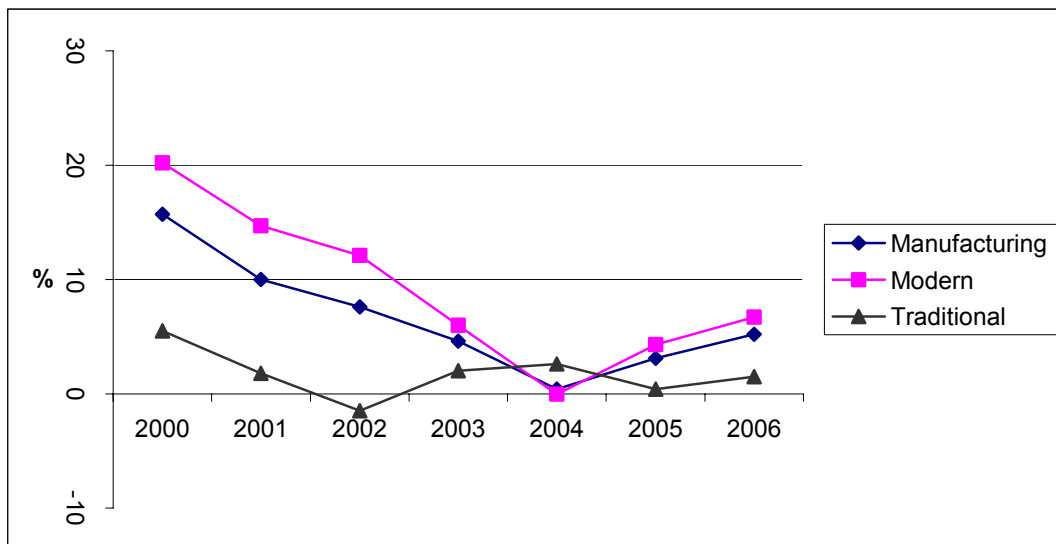
Sectors

According to the latest *Quarterly National Accounts*, output from *industry* grew by 6.1 per cent in 2006, well up on the 2005 figure of 3.4 per cent. As this covers both construction and other industries, it is necessary to look to the Industrial Production and Turnover figures to get a clearer sense of what has been happening to non-construction industries.

In Figure 7, we show rates of growth in industry (excluding construction) based on the CSO's volume indices of industrial production. Between 2000 and 2004, growth in manufacturing output declined steadily but since then a recovery has emerged. It can be seen in the figure that the modern sector has driven this recovery. While growth in the traditional sector was higher in 2006 relative to 2005, the experience in this sector since 2001 has been for output to grow in the low single digits, at best.

This positive picture from manufacturing is also seen in the latest NCB Purchasing Manager's Index on Manufacturing (NCB PMI). The May reading was 51.9 and as such points to expansion (being over 50). Another positive note concerns employment growth. As discussed in the section on *Employment* below, according to the *Quarterly National Household Survey* for Q1 2007 employment in this sector grew for the first time on an annual basis since the first quarter of 2002.

Figure 7: Annual Rate of Growth in Volume of Industrial Production, 2000-2006



Source: CSO *Industrial Production and Turnover*.

The question that is prompted by Figure 7 is whether manufacturing is in the midst of a sustained recovery. As the early outturns for 2007 are positive, with the volume index for the year ended Q1 2007 being 8.2 per cent higher than the twelve months prior to that, it certainly appears as if 2007 will be another year when the recovery will be sustained. We expect industrial output (excluding construction) to grow by 4.5 per cent in 2007 and by 3.5 per cent in 2008. Hence, while we expect the recent performance to be maintained in the short term, we do not envisage a return to the growth rates seen in the early years of this decade. When the slowdown in construction (as discussed above under Investment) is factored in, industry (including construction) is forecast to grow by 3.5 per cent in 2007 and by 3 per cent in 2008.

Services output grew by 5.7 per cent in 2006, according to the *Quarterly Accounts*. Within this category, public administration and defence showed the slowest pace of output growth, at 1.9 per cent. Distribution, transport and communications grew by 5.4 per cent, with other services (including rent) growing by 6.2 per cent. The most recent indicator of activity in the sector, the NCB PMI, points to on-going growth – the index of business activity was at 54.9 in May.

TABLE 7: GDP by Sector

	2005 €m	Change		2006 €m	Change		2007 €m	Change		2008 €m
		Volume	Value		Volume	Value		Volume	Value	
Agriculture	4,103	-0.9	1.5	4,165	1.0	2.5	4,269	1.0	2.5	4,375
Industry:	50,929	6.1	8.2	55,127	3.6	3.5	57,041	2.8	3.5	59,041
Other Industry	36,689	5.5	6.5	39,073	4.5	3.8	40,558	3.5	3.0	41,775
Building & Construction	14,241	7.8	12.7	16,054	1.0	2.7	16,483	0.7	4.8	17,267
Services:	87,336	5.7	8.3	94,551	5.8	9.1	103,178	3.9	7.4	110,762
Public Administration & Defence	5,137	1.9	8.5	5,574	2.5	8.5	6,048	1.0	7.0	6,471
Distribution, Transport and Communications	22,086	5.4	7.4	23,717	5.0	6.9	25,352	2.0	3.8	26,311
Other Services (including rent)	60,113	6.2	8.6	65,260	6.3	10.0	71,779	4.8	8.6	77,980
GDP at Factor Cost - output basis	142,369	5.7	8.1	153,843	4.8	6.9	164,488	3.4	5.9	174,178

We expect services output to grow by 5.8 per cent in 2007 and by 3.9 per cent in 2008. Within the broad services sector, we expect the same relative rate of growth to be maintained, with public administration and defence growing the slowest and “other services (including rent)” growing the fastest. With growth in this latter category outpacing growth in industry as well as in other services, it will remain the main driver of growth in the economy. This reflects the on-going trend towards a more service-intensive economy, in spite of the recent recovery in industry. This trend is even more pronounced when looked at in terms of value as opposed to volume. With higher services deflators expected, as a result of higher inflation in services relative to goods, the value of services output as a proportion of GDP is growing faster than that of industry. Our forecasts suggest that services will account for 63.6 per cent of output (in value terms) by 2008, an increase of almost 10 percentage points on the 1999 proportion.

According to the *Quarterly National Accounts*, the volume of *agricultural* output declined by 0.9 per cent in 2006. Price increases for output offset the fall in output volume, whereby the value of output increased. For 2007 and 2008, we expect a modest recovery in output volumes (with 1 per cent growth in each year).

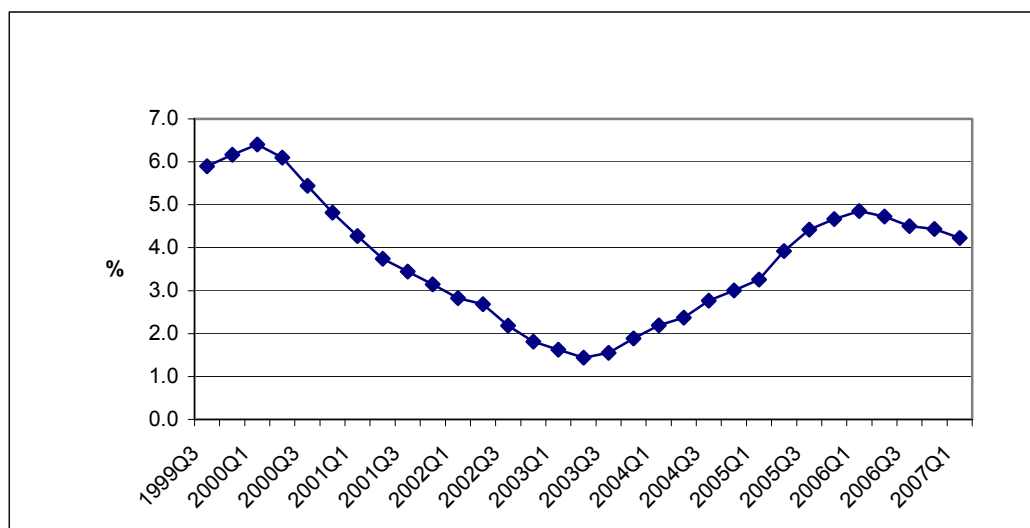
Employment

According to the *Quarterly National Household Survey* for Q1 2007, employment grew by 4.2 per cent.¹⁵ This represents a strong pace of employment growth, both historically and relative to other economies. However, the pace of job creation appears to be slowing. As can be seen from Figure 8, the annual rate of employment creation appears to have peaked in the first quarter of 2006 and has been trending downwards since then.

Construction continues to be the fastest growing sector in employment terms. There were 10.3 per cent more jobs in construction in the year ended Q1 2007 relative to the twelve months prior to that. Although this rate of increase is higher than those seen in the previous two quarters, the figure of 10.3 per cent does represent a slowdown relative to mid-late 2005 when employment growth in construction was recorded at 15 per cent and 14.4 per cent in Q3 and Q4 respectively. Furthermore, the April 2007 index of employment in construction (firms of 5 or more) suggests that employment in construction may have begun to decline.

¹⁵ The figure of 4.2 per cent is based on a comparison of the twelve months ended Q1 2007 with the twelve months prior to that. A comparison of the first quarter of 2007 and the first quarter of 2006 produces an employment growth figure of 3.8 per cent.

Figure 8: Annual Employment Growth Since 1999 Q3



Health and Education remain the other main sectors of job growth, with annual rates of increase of 8.7 per cent and 7.4 per cent respectively. If we combine Construction, Health and Education, we find that almost 70 per cent of the jobs created in the period under discussion were created in these sectors. For this reason, the general pattern of recent quarters is being repeated whereby the vast bulk of jobs are being created in the non-tradable sector. The one minor exception is the increase in employment in “other productive industries”. Since Q1 of 2002, this sector had been recording negative employment growth so the employment increase of 0.5 per cent in Q1 2007 is noteworthy. This is consistent with the relatively stronger performance in industry in recent times and is counter to the view that may have emerged from media coverage of job losses. Whether the recovery will be maintained is discussed below.

The economy’s experience of rapid employment growth continues to be closely linked with significant inward migration. According to the *QNHS*, 46,500 immigrants joined the labour force in the year ended Q1 2007 and hence accounted for almost 60 per cent of the growth in the labour force. Of this group, 45,200 entered employment, whereby immigrants also accounted for about 60 per cent of employment growth. Over 80 per cent of the newly employed immigrants are from the ten New Member States of the EU.¹⁶

Looking ahead, we expect employment to grow by 58,000 in 2007 (an increase of 2.9 per cent) and by 25,000 in 2008 (an increase of 1.2 per cent). These forecasts imply a rapid deceleration in job growth. The main cause of the deceleration is the slowing of employment growth in construction. We see employment in construction growing by just 1 per cent in 2007 and by 0.5 per cent in 2008. This forecast follows from our forecast of a slowdown in housing construction but

¹⁶ Romanian and Bulgarian immigrants are categorised under “others” in the *QNHS* release.

is also based on the latest findings in the FAS/ESRI Vacancies Survey, which shows a steeper decline in vacancies in this sector relative to others. The survey also found that construction sector employers are the most pessimistic about future employment levels in their sector when compared with employers in other sectors. The construction sector employment expectations indicator is at its lowest level since November 2002.

TABLE 8: Employment and Unemployment

	Annual Averages 000s			
	2005	2006	2007	2008
Agriculture	115	117	116	115
Industry	539	560	559	553
Services	1,298	1,362	1,422	1,453
Total at Work	1,952	2,039	2,097	2,122
Unemployed	89	93	103	111
Labour Force	2,041	2,132	2,200	2,233
Unemployment Rate %	4.4	4.4	4.7	5.0
Net Migration	53.4	69.9	50.0	25.0
of which: Inward Migration	70.0	86.9	67.0	42.0
Change in Participation Rate*	1.7	1.2	0.8	0.3

* Note: Participation rate measured as share of population aged 15-64 years.

A fall in employment growth will have implications for immigration, unemployment or participation, or probably some combination of all three. It is particularly difficult to forecast how migration will react, as we have no prior experience on which to base a forecast. Our approach is to allow for adjustment in all three variables. Hence, we forecast that unemployment will rise to 4.7 per cent in 2007 and to 5.0 per cent in 2008 (2006 figure is 4.4 per cent). The increase in participation is forecast to fall to 0.8 percentage points in 2007 and to 0.3 percentage points in 2008 (2006 figure is 1.2 per cent). Finally, net immigration is forecast to fall from almost 70,000 in 2006 to 50,000 in 2007 and to 25,000 in 2008. This decline is consistent with trends emerging from the PPS figures; data for April indicate that applications for permits are 10 per cent lower than in April 2006.

Incomes

In Table 9, we show annual growth rates in weekly earnings across the range of sectors for which we have data, for the years 1999 to 2006. On average, weekly earnings grew by 4.8 per cent in 2006.¹⁷ Earnings growth was slowest in Construction (at 1.8 per cent)¹⁸ and highest in Financial and Other Business Services (at 6.9 per cent).

¹⁷ This figure is not directly comparable with the figure for wage growth in the Summary Table. The latter measures the growth in average annual earnings which include bonuses, holiday pay etc. not included in the weekly earnings figure. The weekly earnings figure is based on sector-level surveys. The annual earnings figure in the Summary Table is derived from the National Accounts.

¹⁸ The first figures for 2007 show an annual growth rate in earnings in construction of 3 per cent, thereby pointing to a recovery in earnings growth in this sector. This is somewhat surprising given the decline in activity.

TABLE 9: Growth in Average Weekly Earnings 1999-2006

	Weekly Earnings		Annual Growth							
	Q3 2006	Cumulative Growth Q1 1999 - Q3 2006	1999	2000	2001	2002	2003	2004	2005	2006**
	<i>Euro</i>	<i>%</i>	<i>%</i>							
Economy*	749.12	54.7	5.3	7.8	9.2	5.5	4.6	5.9	5.3	4.8
Industry	623.69	57.4	5.6	6.6	8.0	6.5	6.8	4.7	3.6	3.6
Construction	798.46	80.8	8.3	12.4	8.7	9.9	4.2	4.8	7.2	1.8
Distribution	706.30	65.4	5.4	11.2	9.2	6.2	5.1	4.0	4.5	6.1
Hotels and Restaurants	436.04	45.6	6.1	6.0	5.4	2.3	5.8	7.7	5.8	2.9
Transport, Storage and Communications	787.37	49.9	3.6	6.0	8.8	0.7	5.1	5.0	4.1	5.8
Non-Market Public Services	898.63	57.2	4.2	5.7	9.9	4.8	4.3	8.5	5.9	4.5
Other Market Services	745.80	51.9	5.9	8.6	7.1	2.5	5.4	4.9	3.4	4.7
Financial and Other Business	858.41	53.3	3.5	6.2	10.9	4.4	1.6	5.6	5.2	6.9

*Weighted by employment, excludes agriculture and health sector earnings.

