

**An Assessment of QEC Forecasts
1984-94**

T. J. Baker and Delma Duggan

Special Article

in

**QUARTERLY
ECONOMIC
COMMENTARY**

Autumn 1995

**T. J. BAKER
DELMA DUGGAN**



AN ASSESSMENT OF QEC FORECASTS 1984-94

by Terry Baker and Delma Duggan

1. Introduction

All regular economic forecasters should carry out periodic assessments of the accuracy of their forecasts. These are not normally for publication, but rather to assure themselves that there are no systematic biases in their work and to identify avoidable weaknesses in their forecasting approach.

In an ideal world, published assessments of the forecasting record over a suitable period should be undertaken by a disinterested third party, preferably including a comparative study of forecasts from different sources. In the real world, third parties have proved uninterested rather than disinterested, leaving the individual forecaster to decide whether to publish his or her own assessments.

There are obvious dangers that such self-assessment either will be, or will be perceived to be, unduly partial, with data selected to show the record in the best possible light, and errors which cannot be concealed glossed over with special pleading. These dangers can largely be overcome by selecting data according to a logical pattern, based on their importance to the forecast rather than on the favourability of their results, and by maintaining as objective an approach as possible to the analysis of the record. It must be remembered also that past forecasts are a matter of public record and can thus be checked quite easily.

Self assessment does have some advantages, in that the author is generally better placed than an observer to explain why past errors occurred, and to weigh the implications of these in terms of past conclusions and future forecasting techniques.

We attempted to bear these considerations in mind when we published a detailed assessment of our forecasting record for the years from 1984 to 1990 in the Spring 1991 issue of the *Quarterly Economic Commentary*. Now appears to be an appropriate time to update this exercise. The Irish economy is again near a cyclical peak, as it was in 1984 and 1990, the publication of *National Income and Expenditure 1994* has resolved some of the reservations we had about using NIE 1993 as a standard of comparison, and forthcoming changes in national accounts methodology could render comparisons of past forecasts with future editions of NIE unduly complicated.

Comparing economic forecasts with the actual out-turn is a less simple exercise than it might appear. This is for two main reasons. The first is the question of selectivity, already referred to. For each year there are generally forecasts in eight separate QECs, each carrying predictions for well over 100 items. It is obviously not feasible to analyse, let alone present, comparisons for over 800 observations for each year! The solution adopted, as in 1991, is to restrict the analysis to the initial QEC forecast for each year, generally made in the preceding summer, and the final QEC estimate made in the spring following the end of the year. Analysis is similarly restricted to the main expenditure

components of GNP, together with the two main income components and a few key employment and price variables.

The other major difficulty is that there is seldom a unique measure of what the actual out-turn was. NIE estimates for each year tend to be significantly revised in succeeding years, with no guarantee than even the final estimates represent a true picture of reality, which of course is inherently unobservable. Our method of dealing with NIE revisions is analogous to our treatment of the range of QEC forecasts, in that we present the preliminary and the latest NIE estimates, with the greater concentration on the latter, as it is reasonable to assume that successive revisions generally improve the quality of the estimates.

Guided by the findings of the 1991 assessment, the format of this presentation is as follows.

The first issue to be addressed is that of possible bias in the forecasts of macro-economic aggregates and specific major components, on the grounds that a persistent tendency towards either optimism or pessimism would constitute a serious fault in the forecasting record.

The second point to be considered is the issue of predicting the economic cycle, in terms of the timing and the amplitude of fluctuations in the growth rate. The past record of short-term economic forecasting, in this and other countries, suggests that it would be unreasonable to expect a high degree of accuracy in this regard, but that an appropriate criterion would be whether the forecasts outperform alternative methods of prediction which eschew the application of judgement.