**Annual growth for years 1999 to 2005 defined as the annual growth in the four quarter moving average ended in Quarter 4. Annual growth in 2006 defined as the annual growth in the four quarter moving average ended in Quarter 3.

These figures are of most interest in a comparative international context as it is only by comparing wage growth in Ireland to elsewhere that we get a sense of the competitiveness implications. In Table 10, we present figures for wage growth for the Euro Area, and also for France, Germany, Italy and the UK. It is clear from the table that Ireland has seen high wage growth relative to elsewhere. As an indicator of competitiveness changes, a comparison of wage growth across countries is overly simplistic as productivity improvements could counterbalance wage gains. However, we know that Ireland has experienced relatively low productivity growth in recent years so the data in Table 10 however, simplistic, point to declining competitiveness. In contrast, the German figures appear to go some way towards explaining the remarkable growth in German exports discussed in the *International Section*.

TABLE 10: International Comparisons of Earnings Growth

	2003	2004	2005	2006	Average 2003-2006
Euro Area	2.9	2.2	2.1	2.6	2.5
France	3.2	1.7	3.2	3.2	2.8
Germany	2.0	0.3	0.2	1.0	0.9
Italy	3.8	3.5	3.2	3.1	3.4
UK	4.8	4.2	4.1	3.7	4.2
Ireland	4.6	5.9	5.3	4.8	5.2

Source: CSO and NIESR (2007).

For 2007 and 2008, we are forecasting continued strong rates of nominal wage growth. For 2007, our expectation is for wage growth of 5.5 per cent and for 2008, we expect a rate of 5 per cent. In the context of a softening in the labour market, these rates may seem high but they need to be understood in the context of CPI inflation. As we are forecasting CPI inflation of 4.9 per cent in 2007 and 3 per

cent in 2008, the implied real wage growth is somewhat lower. We return to this issue in the *General Assessment* of the dangers of seeing a rapid and full feed through from CPI inflation into wages. We should also note at this point that our forecasts have not included any allowance for possible awards under the Public Sector Benchmarking Body.

Combining our forecasts for employment and wage growth, we expect to see the non-agricultural wage bill growing by 8.7 per cent in 2007 and by 6.4 per cent in 2008, a slowdown from the 2006 growth rate of 9.9 per cent. However, with transfers growing rapidly in 2007, as a result of the generous social welfare package in Budget 2007 together with the scheduled repayment of nursing home charges, and other non-agricultural incomes growing more rapidly also, gross personal income will grow by 9.6 per cent in 2007, up on the 2006 figure of 8 per cent. In 2008, we expect gross personal income to grow by 6.3 per cent. With consumption growing at a faster pace than personal disposable income in 2007 and 2008, the savings rate is expected to decline from 10.3 per cent in 2006 to 9.3 per cent in 2007 and to 9.0 per cent in 2008.

Consumer Prices

The May 2007 estimates of consumer price inflation from the consumer price index (CPI) show a year-on-year increase in consumer prices of 5.0 per cent. The rate of increase in consumer prices has been rising steadily since the middle of 2005 and is now at levels last seen in early 2003, as shown in Figure 9. Figure 9 also shows the twelve-month moving average rate of inflation. Following a spike of almost 6 per cent in 2001, inflation moderated to reach a low of 2 per cent in September 2004. However, since then the inflation rate has been increasing steadily and the average of the twelve months to February 2007 reached 4.6 per cent.

To understand what is driving this escalation in price inflation it is useful to look at an alternative measure of inflation, the EU Harmonised Index of Consumer Prices (HICP). This specifically excludes mortgage interest and a number of country-specific, non-traded items,¹⁹ and is generally used to compare inflation rates across EU member states. In the last period of high inflation 2000-2003, the gap between the CPI and the HICP, which is largely driven by mortgage interest, was relatively small (Table 12). In contrast in 2006 the HICP rate of inflation was 2.7 per cent while the CPI measure was 3.9 per cent. Our forecast for 2007 suggest that this gap will widen further due to the impact of interest rate increases on the CPI measure of inflation throughout 2007. Since interest rate increases

¹⁹ In addition to mortgage interest, the HICP also excludes building materials; concrete blocks; union subscriptions; motor car insurance; dwellings insurance; motor car tax and motor cycle tax.

TABLE 11: Personal Disposable Income

	2005	Change		2006	Change		2007	Change		2008
	€m	%	€m	€m	%	€m	€m	%	€m	€m
Agriculture, etc.	3,399	1.5	51	3,450	2.5	86	3,536	2.5	88	3,625
Non-Agricultural Wages	65,272	9.9	6,434	71,706	8.7	6,259	77,965	6.4	4,989	82,954
Other Non-Agricultural Income	16,956	4.4	745	17,700	6.9	1,222	18,922	6.3	1,190	20,112
Total Income Received	85,627	8.4	7,230	92,857	8.1	7,567	100,423	6.2	6,268	106,691
Current Transfers	17,633	5.6	989	18,622	16.9	3,147	21,769	6.6	1,444	23,213
Gross Personal Income	103,260	8.0	8,219	111,478	9.6	10,714	122,192	6.3	7,712	129,904
Direct Personal Taxes	19,580	9.1	1,781	21,362	9.3	1,994	23,356	6.3	1,467	24,823
Personal Disposable Income	83,679	7.7	6,437	90,117	9.7	8,719	98,836	6.3	6,244	105,080
Consumption	74,114	9.0	6,685	80,799	11.0	8,874	89,673	6.6	5,909	95,582
Personal Savings	9,565	-2.6	-247	9,318	-1.7	-154	9,163	3.7	335	9,498
Savings Ratio	11.4			10.3			9.3			9.0
Average Personal Tax Rate	19.0			19.2			19.1			19.1

Figure 9: CPI Inflation Rate

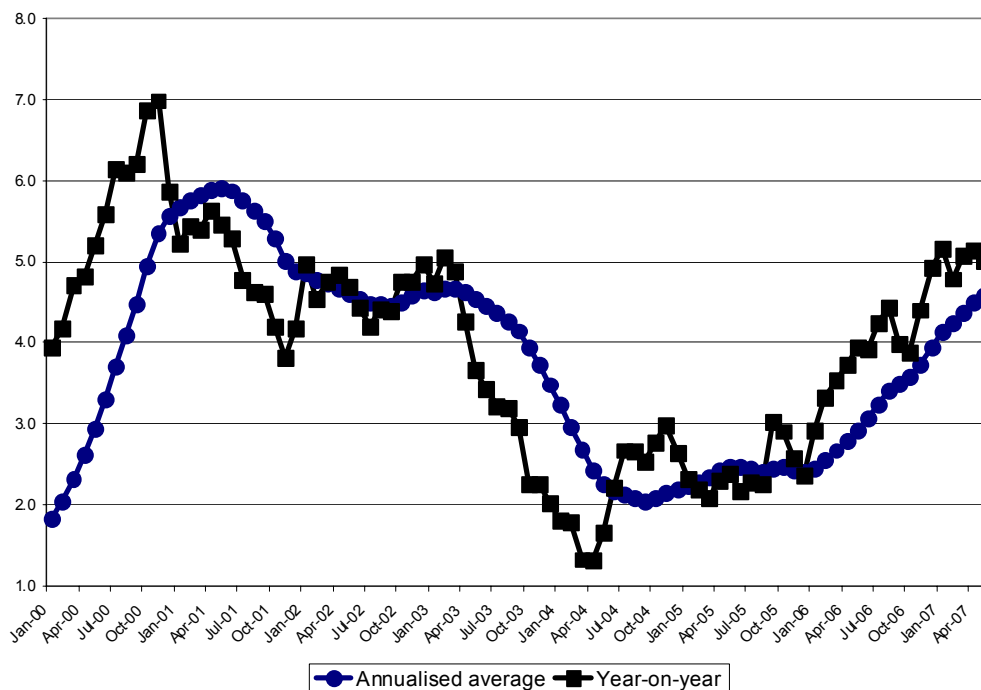


TABLE 12: Inflation Measures (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
HICP	5.3	4.0	4.7	4.0	2.3	2.2	2.7	2.7	2.3
CPI	5.6	4.9	4.6	3.5	2.2	2.4	3.9	4.9	3.0
Mortgage Interest	12.5	24.7	-7.6	-8.3	5.4	12.3	31.4	42.4	11.2

are entirely driven by external forces, our forecast inflation rate of 4.9 per cent greatly exaggerates the incipient domestic inflationary pressures running through the economy.²⁰

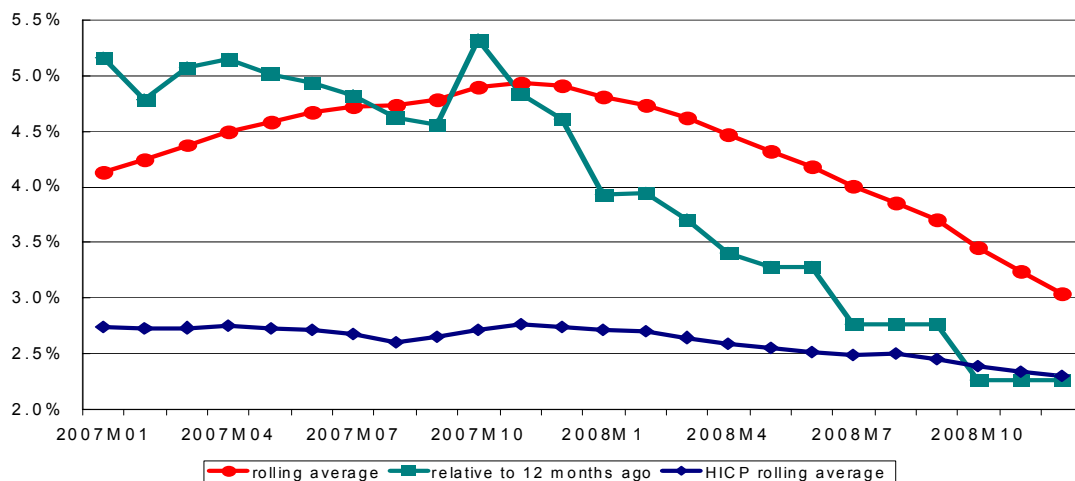
This is not to ignore the fact that HICP inflation, running at 2.7 per cent, is far higher than the EU average. The latest data from Eurostat, for April 2007, shows that Irish inflation was running significantly higher than the EU average in a number of domestically generated categories, namely health; communications; recreation and culture; and restaurants and hotels.

As stated above, the May CPI estimates imply an annualised rate of inflation growth of 4.6 per cent. Ignoring the sub-item mortgage

²⁰ There has been a good deal of discussion among economists in recent years about the manner in which the cost of housing is measured in the CPI. The current “payment approach”, which includes actual mortgage payments, means that both changes in interest rates and changes in house prices are reflected in the CPI measure of inflation. It is argued that this is not an accurate measure of the cost of living since it includes an element of asset appreciation/depreciation. (McCarthy, C. *Owner-Occupied Housing Costs and Bias in the Irish Consumer Price Index*, UCD. <http://www.ucd.ie/economics/staff/cmccarthy/ownocc.pdf>)

interest, it is interesting to give an impression of the relatively high-inflation sub-items within the index over the twelve months to May 2007. These include beef (8.7 per cent); fresh fish (13 per cent); potatoes (7.1 per cent); dry cleaning and laundry (6.9 per cent); private rents (8.9 per cent); electricity gas and other fuels (8 per cent); out-patient services (7.1 per cent); taxi fares (8.2 per cent); postal services (7.6 per cent); sports admittance (6.2per cent); primary education (9 per cent); secondary education (8.3 per cent); accommodation services (9.3 per cent); hairdressing (6.9 per cent); health insurance (11.2 per cent). With the exception of food prices, which have shown some evidence of upward pressure in recent months, all of these items are services.

Figure 10: Inflation Profile 2007-2008 (Forecast 2007M6 Onwards)



The outlook for 2007 is for a higher rate of inflation than 2006. We expect annual inflation to peak towards the end of 2007, partly driven by an assumption of a further 0.25 base points increase in ECB interest rates in September. The annual average rate of inflation for the year is forecast at 4.9 per cent. In 2008, we forecast a rate of inflation of 3.0 per cent. The slowdown in inflation in 2008 is largely based on the technical assumption that there are no further interest rate increases in that year.

General Assessment

The *Quarterly National Accounts* for the fourth quarter of 2006 suggest that GNP grew by 7.4 per cent last year, with GDP growing by 6 per cent. This growth has been accompanied by positive outcomes such as large increases in employment and favourable public revenue inflows. For these reasons the growth is, of course, to be welcomed. However, as we move through 2007 it is becoming clear that 2006 will represent a peak in terms of the recent experience of economic growth. With employment growth slowing, tax revenues growing more slowly than last year and early indicators of activity in house building pointing towards a slowdown, our task in producing

forecasts has been to estimate whether the slowdown will be moderate or otherwise.

For now, our belief is that the slowdown will indeed be moderate. For 2007, we are forecasting GNP growth of 4.8 per cent and for 2008 our forecast is for GNP growth of 3.7 per cent. Although slower than 2006, these rates of growth are high by international standards and so should be seen as a reversal to a sustainable rate of growth. While this moderate slowdown is our view as of now, a number of developments within the economy give rise to a concern that the slowdown could be steeper and so we elaborate on these issues also.

Before looking at these points, we want to set the discussion below in the broader context of developments in the economy in recent years. In Table 13, we show annual growth rates in GNP, exports and productivity for the years 1996 to 2006. For the year 2006, the rate of growth in GNP was similar to that of the late 1990s and so the perception may have held that the processes underlying the “Celtic Tiger” were still in operation. However, it is clear from the table that the economy was actually quite different in the years after 2001/02, relative to pre-2001. As can be seen, export growth collapsed in 2003 and has not approached the growth rates of the late 1990s since then. Similarly, productivity growth dropped in 2003 and has languished since. On the basis of these figures, we would characterise the period 1996-2006 in terms of phases 1 and 2 of the Celtic Tiger, rather than a single period in Irish economic history.

The growth in housing construction partly explains some of the other trends in Table 13. As a percentage of GNP, investment in housing rose steadily from 6.4 per cent to 15.5 per cent by 2006. As house building is a relatively low-productivity activity, it appears to have contributed to the pattern of productivity growth.

TABLE 13: Growth Rates in GNP, Exports and Productivity 1996-2006, and Housing Construction as a Percentage of GNP, 1996-2006

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
GNP	7.8	10.1	7.7	8.5	9.7	3.9	2.8	5.5	3.9	5.3	7.4
Export	12.5	17.6	23.1	15.5	20.2	8.6	4.5	0.5	7.3	3.9	4.9
Productivity	4.3	6.8	2.3	3.3	3.8	4.4	4.4	1.4	2.0	0.8	1.2
Housing Construction (% GNP)	6.4	7.2	7.7	8.7	9.2	9.8	10.2	11.8	13.6	15.4	15.5

Note: Productivity growth is defined as rate of increase in GDP at factor cost per person employed.