As in the earlier study, GNP forecasts for each individual year will be discussed in some detail to illustrate the manner in which unfolding events influence both forecasts and the outcome. Finally we shall investigate whether inaccurate forecasts have led to our giving any advice which, with the benefit of hindsight, was seriously misleading, and draw general conclusions from the current exercise.

2. *Bias*

Although the 1991 study found that our real GNP forecasts from 1984 to 1990 had no persistent bias, the ESRI in general and the QEC in particular have continued to be regarded in some quarters as optimistic forecasters. The eleven years from 1984 to 1994 inclusive, comprising the greater part of two economic cycles provide a suitable period to re-examine whether there has been consistent bias in QEC forecasts.

The following set of tables show the annual average percentage changes over the period in QEC forecasts and official NIE estimates of major national accounts aggregates and other key economic variables. Each table shows the annual average percentage increase for the whole period and for the two sub-periods 1984 to 1989 and 1990 to 1994, each representing a cycle virtually from peak to peak. In most cases the increases are shown for the initial QEC forecasts, the final QEC estimates, the preliminary NIE estimates and the latest NIE estimates, which is NIE 1994 for recent years.

(a) Current Price Aggregates

Table 1: Current Price Aggregates

	Annual Average Percentage Increase								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	Current Price GNP			Current Price GDP			Current Price Net Factor Flow		
QEC Initial	7.0	7.4	7.1	7.4	7.4	7.4	10.2	7.3	8.9
QEC Final	7.4	6.9	7.1	8.1	6.8	7.5	17.7	6.8	11.5
NIE Prelim.	7.1	7.0	7.0	8.0	6.2	7.2	17.0	0.8	9.3
NIE Latest	7.7	6.7	7.2	8.7	6.4	7.7	18.2	5.0	12.0

Table 1 sets out the results for current price GNP, GDP and net factor flows. There is virtually no difference between the initial and final QEC average GNP growth over the entire period, and both fall within the range of NIE estimates. In both sub-periods the QEC final estimate falls within the NIE range. The initial QEC forecasts were marginally low in the first period and high in the second, especially when compared with the latest NIE estimates.

The current price GDP forecasts for the entire period were also within the range of NIE estimates. Here, however, there was significant underprediction in the first sub-period and over-prediction in the second, when the QEC initial forecast is compared with the latest NIE estimate.

Major discrepancies occur in the final section of the table, where average increases in net factor flows are compared. In the first sub-period, the initial forecasts were much too low, mainly because the predictions for 1984 and 1985 were made before the "black-hole" revisions to official balance of payments estimates were available. In the second sub-period the initial QEC forecasts were too high, partly in reaction to the underprediction revealed in the earlier exercise, but mainly due to a failure to foresee the substantial falls in factor outflows in 1990 and 1991 after some years of rapid increase. Final QEC estimates were close to the out-turn in the first sub-period, when most of the data were available by the time of publication. With the timing of official balance of payments estimates much slower in the second period, the accuracy of the final QEC estimates inevitably suffered. Over the full eleven year period, however, the evidence does not suggest a significant persistent bias in the forecasts.

A noteworthy feature is the scale of the revisions in the official estimates, especially in the second sub-period. With such a divergence between preliminary and latest NIE estimates, it is difficult to define what outcome the QEC is attempting to predict, and unreasonable to expect a high degree of accuracy in relation to any subsequent measure.

(b) Constant Price Aggregates

Table 2: Constant Price Aggregates

	Annual Average Percentage Increase								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	Constant Price GNP			Constant Price GDP			Constant Price Net Factor Flow		
QEC Initial	2.1	3.9	2.9	2.5	4.0	3.2	6.4	5.2	5.9
QEC Final	2.2	4.0	3.0	3.1	4.4	3.7	12.2	7.3	9.9
NIE Prelim. Exp.	2.0	5.5	3.6	3.3	5.0	4.1	14.2	2.6	8.9
NIE Latest Exp.	2.6	4.6	3.5	3.8	4.7	4.2	14.6	6.3	10.8
NIE Latest Output	2.2	3.8	2.9	3.4	4.0	3.7			

The accuracy or otherwise of forecasts tends to be judged mainly on the basis of the increase in constant price GNP, frequently referred to as simply "the growth rate". In fact, this is an over-simplification, as there are two official estimates of constant price GNP, one based on deflating expenditure on GNP and the other based on deflating output. Because the QEC forecasts only deflate the expenditure items, the obvious comparison is with the constant price expenditure estimates in the national accounts. The latest output estimates are also included in the table, largely to show the extent of the divergence in cumulative growth between the two methods.

There is little difference between the average growth in QEC initial forecasts and final estimates, indicating that upward and downward revisions in the course of individual years roughly cancel out. Compared with the latest NIE expenditure estimates, the QEC forecasts have been slightly too pessimistic over the entire period and in both sub-periods. This change with regard to the 1991 findings regarding the 1984/89 period reflects official revisions since 1991 to growth rates in that sub-period.

The fact that QEC current price forecasts were unbiased, while constant price forecasts show a slight downward bias, is almost entirely due to a tendency to apply too high an average export price deflator, especially during the second sub-period. It is interesting, if perhaps accidental, that the average increase in the QEC forecasts is very close to that in the official output measure of real GNP, in both sub-periods and over the entire eleven years. More crucially, the QEC forecasts did predict the substantial increase in the average rate of growth in the second sub-period compared with the first.

The QEC forecasts of average real GDP growth similarly were closer to the output measure than to the expenditure, which they tended to underpredict. Constant price net factor flows were underpredicted in the final sub-period and overpredicted in the second. The overprediction in recent years was much less marked in constant prices than in current prices, because of the excessive export

price deflators already referred to, which, of course, are also applied to net factor flows.

(c) *Domestic and External Demand*

Table 3: *Domestic and External Demand*

	<i>Annual Average Percentage Increase</i>								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	<i>Constant Price Domestic Demand</i>			<i>Constant Price Exports</i>			<i>Constant Price Imports</i>		
QEC Initial	1.3	3.8	2.4	7.5	8.0	7.7	5.7	7.4	6.5
QEC Final	1.3	2.4	1.8	9.4	8.4	8.9	5.9	5.3	5.6
NIE Prelim.	1.1	2.0	1.5	9.7	10.0	9.9	5.2	6.0	5.6
NIE Latest	2.0	2.3	2.1	9.9	10.1	10.0	7.3	6.3	6.8

Domestic demand is defined here as excluding stock changes, both to facilitate comparison in terms of percentage growth and also because large-scale stock movements in Ireland are generally associated with fluctuations in agricultural exports rather than changes in domestic demand. It can be seen that, for reasons to be discussed later, the average initial QEC forecasts of growth in domestic demand were much too high in the later sub-period, and rather excessive over the whole period. Final QEC estimates were much closer to reality, although the scale of NIE revisions makes the interpretation of the actual outcome somewhat problematical.

Initial QEC forecasts of constant price exports of goods and services were significantly too low in both sub-periods. Final QEC estimates were slightly too low in the first sub-period, due mainly to overestimating the export price deflator. This factor was still present in the second sub-period, but the main reason for the decline in the accuracy of the final QEC estimates was, of course, the absence of up-to-date trade statistics when the final estimates for 1993 and 1994 were made.

The average QEC initial forecasts for constant price imports were reasonably accurate over the entire period, lying between the preliminary and latest NIE estimates. Actual import growth was underpredicted in the first sub-period but significantly over-predicted in the second. This is not surprising in view of the simultaneous overprediction of domestic demand, as import forecasts are based on the expected growth of final demand. Final QEC estimates were too low in both sub-periods, especially in comparison with revised NIE estimates. This is due more to official revisions of import values than to the use of a slightly excessive import price deflator.