It is in the context of these developments that we look at the prospects for the economy. From Table 13, we know that we are looking at an economy where productivity growth has been low. This has impacted upon competitiveness which is reflected in the low rate of exports growth. As construction is a non-traded activity, it has been able to continue growing in spite of the falls in competitiveness. When viewed in this overall context, some recent developments in the economy point to the possibility of a steeper slowdown in economic activity relative to our forecasts.

One such development is CPI inflation or more precisely the possible feed through from CPI inflation into wage demands. With CPI inflation running at around 5 per cent, the full feed through into wages could see wages rising by substantially over 5 per cent. This would imply that the trend highlighted in Table 10 above (in the section on *Incomes*) may continue, that is, high wage growth in Ireland relative to elsewhere.

We noted in the last *Commentary* that this is a very real concern, based on recent experience. A regression equation relating growth in the CPI in one quarter to wage growth in the following quarter shows that the pass through has tended to be high and rapid. According to the equation, 50 per cent of the increase in CPI is reflected in wage increases within three months. At any time, such a rate of transmission raises concerns about excessive wage demands translating into job losses but a number of factors combine to make this a particular concern right now.

One of these factors has been identified in Figure 8 above, where we showed how employment growth, while still strong, is declining. As with the general situation in the economy of growth returning to a sustainable level, the decline in employment growth should be seen in the same way. However, with employment growth already slowing, excessive wage pressures have a greater potential to lead to a more significant choking off of labour demand. In this way, the decline in employment gains could become steeper. It is more usual to see wage pressures easing as the rate of employment growth falls but at present we have a situation of falling employment growth and, potentially, continued strong wage growth. It is this combination that is troubling as it leads to the risk of accelerated job losses.

High wage increases are not a concern if they are matched by strong productivity growth, but this has not been the case in Ireland in recent years. The rate of productivity growth in 2006 was an improvement on recent years but at 1.2 per cent was still well below the rates of increase prior to 2001. In addition, as productivity growth is typically pro-cyclical, we would expect productivity growth to be increasing and so the question arises of whether actual productivity growth is substantially below what would be expected given GNP growth. An analysis of the correlation between GNP growth and productivity shows that this is the case, thereby adding to concerns over the economy's productivity performance.

Having presented this concern over wage inflation and employment, the logical question arises as to what policy actions should be taken. In truth, the scope for a policy response that will have an immediate impact is limited. The problems of excessive wage growth relative to productivity growth can only be solved in the short-run within the labour market but we are cautiously optimistic on this point. As discussed in earlier *Commentaries*, the economic slowdown in 2001/02 led to wages rising by less than 1 per cent in real terms in 2002. As this was a rapid slowdown relative to the years immediately prior to that, we see this as evidence of flexibility within the labour market where wages respond to demand pressures. Such flexibility should insulate the economy from a more rapid slowdown.

The government has very limited influence over wages in the economy. One area where policy can have an impact is with regard to

public sector benchmarking; the other area where a government response may be needed is with regard to the National Pay Agreement. On benchmarking, as the government can be viewed as a purchaser of labour, it impacts upon wage inflation by adding to the demand for labour. As it increases the price it offers, other purchasers must do likewise. In this way, if there were substantial payments under the next round of benchmarking, they could add to wage pressures more generally. However, the larger concern regarding benchmarking is the extra tax burden that will be needed to finance any pay awards.

With regard to the National Pay Agreement, we have argued previously that its impact on wages in the private sector is likely to be a lot less than is often asserted. For this reason, while we would urge the Government to be cautious with regard to calls for a renegotiation, we do so based on concerns regarding public sector pay and the potential tax implications, as just argued.

Looking beyond the issue of wage increases, the short-term policy measures available to the government in response to some potential challenges are limited, where these challenges relate to productivity and structural shifts within the economy. Policies, for example, that aim to introduce greater competition in utilities or to up-skill the workforce, are more medium term in focus. To a great extent, the short-term limitations on policy arise out of where the Irish economy currently finds itself. The housing boom of recent years, in terms of price and construction activity, obscured some underlying weaknesses in the economy and may have contributed to those weaknesses. The main weakness was the loss in competitiveness. Although its impact was seen, for example, in lower export growth and little or no growth in manufacturing employment, the phenomenal growth in housing left headline numbers on growth unaltered. We now appear to be at the beginning of the end of the housing boom, partly in response to interest rate increases.

The challenge for the economy is to move resources to new areas of economic activity, so that the transition path is as smooth as possible in terms of output and employment. Our forecasts for healthy services output growth and for modest growth in industry imply a confidence in the ability of the economy to manage the transition. However, the type of transition that we are describing involves an element of structural change. As such change is typically facilitated by policy in the medium and longer term, and not through short-term measures, there is limited scope for policy to assist. This means that any rapid slowdown will not be readily addressed by policy and as such leaves the economy vulnerable.

SPECIAL ARTICLES

On the Likely Extent of Falls in Irish House Prices

by
Morgan Kelly

Valuing Ireland's Pension System

by
Shane Whelan

ON THE LIKELY EXTENT OF FALLS IN IRISH HOUSE PRICES

*Morgan Kelly**

Abstract

Looking at house price cycles across the OECD since 1970, we find a strong relationship between the size of the initial rise in price and its subsequent fall. Were this relationship to hold for Ireland, it would predict falls of real house prices of 40 to 60 per cent over a period of 8 to 9 years. The unusually large size of the Irish house building industry suggest that any significant house price fall that does occur could impose a difficult adjustment on the economy.

1. Introduction

The purpose of this paper is to look at the likely behaviour of Irish house prices based on the experience of economies that have gone through similar booms. Looking at nearly 40 booms and busts in OECD economies since 1970, we find that the size of the initial boom is a strong predictor of the size and duration of the subsequent bust.

Typically, real house prices give up 70 per cent of what they gained in a boom during the bust that follows. This is a remarkably robust relationship, holding across very different OECD housing markets over more than 30 years.

Were this relationship to hold for Ireland, it would predict a fall in real house prices of around 40 to 60 per cent, over a period of 8 or 9 years. Assuming an inflation rate of 2 per cent, this would translate into an annual fall of average selling prices of 6 to 7 per cent.

Falls of this magnitude and duration are not unprecedented internationally. For example, the real price of Dutch houses fell by around half during the 1980s, as did those in Finland during the early 1990s. However, other large housing busts occurred in

*I would like to thank Christophe Andre for providing the OECD house price database used here, and to a referee for detailed and constructive criticisms of the submitted draft. All interpretations and errors are mine.
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economies with high rates of housing occupancy and relatively slowly growing stocks of houses. In Ireland, by contrast, housing stock has been growing at around 5 per cent per year, with about 15 per cent of the housing stock lying empty, increasing the potential for larger price falls than in previous OECD housing busts.

Our estimate is in contrast with existing studies that measure over-valuation by the size of a regression residual and find over-valuation of around 20 per cent. We demonstrate below, however, that unless based on very long run time series, such regressions are effectively meaningless.

The principal macroeconomic reason for being concerned about a fall in Irish house prices is its impact on residential investment. Typically, an industrialised economy gets around 5 per cent of its income from building new houses, around the same that it gets from household spending on recreation. Ireland currently derives nearly three times this amount from building and selling houses. Any sudden fall of residential investment to normal international, and national historical, levels, could have a substantial impact on national income, government finances, and unemployment: fewer than 15 per cent of construction workers are immigrants.

Falls in residential investment, moreover, can be sudden as the example of Arizona shows. Until late 2005, Arizona was experiencing a house price and construction boom similar to Ireland's. Then, as sales of new houses stalled around the start of 2006, building fell suddenly: from around 8,000 starts in May 2006 (similar to Irish levels last year) to around 3,000 in November.

The stagnation of the housing market even below the stamp duty threshold makes it evident that the reduction or elimination of stamp duty will not alter the basic dynamics of the housing market. Markets like housing are driven by fear of offering less than other bidders and ending up with nothing. With a large inventory of unsold houses, the *permanent-tsb* house price index showing monthly falls, and the irishpropertywatch.com tracking site showing that cuts in asking prices of €50,000 are now commonplace, potential buyers have an incentive to wait and see if prices will fall further. At the same time, rents are likely to fall as discouraged vendors attempt to let out empty properties.

The rest of this paper is as follows. Section 2 rehearses the relevant economic theory of rational frenzies in asset markets. Section 3 looks at the nearly 40 cases since 1970 where OECD economies have experienced house price rises followed by falls, and shows that the magnitude of the boom is a strong predictor of the size and duration of the subsequent bust. Section 4 shows how the stagnation of rents since 2000 while house prices doubled means that the Irish housing market has not been driven by strong fundamental demand. Section 5 looks at the possible magnitude and duration of house price falls, and their potential macroeconomic effects.

The familiar efficient markets hypothesis predicts that changes in asset prices are unpredictable. The price reflects individuals' information about asset's present value and changes as this information changes. Agents with good information buy, driving up the price, and those with bad information sell, driving it down.

However, instantaneous revelation of information through trade is not possible in house markets due to the very large transaction costs involved. In addition, the market lacks means for individuals to convey negative information through short sales.

As a result, housing markets are better modelled as information cascades: the actions of other agents signal their private information and can cause individuals to ignore their own signals and follow the herd (Bikchandani, Hirshleifer and Welch, 1992). Two models in the cascade literature are particularly useful for understanding the dynamics of housing markets: the rational frenzies model of Bulow and Klemperer (1994) and the wisdom after the fact model of Caplin and Leahy (1994).

Bulow and Klemperer (1994) model rational frenzies in auctions where participants reveal their valuations by bidding. Suppose that there are k items available. If individual reservation prices were known with certainty, everyone would wait until the price fell to just above the reservation price of the $k + 1$ -th highest person, and then all buy together. In practice, only the probability distribution of reservation values is known, and by bidding, or failing to bid, individuals reveal information about their valuations, allowing all participants to update their estimates about the value of the $k + 1$ -th highest reservation price.

As a result, bidders with very different valuations have very similar willingness to pay. Price drops until one person bids. The information this reveals about the true distribution of willingness to pay can set off a bidding frenzy among the other bidders, driving up price again until it becomes clear that price is again above willingness to pay. Bidding then stops, causing prices to collapse until another bidding frenzy starts.

As well as being volatile, Bulow-Klemperer predict that the relationship of house prices to fundamentals such as income and interest rates need not be straightforward. To the extent that individuals depart from Bayesian rationality, altering reservation values in response to observed trends in prices, these effects will be amplified.

Caplin and Leahy (1994) look at investment where individuals have Gaussian signals. If the true state is bad, individuals continue to invest, driven by the dominating effect of past actions. Eventually, however, because signals are not bounded, a few agents get sufficiently bad signals to induce them to stop investing, causing priors rapidly to move to a belief that the state is bad, leading to a market crash and "wisdom after the fact".

3. Mean Reversion in House Prices

Economic theory predicts that house prices should not follow a random walk, but should be a mean-reverting process of booms and crashes around a slowly increasing trend reflecting the growth of household income. This is what the international data show.

Large falls in real house prices in the aftermath of housing booms are common internationally. Table 1 shows the 18 cases since 1970 where OECD economies have experienced falls in real house prices of at least 20 per cent, along with the previous price rise, and the duration of the fall. It can be seen that, in contrast to stock or currency markets, falls are prolonged, usually lasting 5 to 7 years, with the Netherlands, Switzerland, and Japan all experiencing more than a decade of falls. This reflects the reluctance of sellers to cut nominal prices, meaning that inflation does most of the work in reducing real prices.¹

Table 1: Magnitude and Duration of Falls in Real House Prices

	Peak Year	% Fall	Previous Rise	Duration of Fall
Netherlands	1978	50	98	7
Finland	1989	-48	109	6
Switzerland	1989	-39	70	10
Norway	1987	-39	53	6
Denmark	1978	-36	22	4
New Zealand	1975	-35	57	5
Sweden	1979	-35	26	6
Spain	1977	-33	24	4
Denmark	1986	-32	52	6
Japan	1974	-31	56	4
Italy	1982	-30	84	4
Finland	1974	-30	22	5
Japan	1991	-27	78	10
Sweden	1990	-27	38	6
Italy	1992	-26	65	6
Switzerland	1973	-26	34	4
Ireland	1981	-22	53	5
Canada	1981	-20	6	4

Shiller (2006) looks at three long series of real house prices: Amsterdam from 1628 to 1973, Norway from 1819 to 1989, and the United States from 1890 to 2005. In all cases he finds that although there are substantial and long lasting peaks and troughs, there is scarcely any upward long-run trend in prices.

Figure 1 shows the same pattern for smaller OECD economies: the Nordic countries, the Netherlands, and New Zealand, since 1970. The diagram shows the ratio of average house prices to disposable income but real house prices show a very similar pattern. Again, as economic theory predicts, there is considerable volatility and no sign of long-run trends. In contrast to stock price data, the tendency of prices to return to their long-run average means that

¹The referee observes the one small economy that is notably absent from the list of booms and busts is Belgium. It would be useful to identify the sources of this stability, and whether they could be adapted to reduce future volatility in the Irish market.

the size of price falls can be predicted from the size of the price rise that preceded them.

Figure 1: House Prices Relative to Disposable Income in Smaller OECD Economies Since 1970. Index: 2000 equals 100

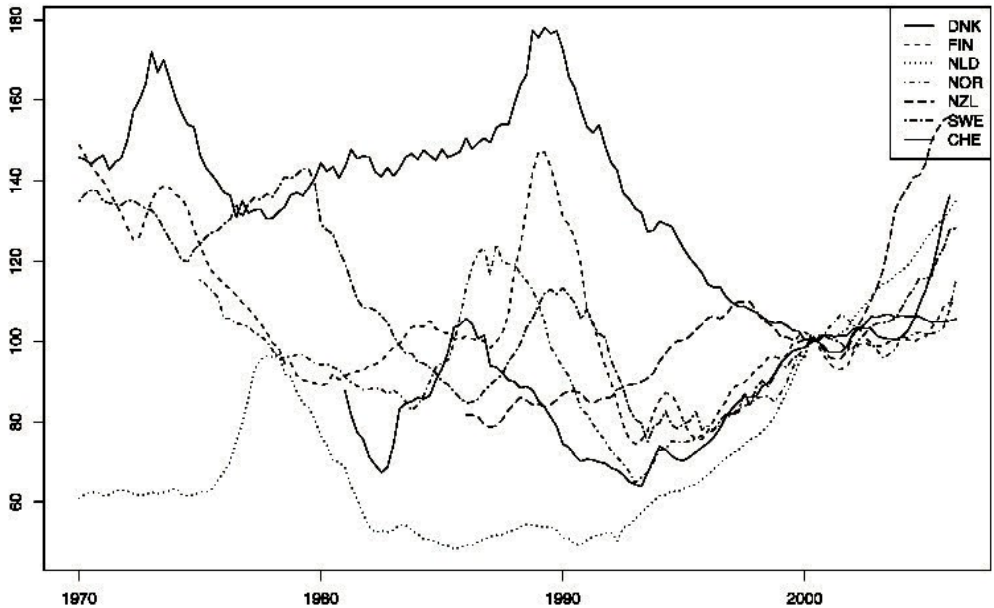


Figure 2 plots the size of increase in house prices for 17 OECD economies, against its subsequent fall.² For clarity, we exclude other variables such as interest rates that other studies find to have limited explanatory power for house prices: we are focusing on weak form efficiency of housing markets.

To estimate the peaks and troughs in each series for each country, we first calculated percentage changes for each quarter. A Friedman supersmoother (implemented in the R statistics package) was then applied to the percentage changes to eliminate short-run fluctuations. Peaks and troughs were then identified as the end of runs of positive or negative changes in the smoothed series, and actual price changes calculated between these points.

Percentage rises and subsequent falls are calculated relative to different values: troughs and peaks respectively. Remember that a rise of p per cent only needs a fall of $p/(1 + p)$ per cent to reverse it. To eliminate this complication, all rises in Figure 2 and subsequent regressions are expressed as a percentage of peak values: for example a rise from 50 to 100 is treated as a 50 per cent rise, rather than a 100 per cent one.

²These economies are Denmark; Finland; Ireland; Netherlands; Norway; New Zealand; Sweden; Switzerland; United States; Japan; Germany; France; Italy; Britain; Canada; Australia and Spain.

Figure 2 shows that there is a strong linkage between rises in real house prices and subsequent falls. There is one evident outlier corresponding to a dip in house prices in Spain that occurred in the early 1990s in an otherwise continuously up-ward trend that saw real prices quadruple between the mid-1980s and the present.

Figure 2: Percentage Rises in Real House Prices (Expressed as a Percentage of Peak Values), and Subsequent Falls for OECD Economies Since 1970

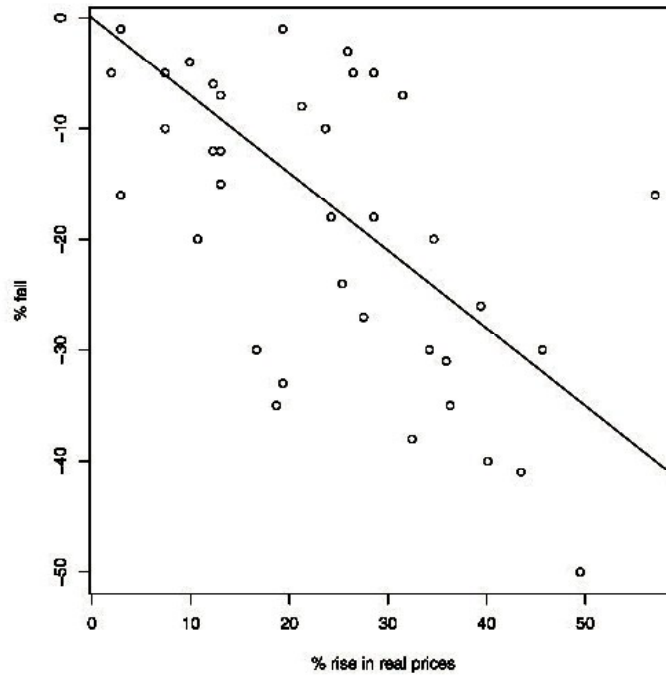


Table 2 shows a regression of the percentage fall in house prices against their previous rise, both including and excluding the Spanish early-1990s outlier, for real house prices and the house price to income ratio. The slope of -0.7 for real house price means that 70 per cent of the rise during a boom (expressed relative to the peak value) is lost during the subsequent bust.

It is worth emphasising that these regressions are simply a summary of data. Beyond being a standard test of weak form efficiency of the housing market, they do not purport to test any model. In particular, the approach here can convey no information about the timing and magnitude of peaks preceding troughs.

By comparison Glaeser and Gyourko (2006) find weaker mean-reversion in house prices in US metropolitan areas: a one dollar rise over five years is typically followed by a fall of 30 cents over the following five years.

Table 2: Predictability of House Price Falls from Preceding House Price Rises

	Intercept	Initial Rise	SER	R ₂	BP	N
Real House Prices						
All	-0.0489 (0.0363)	-0.5746** (0.131)	0.1085	0.3548	0.022	37
Excl. Spain	-0.0252 (0.0356)	-0.7025** (0.1347)	0.1021	0.4445	0.483	36
House Prices Relative to Disposable Income						
All	-0.1168** (0.0389)	-0.6115** (0.1899)	0.1275	0.219	0.187	39
Excl. Spain	-0.104** (0.0395)	-0.713** (0.2013)	0.1259	0.2584	0.428	38

OLS regression of percentage falls in real house prices and house prices relative to income on preceding rises for 17 OECD economies from 1970 to the present. Standard errors in parentheses. *denotes significance at 5 per cent, ** at 1 per cent. BP is p-value of studentised Breusch-Pagan test for heteroskedasticity.

What is notable about the diagram and regressions is how strong the relationship between price rises and falls is. Across very different housing markets in very different economies over a period of more than 30 years, there is a common relationship between the magnitude of booms and subsequent busts. Rent-price series show similar mean reversion but because of the small size of the rented sector in many economies, and the presence of rent controls in part of the period, the data are not as reliable as the real price and price-income series.

As always, national averages conceal substantial variations across regions and types of property. During the last British housing crash, for example, while selling prices nationally fell on average by 10 per cent, they fell in East Anglia by 40 per cent; while models such as Glaeser and Gyourko (2006) predict that the upper end of the market should be the most volatile.

As Table 1 suggests, there is a relationship between the magnitude of real price falls and their duration. Table 3 gives the results of a regression of the average annual rate of house price falls on their magnitude, and shows the two to be closely related. If p is the proportionate price fall, so prices fall from 1 to $1 - p$ over t years, it follows that $r = \ln(1 - p)/t$ is the average rate of decline. Table 3 gives the results of a regression of r on p . For every 10 per cent extra decline in real prices, the annual rate of decline rises by 1.5 percentage points.

Figure 3: Rate Versus Magnitude of Falls in Real House Prices for 17 OECD Economies Since 1970

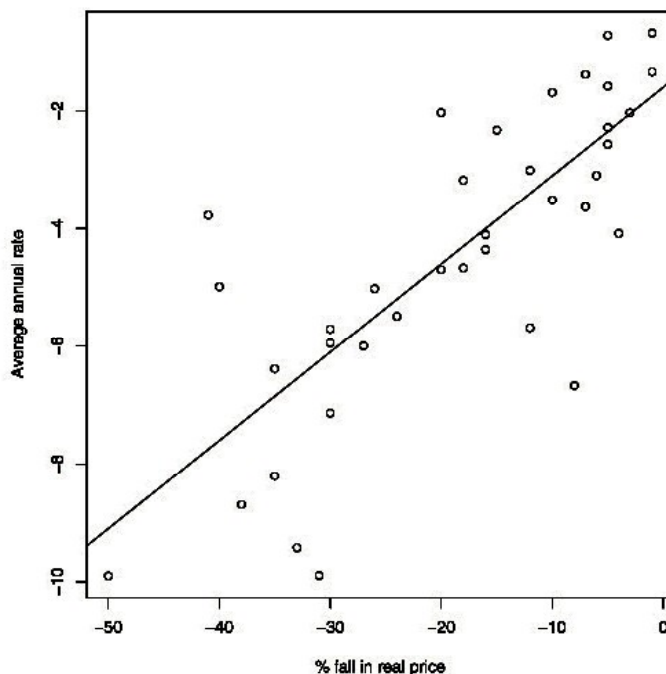


Table 3: Connection Between Annual Rate of Decline and Magnitude of House Price Falls

Intercept	Price Fall	SER	R ₂	BP	N
-1.6784** (0.4709)	0.1494** (0.0206)	1.6434	0.6014	0.121	37

OLS regression of average rate of fall of real house prices on percentage fall for 17 OECD economies from 1970 to the present. Standard errors in parentheses. *denotes significance at 5 per cent, ** at 1 per cent. BP is p-value of studentised Breusch-Pagan test for heteroskedasticity.

4. The Irish Housing Bubble, Causes and Consequences

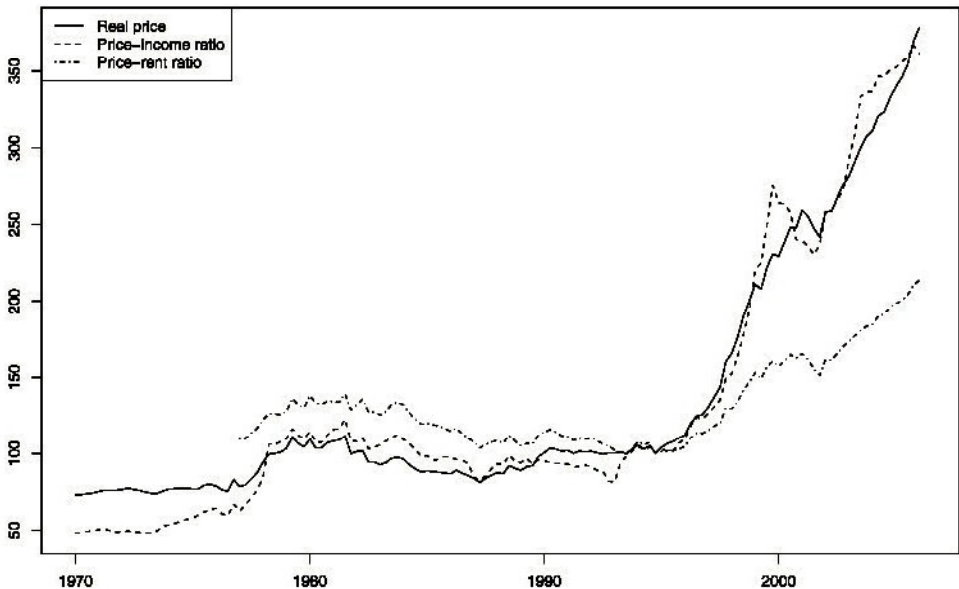
The evidence of nearly 40 cycles in house prices for 17 OECD economies since 1970 shows that real house prices typically give up about 70 per cent of their rise in the subsequent fall, and that these falls occur slowly.

Before looking at what these numbers may imply for Ireland, it is necessary to dispose of the idea that Irish house prices merely reflect strong fundamentals: rising income and increased household formation due to the age structure of the population, declining household size, rising employment, and immigration.

This argument is hard to sustain. If the rise in house prices were due to increased income and more people needing somewhere to live, we would have observed rents rising alongside house prices. Figure 4 shows how house prices have risen far faster than either

rents or income. In fact, while rents doubled relative to income between 1995 and 2000, the ratio has remained unchanged since. The failure of rents to rise, along with the number of recently built units that have been bought but are lying empty (FitzGerald, 2005), suggests that the Irish housing market has left the dull world of fundamental values far behind it.

Figure 4: Irish House Prices Since 1970 in Real Terms, Relative to Income, and Relative to Rent. Index: 1995 Equals 100



A back of envelope calculation of the fundamental price of housing is the following. Abstracting from maintenance costs (which typically run around one month's rent) suppose that housing generates an annual rent of n . This is a fraction v of disposable income y which is expected to grow through time at rate g . The present value of this infinite income stream is then

$$p = \frac{vy}{r - g}$$

where r is the discount rate. As Figures 1 and 2 and Table 1 show, housing is not a risk-free asset, and this discount rate needs to exceed the risk-free rate by an amount reflecting the fundamental risk of the asset. For housing, fundamental risk is large: housing is the largest item by far in most people's asset portfolio and price changes are strongly correlated with income growth. To be conservative, however, we can assign a value of r of 8 per cent, equal to the long run real return on equities.

The ratio of fundamental price to rent is $1/(r - g)$. To explain why Irish house prices have doubled relative to rent since 2000 we need to ask if there is any reason to suppose that new information has arrived causing long run estimates of $(r - g)$ to be rationally halved.

Ireland's stagnant exports, diminishing competitiveness, and the increasing structural problems of sectors such as IT and pharmaceuticals, would suggest that estimates of long-run income growth for the Irish economy g should have fallen in this period. While it may be the case that increased international demand for quality assets may be driving down equilibrium returns (Caballero, 2006), there is no reason to believe that long-run expected returns on risky assets r have halved in the past 7 years.

As White (2006) has observed, there is considerable variation in price-rent ratios within Dublin, with values in the range 80-100 at the top of the market. These values recall the peaks of the dotcom bubble and can be rationalised, with a discount rate $r \approx 0.08$, only with real long-run growth of income of 6 to 7 per cent, equivalent to a doubling of real income every 10-12 years. This is the rate achieved by Korea during its transition from effectively the stone age to an industrial economy but has not been remotely approached by any rich economy. Alternatively, assuming an equilibrium price-rent ratio in the region of 15, it suggests that large falls in prices, of the order of 85 per cent, might be needed for the top of the market to return to fundamental value.

Again it is worth reminding ourselves that, just as in stock markets, fundamental measures such as price-earnings ratios have limited explanatory power for price changes in the short run.

While other parts of the market appear less over-valued, they are still expensive by international standards. The Global Property Guide website reports that the average Dublin apartment rents for around 4 per cent of its purchase price. Only Madrid among major cities has a lower ratio. By comparison, London apartments return nearly 6 per cent, and Amsterdam and Paris over 8 per cent.

**5.
International
Perspectives
on the Irish
Housing
Bubble**

Were Ireland to experience the same housing dynamics as every other OECD economy, except Spain in the early 1990s, what sort of price changes might be expected? Recall that Table 2 predicts a 7 per cent fall for every 10 per cent rise (relative to peak values) of real prices from their trough level, with a standard error of 10 per cent.

Since the mid-1990s, real house prices have risen from an index level of 100 to around 350, and increase in terms of peak value of 70 per cent. If 70 per cent of this rise were to be subsequently lost – as occurred during our previous bust in the early 1980s – the predicted fall in real house prices would be 50 per cent with a standard error of 10 per cent. In other words, a 68 per cent confidence interval for price falls would be in the range of 40 to 60 per cent. There would be one chance in eight of a price fall of only 30 to 40 per cent, just as there is a predicted one chance in eight of a fall of 60 to 70 per cent.

Similarly, Table 2 predicts, given an approximately 70 per cent rise in the price income ratio, that the price income ratio will fall by around 60 per cent, with a standard error of around 12.5 per cent.

It must be emphasised that these estimates are extrapolations: no economy in our sample of busts following booms experienced a rise as large as Ireland's. A fall in real prices of 50 per cent from Table 3, implies a predicted annual rate of decline of around 9 per cent, with a standard error of approximately 1.5 per cent. This translates into a decline of around 8 years, of the same order of magnitude as that experienced in the Netherlands in the 1980s or Britain in the 1950s. Assuming an inflation rate of 2 per cent, this implies an annual fall in selling prices of 7 per cent.