(d) Domestic Demand Components

Table 4: Domestic Demand Components

	Annual Average Percentage Increase								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	Constant Price Consumption			Constant Price Govern.			Constant Price Investment		
QEC Initial	1.8	3.6	2.6	-1.1	0.6	-0.3	2.3	7.3	4.5
QEC Final	2.0	2.7	2.3	-1.4	2.2	0.3	1.6	1.8	1.7
NIE Prelim.	1.9	2.0	2.0	-1.4	2.4	0.3	0.8	1.7	1.2
NIE Latest	3.9	2.3	3.2	-1.2	3.1	0.8	-0.1	1.5	0.6
Retail Sales Volume	0.9	2.4	1.6						

NIE estimates of personal consumption must be treated with some caution, because the item is, at least partially, derived as a residual in balancing the national accounts. In particular, the doubling of the average growth in constant price consumption in the late '80s between the preliminary and latest NIE appears suspect, as it could result from revisions to consumption levels being phased in over too short a period. In the first sub-period at least, the preliminary NIE estimate probably provides a truer yardstick of comparison for the QEC forecasts than the latest revisions.

On this basis the initial QEC forecasts were reasonably unbiased in the first sub-period, but significantly overoptimistic in the second, primarily through failing to predict the relative stagnation of consumption in 1990 and 1991. Final QEC estimates were also slightly too high in the later sub-period. In this respect the changing relationship between the retail sales index and the NIE consumption index is interesting. In the first sub-period, constant price consumption, even on the preliminary estimates, grew more than twice as fast as the volume of retail sales. In the second sub-period the growth in real consumption has been slower than that in the retail sales volume index, the main short-term indicator of consumption trends.

The initial QEC forecasts of current government spending predicted the fall in volume reasonably accurately in the first sub-period. However they seriously underpredicted the reversal of trends in the second sub-period. This was partly due to assuming too low an increase in average current price spending, and partly to applying too high a price deflator in some years. Even the QEC final estimates, made after Budget-time data was available, tended to underestimate slightly the growth in the volume of public authorities' expenditure.

By far the most serious and consistent bias in the QEC initial forecasts of national accounts components relates to the volume of gross fixed capital formation, which was greatly overpredicted in both sub-periods. In only three

years out of the eleven were our initial forecasts below the out-turn, while in many of the remaining eight years they were much too high, predicting substantial growth rather than an actual decline. For some individual years there are particular reasons for this discrepancy, such as failing to foresee cyclical downturns or significant increases in interest rates. However, underlying the general bias, especially during the second sub-period, is the tendency to apply to the forecasts a mental model of the economy in which sustained economic growth, which was correctly predicted, depends on rising investment, which, according to NIE estimates, did not take place.

(e) *Current Price Components*

Table 5: *Current Price Components*

	<i>Annual Average Percentage Increase</i>								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	<i>Current Price Stock Change (Em)</i>			<i>Current Price Wages etc.</i>			<i>Current Price Other Income</i>		
QEC Initial	83.5	121.0	100.5	6.3	6.4	6.4	10.3	11.0	10.6
QEC Final	44.8	122.2	80.0	6.1	6.6	6.3	15.1	10.7	13.1
NIE Prelim	102.7	121.8	111.4	5.7	6.5	6.1	15.8	8.1	12.3
NIE Latest	127.0	152.8	138.7	6.8	6.7	6.8	16.1	8.2	12.5

For technical reasons the QEC forecasts of stock changes cannot be compared with NIE estimates in volume or constant price terms. However, because of the importance and volatility of stock changes in the national accounts, some comparison appears necessary and it is therefore presented at current prices. Somewhat to our surprise, there is relatively little bias, particularly between the initial forecasts and the preliminary NIE estimates, although in some individual years there were major discrepancies. In the second sub-period, the average QEC forecasts and estimates were very close to the preliminary NIE estimates, and even in the individual years the final QEC estimates were not seriously misleading.