These estimates may be unduly optimistic. In all the housing cycles on which the regression was based, housing stock was, for practical purposes, fixed. In Ireland, by contrast, the number of housing units is growing at around 5 per cent per year, which would suggest the potential for larger falls than those experienced in other OECD housing slowdowns.

5.1 FUNDAMENTAL REGRESSIONS

The prediction that Ireland may experience house price falls in the range of 50 per cent, is a good way from the OECD estimate (Rae and van den Noord, 2006) that Irish houses are overvalued by only around 20 per cent. However, the OECD methodology, and that of similar studies, is problematic. Such studies run a regression of house prices on interest rates, disposable income, employment and other fundamental variables. The regression residuals are then equated with the degree of over- or under-valuation in the market.

To see this, consider a regression of Irish real house prices on disposable income since 1976 gives a residual for the last quarter of 2006 of 17 per cent. If instead house prices had changed by twice as much each quarter as they did, the regression residual would find that they were 35 per cent over-valued, while prices would be four times as high as they are now. Measuring over-valuation using regression residuals is a valid approach if very long-run series are available to tie down coefficient values, but using short-run series, as existing studies do, leads to meaningless results.

5.2 MACROECONOMIC CONSEQUENCES

House price falls have three effects. First, households feel less wealthy and consume less. Evidence from the United States points to a final long-run marginal propensity to consume from housing wealth of around 10 per cent: a \$100,000 rise in property values, increases household consumption eventually by a total of \$10,000 (Carroll, Otsuka and Slacalek, 2006). Second, banks face more bad loans, and become more cautious in their lending, leading to further falls in creditworthiness through the standard financial accelerator. Finally, the value of Tobin's q for residential investment falls, reducing house building. Most countries devote about 5 per cent of national income to building houses and in a typical housing bust, this falls to around 4 per cent of national income.

In most cases then, housing busts are uncomfortable, but not macroeconomically disastrous events. How about Ireland? There is some evidence that the wealth effect on consumption might not

be as strong as in the United States: there has been no fall in personal saving in Ireland during the housing bubble, and households have not consumed home equity through second mortgages (Hogan and O'Sullivan, 2006). Similarly, the larger banks which dominate lending are well capitalised and the banking system has, until recently at least, avoided the worst excesses of the sub-prime mortgage market, although it is likely that many interest-only and 100 per cent mortgages could go sour, especially given the ease with which delinquent borrowers can relocate to England.

It is the scale of the Irish house building industry that makes a fall in house prices potentially troubling. While most economies derive only 5 per cent of their income directly from residential construction, in Ireland house building accounts for around 15 per cent of national income.

Effectively, the recent growth of the Irish economy looks similar to the unstable case of an old-fashioned multiplier-accelerator model. The employment growth in the Celtic Tiger period of the 1990s led to increased demand for housing, reflected in rising real house prices and rent to income ratios. This stimulated house building, which generated more employment, leading to more demand for housing, and so on. Effectively, the Irish economy has come to be driven by building houses for all the people whose jobs have come, directly or indirectly, from building houses.

It is hard to envisage how a fall in house building from 15 per cent to 5 per cent of national income might be achieved without considerable macroeconomic dislocation. Building booms, moreover, tend to end suddenly: the example of Arizona in the summer of 2006 shows how a housing market can move in the space of a few months from buyers queuing overnight to buy, to empty tracts of new houses being priced below construction cost and still failing to sell.

6. Conclusions

This paper has taken an international perspective on the Irish housing boom. We have shown that there is a close relationship historically across very different economies and housing markets between the size of increases in real house prices, and subsequent declines. If this relationship were to hold for Ireland, the expected fall in average real house prices is in the range 40 to 60 per cent, over a period of around 8 years. Such a fall would return the ratio of house prices to rents to its level at the start of the decade. Given the unusual reliance of the Irish economy on building houses, the effects of any such fall on national income may be somewhat larger than that experienced at the end of other housing bubbles.

Policy implications are straightforward. Booms and busts are a normal part of property markets. The government did not cause the current boom, and is powerless to do anything about a subsequent bust. In particular, cuts in stamp duty will not change buyers' self-fulfilling incentive to wait and see if prices fall further.

Blanchard (2006) has observed that Euro-area economies appear at risk of rotating recessions: increased domestic demand drives up real wages and erodes competitiveness, but the impossibility of

devaluing means that prolonged rises in unemployment become the only means to reduce real wages. Notable current examples are Italy and Portugal. There may be some risk that the sharp fall in Irish competitiveness since 2000, which has been disguised and, to some extent, caused by the construction boom, may require a lengthy period of high unemployment to reverse.

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VALUING IRELAND'S PENSION SYSTEM

*Shane Whelan**

Abstract

Despite considerable research, no consensus has yet emerged on the design of a sustainable pension system for Ireland. This paper takes a novel market-consistent approach and, in so doing, challenges the assumptions underlying the costing of alternative systems presented in Pensions Board reports (2005, 2006). It is shown that by ignoring investment risk and its consequences, the cost and value of pensions are materially understated. It is argued that risky investment strategies are not appropriate for modest or mandated pension savings and they propose, at the very least, that the state develops and maintains a market in index-linked stock to help pension savers manage investment risk. It is shown that a system based on mandatory personal pension savings in low risk government guaranteed investments is functionally very similar to a sustainable pay-as-you-go (PAYG) system. The two systems are contrasted from the perspective of value-for-money for contributors. We conclude that the sustainable PAYG is superior, delivering pensions of the order of one-fifth higher for the same level of contribution due to lower administration costs. Accordingly, we propose a better solution than simply the state maintaining a market in index-linked securities: Ireland's current PAYG system should be developed into a sustainable version that provides all mandated pensions.

1. Introduction

The last couple of years have been a time of unprecedented research within both the pension industry and academia on the functioning of the pension system in Ireland. The activity was sparked in February 2005 by the Minister for Social and Family

* The author is indebted to Professor Brendan Walsh, an anonymous referee, and the many who contributed to the discussion following a seminar at the Economic and Social Research Institute on 3 May 2007 for comments and suggestions that improved the final version of this paper.

Affairs when, after consultation with the Government, he requested the Pensions Board bring forward a full review of the Irish pension system. Two substantial reports were prepared under the aegis of the Pensions Board, *National Pensions Review* (2005) and, at the further request of the Minister, a supplemental report on a mandatory pension system, *Special Savings for Retirement* (2006). These reports, when coupled with survey studies of the operation of the existing system (for example, Hughes and Watson (2005); Steward (2005); Whelan (2006); Department of Social and Family Affairs (2005)), set out a comprehensive overview of the current system and possible alternatives.

One of the issues central to the debate is the sustainability of our current system against the forces of reducing fertility, increasing longevity and the demise of the occupational defined benefit pension scheme outside of the public sector. Of course, Ireland is not alone in facing these challenges and, in fact, the adverse trends are somewhat less advanced in Ireland than in other developed economies. Accordingly, there is also a rich international literature on pension policy, complete with case studies of early implementation. Influential studies are World Bank (1994, 2005), with wide ranging discussion of the issues presented in, for instance, Barr (1998; 2000; 2001; 2002). Case studies of special interest are the recent fundamental reforms to the Australian and New Zealand pension systems, given their similarities with the Irish system until recently. Given the integration of our labour markets, the current proposals for pension reform in the UK in the Turner Reports (2004; 2005; 2006) and the UK Pensions White Papers (2006a; 2006b) are of particular interest. Indeed, Ireland, the UK, New Zealand and Canada are currently the only developed economies where the state pension is designed to alleviate poverty rather than, as elsewhere, designed to provide income replacement in retirement.

It seems we have never been better informed on pensions issues, nor so much confused. Despite the focus on pension policy in Ireland over the last couple of years, no consensus had emerged to help narrow the range of options in the forthcoming Green Paper. The reports of the Pensions Board reflect the conflicting divisions of the representatives of the different factors of production in the economy, with labour (represented on the Board by the trade union movement) broadly supportive of any increase in coverage or adequacy of pension, and capital (represented by an employers' association) broadly opposed to any such extension. This could reasonably have been anticipated as it has been the perspective of the parties consistently over at least the last hundred years (see McCashin (2004), Whelan (2006)). The surprise was that the representative of the Minister of Finance, and therefore the state, did not agree with the aims of pension policy (viewing them as more aspirational than firm targets) and generally opposed any measure that might increase the cost to be borne by the state. The Pensions Board did not achieve a consensus on principles of system design or financing, so its recommendations were rather piecemeal and unadventurous.

Yet a fundamental change in the landscape of pension provision in Ireland is upon us. Projections in the Pensions Board (2005) assume that the occupational defined benefit scheme outside the public sector will dwindle from now providing one-third of the total pension coverage in Ireland to nought in 50 years' time. The Board is relying on policies to give further incentives to volunteer defined contribution arrangements to both fill the void thus created and go on to achieve the stated 70 per cent coverage targets (from the current 52 per cent coverage). If a mandatory system is envisaged then the Board propose a mix of a defined contribution arrangement with an increased level of the flat rate state pension. Yet, in terms of the adequacy target to replace 50 per cent of income on retirement, the Board (2006, p. 33) admits the superiority of the defined benefit design.

The Board anticipates a fundamental shift in the design of pension coverage in Ireland from defined benefit to defined contribution.¹ Yet there is little discussion on the key differences between these designs. Indeed the extensive costings provided in Pensions Board (2005, 2006) reports on alternative systems conceal the significance of this change by ignoring investment risk and its possible consequences and, as such, the figures presented are not market-consistent. In this paper, we explicitly take account of investment risk at its market price. Quite a different picture emerges from this novel approach. Making due allowance for the market price of risk more than doubles the cost of pensions presented in Pensions Board (2005, 2006) reports. The appropriateness of a risky investment strategy for modest and mandated pension savings is challenged and, as a key and costless policy action, it is proposed that, at a minimum, the state develops and maintains a market in index-linked stock to allow pension savers to manage investment risk.

The commitment of the state to maintain a market in index-linked securities is simply an undertaking that future taxation revenues be applied to meet its obligations under the debt instruments. This commitment creates a system that is functionally almost identical to the PAYG system, under which future taxation meets the costs of the future pensions. The two systems are contrasted – a system based on compulsory personal pension savings in low risk investments and a mandatory pay-as-you-go (PAYG) approach. It is shown that both systems sustainably deliver very similar returns to contributors before administration expenses. The PAYG approach is shown to possess a number of theoretical

¹ In fact, the proposal made by the Pensions Board to grant higher rate tax relief to employees on pension contributions can be expected to accelerate further the demise of private sector defined benefit schemes. Under the proposal, for employees on the standard rate of tax, it would be financially more advantageous for the employer to cease making provision through a defined benefit scheme and increase the salary of employees correspondingly. By so doing, if the employee saves the salary increment in a pension arrangement, s/he can be better off (as tax relief is at the higher rate) and the employer no worse off (as no employer PRSI contributions are levied on the saved increment).

2. Pricing Investment Risk

and practical advantages over the alternative. Materially, when the lower administration charges associated with the sustainable PAYG system are allowed for, the PAYG system can be expected to produce pensions of the order of 20 per cent higher for the same contributions than the alternative system.

Before concluding, we take a brief look at the pension systems in the very long term, and the challenges posed by fertility rates below replacement.

It is often supposed that the costs of production are threefold, corresponding to the rewards of labour, enterprise, and accumulation. But there is a fourth cost, namely risk; and the reward of risk-bearing is one of the heaviest, and perhaps the most avoidable, burden on production.

J.M. Keynes, Preface to *A Tract on Monetary Reform* (1923).

The essential difference between the defined benefit pension scheme and the defined contribution scheme is where the investment risk resides. Under the defined contribution scheme, investment risk is borne by the pension saver and, on retirement, the pensioner. The investment risk is very material, but it does have a market price so it can be valued.

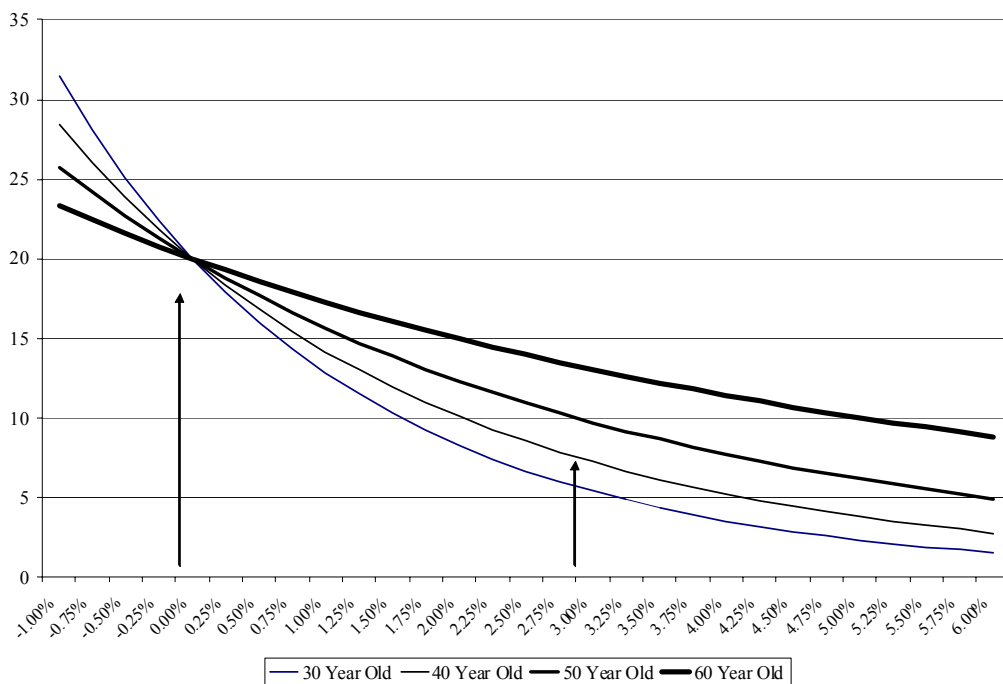
Let us illustrate how to estimate the market price of investment risk. Consider a pension saver who wishes to provide a pension of a unit of wages at retirement from his 65th birthday until his assumed death on his 85th birthday. The present value of such a pension is clearly a function of the saver's current age and the rate of return above wage growth his investments earn both prior to and after retirement. For simplicity, we assume the same rate of return on investments both before and after retirement. Figure 1 outlines the present value of such a pension for a person at various ages and for various assumed rates of return above wage escalation.

The graph illustrates well the sensitivity of the present value of the ultimate pension to the rate of return above salary growth. As developed later in this section, the graph can be used to price investment risk for a pension saver.

Individual pension savers must be amongst the most risk-averse savers in the economy. Indeed, the arguments for mandatory pension provision become especially convincing only when the lack of pension provision at a certain minimum level triggers an obligation on society to make good the shortfall. So society's concern is to ensure that everyone has a certain *minimum* pension. Accordingly, national pension policy is primarily concerned with those making modest provision, which must be invested in securities that promise the most secure pension.²

² Equivalently, if it is argued that such savers can tolerate investment risk then the level of compulsory savings is clearly set at too high a level. Those saving more than that required to provide the minimum required pension may, of course, assume a higher level of investment risk once the probability of achieving the minimum pension is not lowered.

Figure 1: Present Value of a Pension of One Unit of Wages Payable for Twenty Years from Age 65 Years, for a Person at Various Ages, as a Function of Investment Return above Wage Escalation



The minimum pension required by society should be at least inflation-linked to maintain purchasing power or, better, wage-linked, as relative property measures are arguably more appropriate in a developed economy. The least-risk investment strategy for such savers is to invest in securities the proceeds of which are guaranteed to rise in line with inflation (ideally wage inflation but, failing that, consumer price inflation). Bonds with proceeds linked to consumer price inflation have been issued in many euro economies so by comparing the guaranteed real return from these assets with the best estimate of the proceeds from more risky assets, an assessment can be made of the market value of the risk in the risky asset.

So the least risk investment strategy – and the most appropriate investment strategy for modest pension savers and mandated savings – is to invest in index-linked bonds of suitable duration. Taking real yields on long-term state guaranteed index-linked bonds to be of the order of 2 per cent (consistent with current market rates) and real wage escalation to be of the order of 2 per cent per annum (which is of the order of wage increases seen over the long-term past) then the return differential above wage escalation is 0 per cent. Consulting Figure 1 a crude approximation to the market price of such a pension would be 20 wage units per unit of pension from age 65 years (i.e., the saver’s post-retirement life expectancy), irrespective of the current age of the saver.

Now investing in more risky assets can be expected to increase the expected return. Assuming, for instance, a diversified portfolio of equities gives a real return of 5 per cent per annum on average over the long term then the expected return above wage escalation is 3 per cent per annum. Consulting Figure 1 indicates that the present value of such a pension is 7.2 units for a 40 year old (with a higher value for older persons and lower for younger ones). In our example, the market cost of the pension to a 40 year old, assuming equity risk, is 7.2; the cost with no risk is 20; so the market cost of the investment risk is 12.8. We note the materiality of investment risk in this illustrative example: the cost of investment risk is almost double the present value of the pension assuming equity risk. Used in this manner, Figure 1 gives a rough-and-ready estimate of the market value of a pension, assuming different levels of investment risk, or, as used in the example, it gives the market price of the investment risk assumed.

The above example was not arbitrarily chosen, but reflects assumptions made in the Pensions Board reports (2005, 2006). In Table 1, we summarise the real returns, investing expenses and the real rate of wage growth in the very long term assumed in the Pensions Board (2005, 2006) and highlight the net return above wage growth it entails for different investment strategies.

Table 1: Real Returns, Investing Expenses and Real Wage Escalation, Based on Assumptions in Pensions Board Reports (2005, 2006)

Investment Strategy	Real Return	Investing Expenses	Real Salary Increase ³	Net Return above Salary Escalation
	% p.a.	% p.a.	% p.a.	% p.a.
100% Equities	6.00	0.65	2.0	+3.35
100% Government Bonds	1.75	0.10	2.0	-0.35
100% Index-linked Bonds	1.75	0.10	2.0	-0.35
75% Equities, 25% Bonds	4.94	0.51	2.0	+2.43
50% Equities, 50% Bonds	3.88	0.38	2.0	+1.50
100% Equities up to 10 Years to Retirement then 100% Bonds	4.50	0.42	2.0	+2.08

The costings for the different pension systems in Pensions Board (2005, 2006) reports do not allow for the market price of the risk assumed. Accordingly, in our earlier example, the cost of the pension for a saver investing wholly in equities is put at about 7.2 by the method underlying the figures produced by the Pensions Board. This is materially different from the market-consistent value of 20, which assumes minimal investment risk.

The detailed figures of the Pension Board reports assume the individual pension saver will invest over half in equities on average,

³ Real salary increases are estimated at 3 per cent per annum currently falling to a long-run average of 2 per cent per annum from the year 2021. Accordingly, the table above somewhat overstates the return above wage escalation up to 2021.

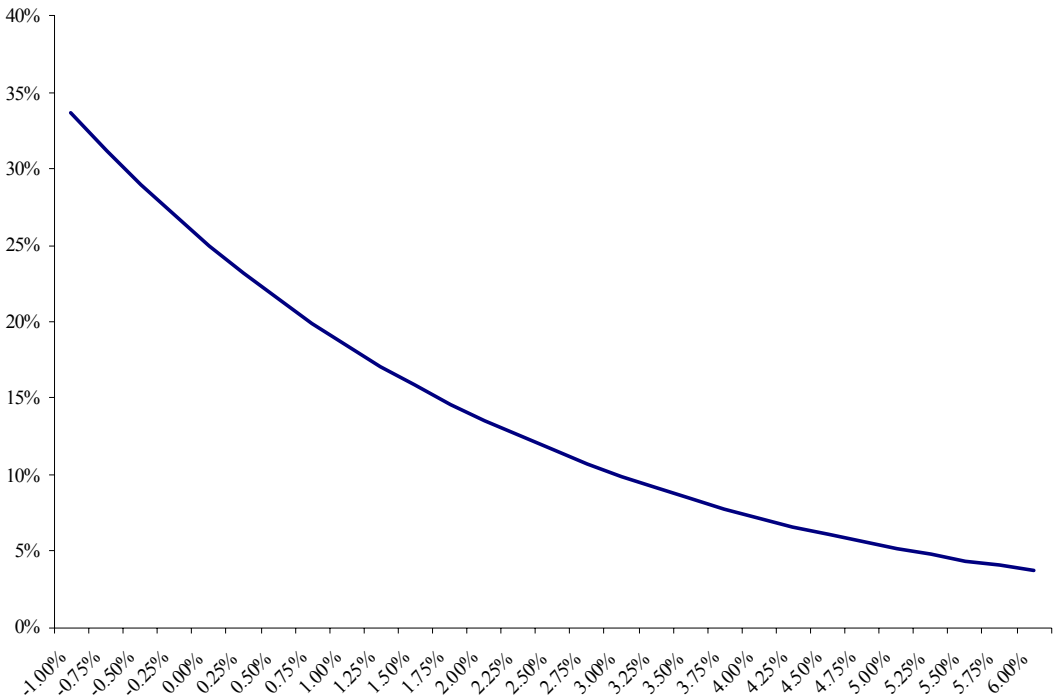
and the state, through the National Pensions Reserve Fund will invest four-fifths or so in equities (Pensions Board 2005, pp. 215-6). By ignoring risk and its possible consequences, the mathematics lead to the conclusion that the more risk taken the less one needs to save – the complete opposite to the more pertinent logic that the more risk undertaken the greater one must save for a certain minimum level of pension. In fact the figures provided in the reports lead to many anomalies – that pensions are cheapest if provided by the state (as the National Pensions Reserve Fund’s higher risk tolerance is assumed to produce a real return of 4.6 per cent, higher than the 3.6 per cent real return assumed for defined contribution arrangements) and that, in fact, the state can turn a worthwhile profit by issuing bonds at a 1.75 per cent real return and using the proceeds to buy equities with a real return of 5.35 per cent per annum. These anomalies are a consequence of taking credit for investment risk by assuming higher returns, and not modelling the consequences of that investment risk.⁴

We propose that the more appropriate value to use is the market-consistent value. Aside from placing a considerably higher present value on any pension, the market-consistent approach also entails dramatically higher contribution rates to provide for a pension. Figure 2 graphs the level contribution rate required over a working lifetime (assumed to be 40 years up to age 65 years) to provide for a pension of half salary from age 65 years at different rates of return above wage growth. Again, death is assumed to occur on the pensioner’s 85th birthday.

The marked dependency of the contribution rate on the assumed return is evident. Note in particular, that the contribution rate is 25 per cent of salary per annum to provide a pension of half salary at a 0 per cent rate of return above wage escalation while at a

⁴It must be said that the costings in the Pensions Board reports (2005, 2006) reflect an approach common in the pensions industry in Ireland, the UK and elsewhere. It is difficult to model investment risk satisfactorily (see Appendix) whence our adoption of a market-consistent approach to investment risk. Note that MacDonald and Cairns (2007) attempt to model explicitly the impact of investment risk on retirement behaviour in an economy where each individual bears investment risk and has complete discretion of the investment strategy pursued. They conclude that “...the unpredictability of the financial markets could produce ambiguous and unmanageable retirement ages...” and note that the most stable outcome is produced when everyone maintains very high concentrations in index-linked bonds.

Figure 2: Level of Contribution Rate as a Percentage of Salary over Working Life of 40 Years to Provide a Pension of Half Salary from Age 65 Years under Various Assumed Rates of Return Above Wage Escalation



positive 3 per cent differential the contribution rate is 9.9 per cent.⁵ Figure 2 also highlights the cost of achieving the national pension target of half salary under different return assumptions. If investment risk is minimised then the real investment return over salary growth is of the order of 0 per cent, pointing to a market-consistent cost of about one-quarter of salary per annum over the entire working lifetime. If, further, an allowance of, say, 1 per cent per annum is made for administration costs (see discussion later), then the cost of the pension is about one-third salary in each year. If such a level of saving appears unrealistic then so too is the national pension target.

The price of the investment risk determined above is sensitive to the real returns assumed on different asset classes and to real wage escalation. Appendix I sets out a concise overview of the literature

⁵ A case can be made that public sector pensions, which have a state guarantee like index-linked stock, should be valued at 0 per cent in Figure 2 while other occupational pensions with largely equity-backed security should be discounted at 3 per cent to account appropriately for the higher risk. This suggests that the market value of public sector pensions is of the order of 25 per cent of salary per annum while the equivalent pension from the private sector only about 10 per cent. If a true market approach is adopted, this difference of 15 per cent or so per annum should be taken into account in 'benchmarking' public sector remuneration against that of the private sector.

in this area and provides data from the markets that broadly support the figures in Table 1. The Appendix also discusses the considerable uncertainty surrounding the expected return from risky assets, especially in the context of those targeting a preset pension. It is the considerable uncertainty in the performance of risky assets over both the long and short term that leads to such high rewards for risk bearers. In short, we cannot build a durable pension system on the shaky and unreliable foundation that is provided by the expected returns from risky assets.

The above considerations, centring on investment risk and its market price, lead to a rather simple policy recommendation: the state should issue and maintain a broad and liquid market in index-linked bonds with maturities up to 60 years. The recommendation imposes no cost on the state, as the conversion of current outstanding nominal bonds to index-linked bonds will be done at market rates. Yet the simple innovation gives pension savers instruments to reduce significantly the risk in pension saving and, by so doing, gives transparency to the ultimate pension (a key characteristic of the defined benefit plan). Such instruments provide a valuable safeguard against the mis-selling of investment risk to the risk-averse pension saver. For mandatory savings, the presumed need to provide for a minimum level of pension entails that investment risk be eschewed so investment in index-linked securities should be mandatory.⁶ Indeed, as developed in the next section, the insight that compulsory pension savings should be invested in index-linked state guaranteed stock leads on to a greater insight that produces a more efficient method to provide minimum pensions.

The above recommendation echoes calls for an index-linked bond issuance policy to help manage pension liabilities by, amongst others, Healy (1996), Fitzgerald (2005), recent petitions from leading industry-wide pension schemes and from professional bodies such as the *Society of Actuaries in Ireland*. Other mechanisms to transfer risk away from the pension saver have been made by Kehoe (2003); IAPF (2005); Whelan (2005a, 2006), but the simple market-based approach of issuing index-linked gilts has the considerable merit that it is costless and straightforward to implement.

We conclude this section by summarising. The defined benefit scheme design is ideal from the perspective of the pension saver as it shifts investment risk and gives transparency to the quantum of pension ultimately payable. Defined contribution arrangements can achieve these key benefits if there is a broad and liquid market in index-linked bonds. The state, at negligible cost, can maintain a market in index-linked bonds. The simple innovation of an index-

⁶ Some have suggested the state guarantee a minimum return on compulsory retirement accounts. This suggestion is incompatible with investment freedom as the guarantee is a put option for the investor, the value of which is increased by following a more risky investment strategy. In short, the presence of such a guarantee encourages risk-taking by investors at the cost of the state. The logic for compulsory saving leads, as outlined in the text, to controls on the investment freedom permitted.

linked market in Ireland will enable pension savers to provide low risk pensions for themselves. However, if compulsory savings in defined contribution arrangements is proposed (as outlined in Pensions Board (2006) report) then investment in such state guaranteed index-linked stock should be mandatory to provide for a minimum pension. This later conclusion points to an even better design of a compulsory pension savings scheme, as developed below.

**3.
Financing
Pensions: to
Fund or Not to
Fund?**

To allow retirement in an economy, the retired must have claims over current production to facilitate their consumption when not themselves producing. The claim over current production can be organised in two ways: via the financial markets or via the state through the so-called ‘social contract’, which requires that the working generation contribute on a pay-as-you-go (PAYG) basis to the retired generation. The financial contract route is pre-funded, as the pension provider builds up a portfolio of financial claims. The PAYG approach is often identified with an unfunded approach. The Pensions Board (2005) is equivocal on whether to pre-fund or not, arguing “...the difference between funding and PAYG is only a different means of organising the future transfer of assets.... The difference between funding and PAYG is the difference between the uncertainty of future asset values and the uncertainty of future taxation” (p. 57). The report fails to discuss the issue further simply noting that “the economic theory of funding versus PAYG is quite involved and its relevance to the assignment in hand is questionable” (ibid. p.184).

Let us consider a little deeper the simple policy recommendation above that the state maintain a market in index-linked securities, sufficiently broad and deep to allow pension savers to monitor and manage investment risk. Such a commitment is simply an undertaking by the state that future taxation revenues be applied to meet its obligations under the debt instruments. This commitment creates a system that is functionally almost identical to the PAYG system, under which future taxation meets the costs of the social obligation. The key differences between the contrasting system – defined contribution arrangements investing in government guaranteed index-linked stock or a PAYG scheme – may conveniently be discussed under two main headings: pricing or value-for-money and administration.

**4.
Pricing or
Value-For-
Money**

In capital markets, the price of index-linked stock, like any other financial asset, is set by supply and demand in the context of the price of all other capital market securities. The extensive Appendix I, shows that, on average over the long term, a real return of about 2 per cent per annum or so has been delivered on reasonably low risk investments. With wages growing in real terms by about 2 per cent per annum on average over the long term, this gives a long-term return above wage escalation of approximately 0 per cent per

annum. It is of primary concern to the contributors of any PAYG system that it can deliver comparable returns.