Turning from the expenditure to the income side of the national accounts, both the QEC and NIE only provide current price estimates. The average increase in both QEC initial forecasts and final estimates of aggregate wages, salaries and pensions lie within the range of NIE estimates for the period as a whole, and very close to the NIE estimates for both sub-periods. Even with regard to individual years, the QEC forecasts have generally proved reasonably accurate, although it must be conceded that this is one of the least volatile elements of the national accounts.

Other non-agricultural incomes, defined as trading profits of companies, other trading profits (including income from self-employment) and rent of dwellings, all adjusted for stock appreciation and for financial services, has been

much more volatile. The QEC initial forecasts were substantially too low in the first sub-period and significantly too high in the second. Final QEC estimates were reasonably close to the outcome in the first sub-period but too high in the second. The main reason for the recent overestimates in this item has been the failure to anticipate a steep rise in the adjustment elements, which are strongly negative, since 1991.

(f) *Other Indicators*

Table 6: *Employment Indicators*

	<i>Annual Average Percentage Increase</i>								
	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94	1984/9	1990/4	1984/94
	<i>Total Employment (April)</i>			<i>Labour Force Unemployment (April)</i>			<i>Live Register (Annual Average)</i>		
QEC Initial	-0.2	0.8	0.3	3.4	2.8	3.1	2.6	0.2	1.5
Actual	-0.6	1.7	0.5	1.9	2.2	2.0	3.3	4.3	3.7

Although national accounts components and aggregates provide the framework within which the QEC forecasts are constructed and presented, the forecasts also contain predictions of variables which are outside this framework. The most important of these concern employment, unemployment and the consumer price index.

Because no official estimates are published of annual average employment totals, comparison has to be limited to the estimates based on the Labour Force Survey in April each year. The QEC forecasts presented here are those for the following April made in the preceding Summer issue of the QEC, when the full national accounts forecast for that year are first presented. There is no point in presenting the final QEC estimate, as by that time the preliminary labour force estimates are already available.

It can be seen that the average QEC forecasts of total employment were slightly optimistic in the first sub-period and pessimistic in the second sub-period and over the period as a whole. However, the degree of bias is relatively small, and the forecasts did predict the change in trend between the two sub-periods.

Forecasts of unemployment, as recorded in the Labour Force Survey, are too pessimistic in both sub-periods. Conversely forecasts of the Live Register are much too optimistic, especially in the second sub-period. This dichotomy arose from a failure to take sufficient account of the growing divergence between the Labour Force and Live Register measures of unemployment, which increased from 5,000 in April 1983 to 66,000 in April 1994. By virtually ignoring the autonomous element in the Live Register increase, we both under-predicted the growth in the numbers on the Register and imparted a downward bias to our employment forecasts.

As with the employment and unemployment indicators, there is no point in comparing the final QEC estimates with the actual increase in the consumer

price index, as the actual result is known by the time the final QEC estimate is made. The QEC initial forecasts tend to be slightly too high in both sub-periods, although not to an extent that was significantly misleading. In general, the reduction in the inflation rate from its high level in the early eighties to its fairly stable low level since 1987 was accurately predicted.