The mathematics underlying the PAYG approach gives a very neat answer to the return sustainably deliverable under such a system (anticipated in Samuelson (1958)). For sustainability, we must consider an idealised stationary population, where the number of workers entering in any year equals the number of deaths. Consider such a stationary population with workers contributing a fixed percentage of wages and total contributions divided as pension payments to the retired population. Viewed from the perspective of an individual, the internal rate of return from such a system is calculated by solving the equation of value that puts the present value of contributions paid over a working lifetime (discounted at the required rate of return i equal to the present value of the pension from retirement (discounted at the same rate of return, i). Intuitively, the contributor will get out everything he puts in (by the stationary assumption) and, as each calendar year passes, the increase will be in line with the increase in wages. This leads us to speculate that the rate of return, i , will be the same as the rate of wage escalation. This insight turns out to be true (see endnote⁷). In short, in a stationary population, the PAYG system of financing delivers a return comparable to the expected return on a low risk portfolio of assets. Indeed, the PAYG system is somewhat superior in several respects, in that: (i) the return to contributors is explicitly linked to wage escalation, a linkage that no existing capital security gives but is ideal to maintain relative income levels in an economy; (ii) the rate of return is applied to future as well as current contributions, a guarantee that is impractical to synthesize through the capital markets; and (iii) it ensures that the ultimate pension is not dependent on the performance of the markets, the investment policy pursued by the individual, the solvency of financial institutions, or other factors that could conspire to frustrate the objectives of pension policy. In place of all these risks, it substitutes the single risk that the social contract will be honoured by future generations.

The above result only applies to stationary working populations. The working population in Ireland is not stationary but has been growing rapidly of late. The internal return to the retired in a strictly operated PAYG system when the workforce is growing is above the weighted average growth of wages in the economy as there is an excess of contributors. This extraordinary value for money was remarked upon by Paul Samuelson⁷: "...the beauty of social insurance is that it is actuarially unsound. Everyone who reaches retirement age is given benefit privileges that far exceed anything he has paid in... A growing nation is the greatest Ponzi game ever contrived?". However, such enhanced returns are only sustainable if the working population grows indefinitely. Rather than pay out such enhanced pensions, a better approach is for the state to invest the surplus contributions. This would not only ensure intergenerational

⁷ As quoted in "Snares and Delusions", *The Economist*, 14 February 2002.

equity (as all contributors get the same return) but also the financial sustainability of the system, as the surplus funds would be invested in global capital assets which, according to reasonable expectations, would produce a return from a low risk investment portfolio of the order of wage escalation. These surplus funds could then be drawn upon when future contributors are below the number required to support the retired in a stationary population.⁸

5. Administration

The two contrasting systems – defined contribution arrangements investing in index-linked stock or the sustainable PAYG scheme with an element of pre-funding – might also differ in their administration. The PAYG system would be run by a single entity (the state, as at present, or an organisation the state appoints) while the other is generally envisaged to work in a free but regulated market, with many provident institutions competing for market share. Arguments as to which model is preferable centre on the perceived better service and greater innovation in the competitive market model against the economies of scale a monopoly provider can achieve. The issue of quality of service versus cost of service is a debate that cannot be resolved neatly.

Mahon (2005) gives an overview of the issues, a survey of the literature and a case study of economies of scale within Irish occupational pension schemes. He shows that small schemes have costs a multiple of times higher than large schemes per member. Such costs can best be expressed as a ‘reduction in yield’ (RIY) for our purposes and Mahon (2005) estimates the costs so expressed to vary from over 3 per cent of assets per annum for small schemes to about 0.3 per cent per annum for larger schemes. These costs are very material in the context of investment returns of the same order of magnitude and, with the aid of Figures 1 and 2, we can estimate the impact of such costs on the ultimate pension. Table 2 illustrates the magnitude of the reduction in pension as a function of administration costs pre-retirement and the investment return before administration costs (but after expenses of investment).

Table 2 shows, for instance, that factoring in administration costs of 1 per cent per annum in the accumulation phase, reduces the ultimate pension by between 18 per cent to 21 per cent per annum (as the assumed investment return increases from 0 per cent to 4 per cent per annum). In fact, it is clear from Table 2 that the reduction in pension is highly sensitive to the assumed administration costs but the reduction is not particularly sensitive to the investment return assumed. A rule-of-thumb can summarise the import of Table 2: *extra administration costs of 0.5 per cent per annum in*

⁸ Of course, the state might adopt a more aggressive investment strategy, as currently pursued by the National Pension Reserve Fund. The essential point, though, is that the state guarantees returns to contributors and charges for those guarantees at a rate consistent with long-term market rates.

the accumulation phase will reduce the ultimate pension by about 10 per cent per annum.

Table 2: Percentage Reduction of Ultimate Pension Due to Impact of Administration Costs in the Accumulation Phase (expressed as reduction in yield), as a Function of the Investment Return above Wage Escalation in the Accumulation Phase

Administration Costs (RIY)	Investment Return above Wage Escalation in Accumulation Phase				
	(before administration costs)				
	0%	1%	2%	3%	4%
%					
2.00	31	33	34	36	37
1.75	28	30	31	32	33
1.50	25	26	27	29	30
1.25	21	23	24	25	25
1.00	18	19	19	20	21
0.75	14	14	15	16	16
0.50	9	10	10	11	11
0.25	5	5	5	6	6
0.00	0	0	0	0	0

Assumptions: Pension is payable for 20 years from age 65 years, increasing in line with wage increases. Net investment return in retirement (decumulation phase) is 0 per cent above wage escalation. Once off administration charge of 3 per cent of assets on retirement. Accumulation period 40 years to age 65 years.

Turner (2004, Appendix C) includes a discussion of the costs of different administration structures and puts explicit administration costs at 0.3 per cent of assets for occupational schemes and 0.8 per cent for personal pensions. The administration costs assumed by Turner (2004) are probably below what an Irish pension saver would have to pay. The Pensions Board (2005, pp. 226-7) estimates that administration costs on personal accounts to be of the order of 1.3 per cent to 1.5 per cent per annum pre-retirement and, on retirement, a once-off charge of 3 per cent of assets is assumed.

The conclusion is that economies of scale are material in pension provision. According to estimates in the Pensions Board (2005) report, extra charges associated with maintaining individual retirement accounts are of the order of 1 per cent to 1.2 per cent per annum (that is 1.3 per cent-1.5 per cent less the 0.3 per cent RIY of a monopoly provider). Assuming extra charges of 1 per cent per annum, the associated reduction in pension is of the order of 20 per cent. Murthi *et al.* (1999) gives empirical support to this assessment, estimating that pensions are reduced by one-quarter due to costs associated with operating individual retirement accounts in the UK (both investment and administration).

The above estimates assume that there is no change in the pension provider over the entire accumulation phase of four decades. If pension providers are changed then costs increase further. Murthi *et al.* (1999) reports that the costs of switching from one provider of individual retirement accounts to another (or ceasing contributions with one and starting with another) will reduce the ultimate pension by approximately a further 15 per cent.

Extra charges of this magnitude inhibit movement between providers, so reducing competition in the market.

We conclude that extra charges associated with individual retirement accounts will reduce the ultimate pension by about one-fifth. Since, from our earlier discussion, the pension contracts types are standard, offering guaranteed proceeds, it is difficult to envisage how service can justify the significant financial impact of the loss of economies of scale identified above.

**6.
Key Principle
of Design**

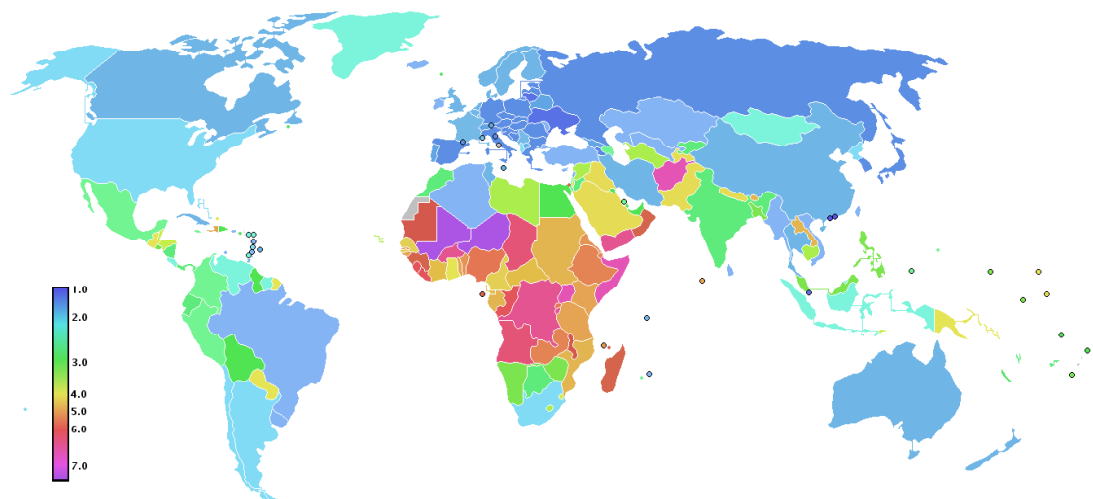
There are details to be worked out in the operations of the envisaged PAYG system, stabilised by pre-funding. Yet the principle underpinning the system design is value-for-money for contributors – that is, contributors get a return on their contributions equivalent to the market return on low risk investments. Details that require consideration include formalising the social contract so that it becomes more akin to a financial contract. This entails ensuring that contributions will remain a fixed percentage of wages and that contributions give an enforceable entitlement to a corresponding pension, the pension to increase in line with the weighted average wage growth in the economy. It is necessary to specify how the system will be modified if life expectancies change (see, for instance, Turner (2006) for some interesting suggestions) and specify how the system will treat persons who help achieve ‘the common good’ but are not in paid employment. The greatest challenge is, though, how to invest such commitments by the state with credibility. As envisaged above, the system is sustainable and self-financing so there is no reason why an organisation at arms-length from the state cannot operate the system. This would entail removing political discretion from state pensions, a particular challenge given its historic importance to Irish politics (see Ó Gráda, 2002).

**7.
Sustainability
in the Very
Long Term**

Whether based on financial or social contracts, it is necessary that there is a sufficiently large working population to support the rest of the population under any pension system. The projections of the Central Statistics Office, CSO (2004), which were used in the costings of alternative pension systems, assumes that fertility rates in Ireland will fall below replacement rate to between 1.7 and 2.0 over the foreseeable future, with a medium assumption of 1.85. Unless immigration is maintained at a high level, this projection puts pressure on the sustainability of any pension system in the very long term.

Fertility rates below the replacement level of approximately 2.1 are commonplace not only in developed economies but also in more developing ones, as highlighted in Figure 3. In particular the fertility rates of EU-15 countries are amongst the lowest in the world and the new accession countries have even lower fertility rates (e.g., Poland and Slovenia at 1.25). In most regions of the world, as the map makes clear, the population is not replacing itself.

Figure 3: Map of Estimates of Total Fertility Rates, 2006



Sources: *The World Factbook 2006*, Central Intelligence Agency. Map sourced from Wikipedia under GNU Free Documentation License.

The low fertility rates across the world have a direct impact on Ireland. First, it can be anticipated that there will be downward pressure on the future returns from capital markets caused by weaker demand from the smaller future working (and saving) generations. The size of the impact is less easy to forecast but modelling done by, *inter alia*, Miles (1999; Brooks (2000); Turner (2003); and Miles and Černý (2006) are suggestive that a fall in the long-term return of $\frac{1}{2}$ per cent per annum can be expected. This shades downwards the estimates based on long run historic statistics. Second, fertility and migration policy are intimately linked to pensions policy in the long term. In particular, the state might encourage higher fertility. One policy option, compatible with the PAYG system, is to give an increment of pension for each child reared.⁹ Equally, pension policy might encompass policies aimed at making Ireland more attractive to immigrant workers than other competing economies. To encourage immigration further might require some radical initiatives and, in the fullness of time, require a rebalancing in the relative taxation of capital and labour when labour replaces capital as the scarce and mobile factor of production. These considerations are obviously longer term (longer than the 50 year projections in the Pensions Board (2005, 2006)) reports but must be borne in mind and inform pension policy.

⁹ Such a policy also helps ensure that parents' limited resources are directly invested in the development of the next generation, and not otherwise directed to pension saving.

8. Conclusion

This paper attempts to identify some principles that might help guide the design and financing of pension provision in Ireland for the twenty-first century. We focus on the key difference between the two design templates of defined benefit and defined contribution, namely, who bears the investment risk. The price of investment risk is assessed on a market-consistent basis and its order of magnitude shown to be material.

It is argued that individual pension savers of modest means or those mandated to save must be considered risk-averse. A proposal is made that the state issue market instruments, at market price, to help these savers manage investment risk. This is represented as a costless innovation that significantly furthers the overall aims of national pension policy. For mandated pension savings designed to provide a minimum pension, investment in low risk instruments should be compulsory. The identification of state guaranteed index-linked bonds of suitable duration as the low investments allows us to identify a more efficient method of providing minimum pensions than through personal retirement accounts.

A sustainable PAYG system is contrasted with compulsory pension savings in low risk investments. Ignoring administration costs, the two systems are seen to be very similar and deliver very similar value-for-money for contributors. The PAYG system was seen to have some second-order advantages. Factoring in administration costs tilts the balance in favour of the PAYG system as it can deliver better value for money through economies of scale.

Of course, the framework for compulsory pension provision in Ireland has been a PAYG system for almost a hundred years. This system needs to be refined in two ways. First, it requires an element of pre-funding to ensure that it is sustainable in the long term. Second, the social contract it represents needs to be better defined so it more closely approximates a financial contract with, in particular, greater clarity on the rights of contributors and beneficiaries.

In conclusion, the argument developed in the paper is against the introduction of special retirement savings accounts suggested in Pensions Board (2006) report. Figures presented show that, for the same level of contributions, such accounts will lead to pensions lower by at least 10 per cent, and probably closer to 20 per cent, than those delivered by the alternative sustainable PAYG system proposed.

APPENDIX I: ESTIMATING THE REAL LONG-TERM RATE OF RETURN ON RISKY ASSETS

A.I Introduction

Risky investments, by definition, deliver uncertain payoffs. Yet for several important purposes it is necessary to have an estimate, with some appreciation for its accuracy, of the long-term average payoff from a diversified portfolio of risky assets. Such purposes include (a) informing the individual's decision on whether to consume or save, (b) estimating the amount to save for a given targeted sum or pension and (c) evaluating the opportunity costs incurred by following a less risky or matching strategy. Estimating the magnitude of the return from a diversified portfolio of risky assets is thus a fundamental problem in an economy. In turn, the risk premium demanded by investors from time to time gives valuable information on the outlook for the economy.

If the portfolio of risky assets is limited to include only equities listed on recognised exchanges we find a considerable literature devoted to the problem. The term 'equity risk premium' (ERP) has been coined to denote the expected additional return from a diversified portfolio of equities over a riskless investment. The riskless investment has been variously taken to be cash instruments, such as short-term Treasury bills or, to provide a better match for the term of the equity investment, returns on gilt-edged stock of long maturity.

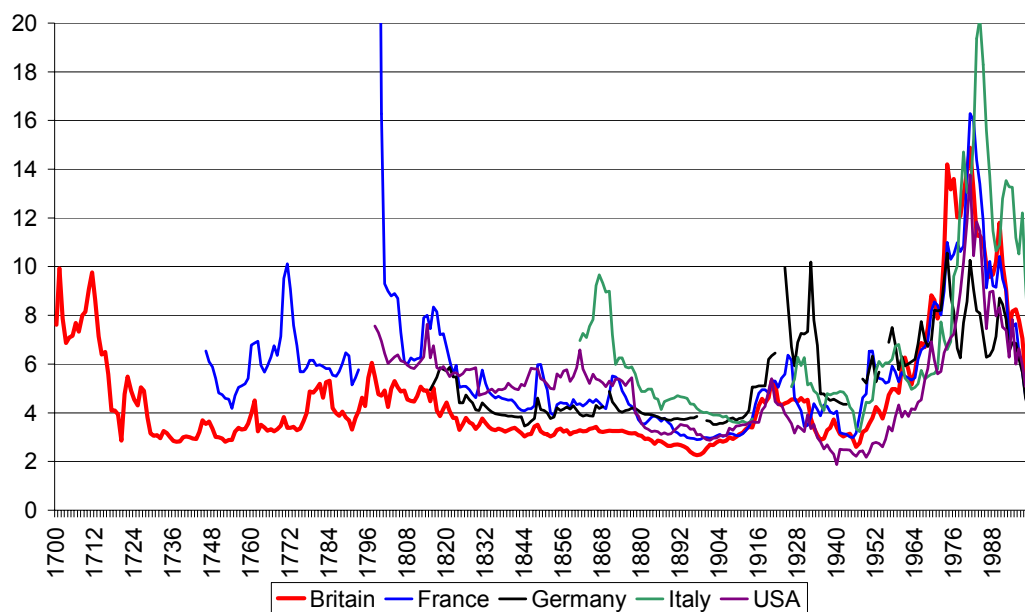
Welch (2000, 2001), amongst others, shows that estimates of the future long-term equity risk premium tend to be anchored in the long term *ex post* ERP, despite arguments that the historic ERP appears too high to be considered solely as a premium for risk-taking (Mehra and Prescott, 1985). Knowledge of the historic ERP recorded in different economies, with different growth trajectories, can give valuable insights into estimating the future ERP.

A.II History of Modern Capital Markets

Capital markets in the modern form are relatively recent innovations. Homer and Sylla (1996) give a comprehensive overview of the historical evolution of interest rates, tracing them back five millennia and documenting their level through every major economy in modern times. Homer and Sylla (1996) and Homer (1997) make a persuasive case that modern long and short-term interest rate markets can be traced no further back than Holland of the seventeenth century and England from the eighteenth century. The Dutch developed the notion of a national debt, funded from the taxation revenues of a stable and dependable system of government. The Dutch system of finance migrated to England with King William of Orange, and from England was spread to Ireland, America, and elsewhere. Accordingly, we can date the beginning of modern fixed interest markets from about 1700.

The history of long-term interest rates in modern times is summarised in Figure I.1, which traces long-term interest rates of almost the entire western world every year from 1700, with particular emphasis on those currencies to which Ireland's is or has been pegged. Specifically, the graph shows sovereign long bond yields from 1700 in the UK, from 1746 in France, from 1798 in the US, from (what was to become) Germany since 1815, and from Italy since 1861.

Figure I.1: Annual Long Bond Yields, 1700-2002



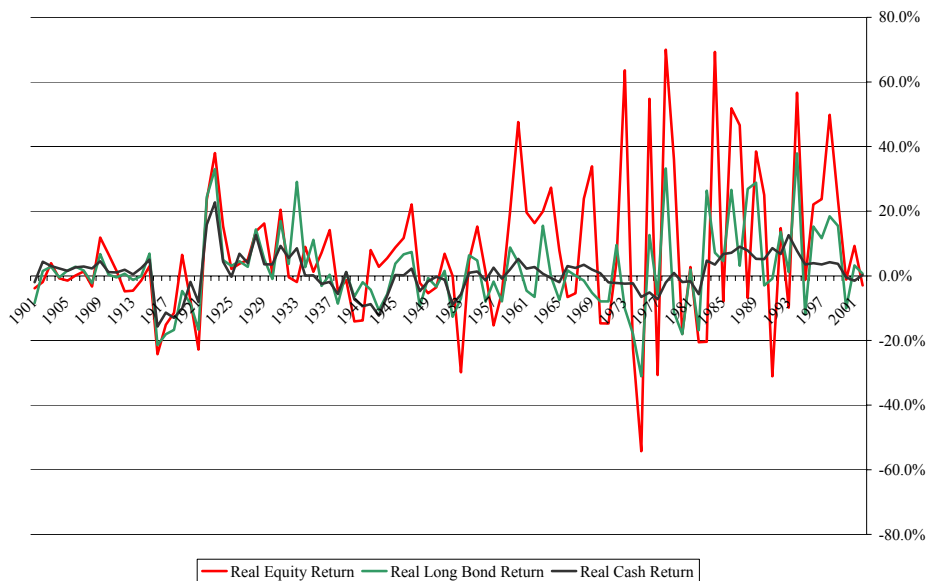
Sources of Data: *A History of Interest Rates*, Homer, S. & R. Sylla, Rutgers University Press, 1996; Sylla, R. website; *Global Financial Data* website; *British Historical Statistics*, Mitchell, B.R., Cambridge University Press, 1988. Note that the real return on gilts over the entire period since 1700 was 3.1 per cent in the UK and 3.4 per cent in US (*Source: Global Financial Data*).

Modern equity markets have an even shorter history. Scott (1912) details the establishment and development of the first limited liability companies in these isles, but the development of extensive markets in such shares was disrupted by the Bubble Act of 1720, which required an Act of Parliament to confer limited liability. While the Bubble Act did not apply in Ireland, it did hamper developments. It was not until legislative developments in the middle of the nineteenth century (particularly the Joint Stock Companies Act of 1856) that limited liability became more widely availed of in the UK (including Ireland). Thomas (1986, p.144) recounts that, outside of the banking sector, there was just 47 companies in Ireland with limited liability in September 1944 (of which 10 were listed on Irish stock exchanges) and this number was swelled by more than 2,500 incorporations over the second half of the nineteenth century.

A.III Investment Returns

The documented history of returns from equity markets prior to the twentieth, including the Irish markets, is as yet patchy (but for the markets in these isles, see Gayer *et al.* (1940), Grossman (2002) and the on-going project of Charles Hickson and John Turner of Queen’s University, Belfast). However, the returns from 1900 are now well documented. The real returns in each calendar year from each major market in Ireland from 1900 are summarised in graphical form in Figure I.2.

Figure I.2: Annual Real Returns from Irish Equity, Bond, and Cash Markets, 1900-2002



Sources: See Whelan (2004). This source also gives details of returns above wage escalation in Ireland.

The return from each market over the 101 years to end 2000 is summarised below and compared with the returns from other national markets.

Table I.1: Annualised Real Returns on Ireland and Major Markets, 101 Years Ending 31 December 2000

Country	Equity % p.a.	Bonds % p.a.	Cash % p.a.	Inflation % p.a.
Ireland	4.7	1.0	0.7	4.5
UK	5.8	1.3	1.0	4.1
US	6.7	1.6	0.9	3.2
Japan	4.5	-1.6	-2.0	7.6
Netherlands	5.8	1.1	0.7	3.0
Germany	3.6	-2.2	-0.6	5.1
France	3.8	-1.0	-3.3	7.9
Italy	2.7	-2.2	-4.1	9.1
Spain	3.6	1.2	0.4	6.1

Sources: For Ireland see Whelan (2004), otherwise figures taken from Tables 4-1 and 5-1 in Dimson *et al.* (2002). Figures for Germany exclude the two-year hyperinflationary period of 1922-23. If this episode was included then German inflation would go up to an annualised rate of about 34 per cent, cash returns fall to -19 per cent real per annum bond returns to -8.5 per cent, and equities to 4.5 per cent real per annum (Dimson *et al.*, 2000).

The returns from the Irish capital markets mirror that from other national markets. Inflation was roughly in line with international averages; equities considerably outperformed the two other asset classes and by roughly the same margin; bonds and cash struggled to keep ahead of inflation and posted similar modest real returns.

A.IV Investment Risk

Investment risk is often measured as simply the standard deviation of the nominal or real return. Taken as the standard deviation of real returns, such a measure would put the investment risk of the Irish equity, long bond and cash markets at about 25 per cent, 12.5 per cent, and 5 per cent respectively (see Whelan, 2002). However, these popular risk measures are not appropriate to the pension saver whose risk relates to the uncertainty of the future pension, not to the uncertainty of the current value of the sums saved. Defining risk in terms of the targeted pension produces materially different, and generally higher, measures of investment risk. Whelan (2004) provides a detailed analysis and measurement of investment risk by assessing the variability of the ultimate pension under different investment strategies. The measure depends on, *inter alia*, the age of the pension saver. However, over a wide range of ages, the investment risk under this more appropriate definition is of a higher order of magnitude than the conventional measure and bears out our intuition in ranking cash as the highest risk for those targeting a predefined pension, followed by conventional bonds and equities. In particular, duration mismatch in bonds is shown to be of equal or sometimes even greater significance than equity risk. Finally, it is shown that index-linked bonds of suitable duration are the lowest risk investment for an index-linked pension.

The relatively paucity of data from the capital markets' short history give little support to the often expressed view that

investment risk from equities reduces as the time period of investment increases (the so-called ‘time diversification of risk’). In any event, such an effect, if present, is not so sufficiently pronounced as to be relied upon by risk averse pension savers. Examples may be cited of long periods where the cumulative real returns from equities were negative, such as the world equity market in the first two decades of the twentieth century, such as the French and German equity markets over a period of more than 50 years (1900-1952 and 1900-1954 respectively), or such as the cumulative decline of 41 per cent in real terms of the Japanese equity market over the 1990s (see Dimson, Marsh *et al.* (2006), especially p.31).

A.V Estimating the Equity Risk Premium

The obvious approach to estimating the future equity risk premium (ERP) is to measure it historically and use this as a best estimate. Derrig and Orr (2004) provide a detailed overview of methods used to forecast the ERP in the much-studied US market. Many of the methods used simple averages or, more generally, assume that the returns are generated from a stationary stochastic process. But the empirical studies surveyed in Whelan (2005b) demonstrate that this assumption is not valid. In short, the risk of risky assets tends to change over time and thus the ERP, as a compensation for risk borne, can be expected to vary with time. Figure I.2 highlights the non-stationary of the returns delivered by the Irish equity market over the twentieth century. Accordingly, forecasting the equity risk premium must be done in tandem with forecasting the expected course of the riskiness of the market. This compounds the problem as we are uncertain of the future riskiness of risky assets.

Mehra and Prescott (1985) argue that the historical equity risk premium appears too large to be attributed solely as a premium for risk bearing, as such an attribution leads to risk aversion parameters that appear implausibly high. Other factors, such as borrowing constraints after the Second World War and the form of taxation, have been used to account for some of the observed excess return (McGrattan and Prescott, 2001). In so far as these latter factors are unlikely to operate to the same extent in the future then the ERP, as a pure premium for risk-bearing, must be lower than it has been observed in the past.

Welch (2000) surveyed 226 academic financial economists between late 1997 and early 1999 and reports that estimates of the ERP (30-year arithmetic average relative to either 30-year bonds or short-term bills¹⁰) varied between 1.5 per cent and 15 per cent, with a mean of 7.1 per cent, and a median of 7.0 per cent. Of special interest is the subgroup of 17 academics that published at least one paper on the equity risk premium or aggregate stock returns. These

¹⁰ This pools the results of two different surveys of nearly equal numbers. The first asked the ERP relative to the 30-year bond and the second asked the ERP relative to short-term bills. Coincidentally, the average of the responses was almost the same for both groups.

experts estimate the 30-year ERP somewhat lower, the average of this subgroup being 6.5 per cent.

The respondents were mostly US based and it appears that they anchored their estimate about the historical averages based on the well documented experience of the US equity market in the period 1926 to mid-1990s. Indeed, Welch provides evidence that the financial economists believed the consensus of other financial economists' would be somewhat higher than their own (by about 0.5 per cent) and that they appear to shade lower their estimate relative to their perceived consensus view. Welch (2001) updated the survey and reports that the same ERP estimate has now fallen to about 5 per cent to 5.5 per cent, even when the results were limited to that subset of the whole 510 respondents who had participated in the original survey. To summarise it appears that estimates of the long-term ERP are (a) anchored in long term historical averages, (b) shaded downwards slightly, and (c) the estimates are surprisingly sensitive to short-term returns on the market.

Other authors, such as Shiller (2000, 2002); Thaler (2002); Barberis and Thaler (2003) challenge the assumption that investors behave rationally and attempt to account for the equity risk premium (and other apparent anomalies in markets) in terms of cultural, psychological, or structural factors. Thaler (2002), for instance, argues that investors suffer from 'myopic loss aversion', where they tend to be overly influenced by their recent market experiences and, in particular, place too great an emphasis on short-term losses.¹¹

A.VI Conclusion

There is an unhelpfully wide range of estimates for the ERP, even amongst academics publishing in the field. All the methods, whether by a formal statistical projection or a less formal adjustment of past returns to exclude episodes unlikely to recur, are anchored to greater or lesser extent on the ERP observed in the past.

Based on our summary of the long-term returns delivered by Irish and international capital markets, it would not be unreasonable to assume the following real (geometric) returns for the long-term future, not allowing for management and other expenses:

Diversified equity portfolio:	3-5%
Index-linked and nominal long bonds:	1-3%
Cash:	½%-1½%

The above estimates are subject to the qualification that the returns from such risky assets will not be as expected. No doubt, this qualification is why the markets so generously reward the risk bearer as, as yet, there is no satisfactory model for investment risk.

¹¹ Whatever about investors, Thaler's thesis does account for the financial economists' dramatic revision of the long term ERP between Welch (2000) and Welch (2001).

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ENDNOTE

† In standard actuarial notation, if r is the retirement age and x the age when contributions start then we have,

$$\bar{a}_{x:r-x|}^{@i\%} = \frac{\bar{a}_{x:r-x|}^{@0\%}}{l_r \bar{a}_r^{@0\%}} \left(\frac{l_r}{l_x} v_{@i\%}^{r-x} \bar{a}_r^{@i\%} \right)$$

Rewriting gives:

$$\frac{\bar{a}_{x:r-x|}^{@i\%}}{\bar{a}_{x:r-x|}^{@0\%}} = \frac{\bar{a}_r^{@i\%}}{\bar{a}_r^{@0\%}} v_{@i\%}^{r-x}$$

Now, as suspected, $i=0$ per cent is clearly a solution. This solution can be seen to be unique for reasonable r by considering the derivative with respect to i of both sides. The import of this is that the internal rate of return to contributors in a stationary and sustainable PAYG system is equal to the weighted average rate of wage growth of contributors.