Table 7: Consumer Price Index

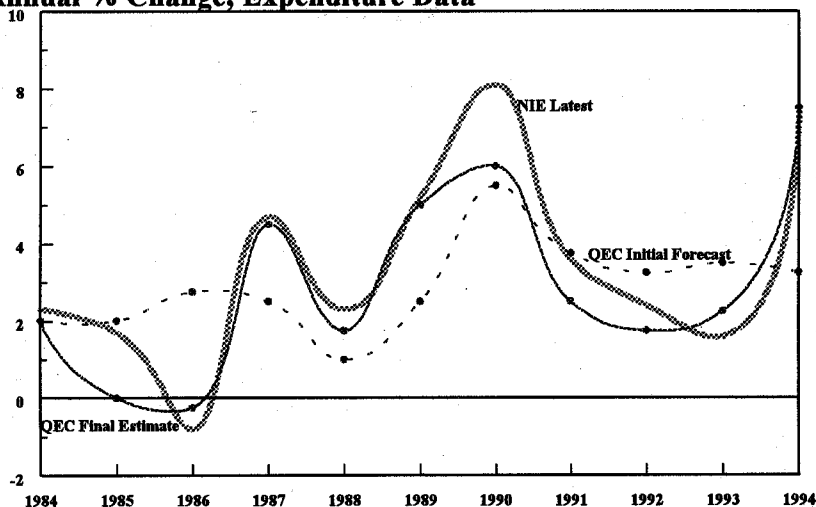
	Annual Average Percentage Increase		
	1984/9	1990/94	1984/94
	<i>Consumer Price Index</i>		
QEC Initial	4.7	3.1	4.0
Actual	4.5	2.7	3.7

3. Cyclical Timing and Amplitude

In the 1991 assessment of QEC forecasts, we found that the final QEC estimates tracked the course of the economic cycle, as defined by NIE estimates, with a high degree of accuracy. By contrast, the initial QEC forecasts showed insufficient amplitude in their variation, and tended to miss important cyclical turning points. To simplify the consideration of timing in the present exercise, attention is focused on the growth of real expenditure on GNP. The cyclical movements of categories of expenditure by and large follow a similar pattern and there is little to be gained by presenting the course of each.

Figure 1 thus sets out the QEC initial forecasts and final estimates from 1984 to 1994, compared with the latest NIE estimates from NIE 1994 and its

FIGURE 1: Real GNP 1984-94
Annual % Change, Expenditure Data



predecessors. Although the chart is largely self explanatory, it does require some interpretation.

In the first place, the latest NIE estimates diverge quite significantly from earlier estimates, especially in 1985 and the period from 1991 to 1993. This has had the effect of weakening the fit between the QEC final estimates and the NIE results in the earlier sub-period, from 1984 to 1989. Conversely, it has greatly improved the fit over the second sub-period, from 1990 to 1994. Overall, it remains fair to claim that the final QEC estimates, which generally appear several months before the preliminary NIE estimates, have provided a reasonably accurate picture of the growth-path of the Irish economy.

Turning to the more interesting issue of the predictive ability of the QEC initial forecasts, there would appear to have been a slight improvement with regard to timing between the first and second sub-periods. In the earlier period the initial forecasts failed to predict the deterioration in 1986 or the subsequent recovery in 1987, although the downturn in 1988 was predicted and the direction, but not the scale, of the upturn in 1989 was also foreseen. In the second sub-period, the initial forecast of GNP growth of 5½ per cent in 1990, the highest since 1978, was quite bold, and must be regarded as successful even though it fell short of the exceptional final outcome. The downturn in 1991 was accurately predicted, and the forecast of a continuation of moderate growth in 1992 and 1993 was by no means misleading, with the predicted rate of growth in both years falling between the initial and latest NIE estimates. The apparent failure to predict the sharp up-turn in 1994 is discussed in detail later.

The data underlying Figure 1 can be subjected to more formal analysis, in an attempt to discover the comparative predictive accuracy of the QEC forecasts. The most familiar test is to calculate the standard error of forecast according to the formula $E = \sqrt{\frac{1}{N} \sum_t (x_t - \hat{x}_t)^2}$, where E is the standard error of forecast, x_t is the actual result for year t, and \hat{x}_t is the forecast for that year. For the purpose of this exercise, it has to be assumed that the latest NIE estimates measure the actual result x_t for the growth in real GNP in each year.

Table 8 sets out the standard error of forecast over the two sub-periods and the total period for various actual or hypothetical forecasts of real GNP growth. The predictors included in the analysis are the NIE Preliminary estimates, the QEC final estimates and initial forecasts, the *post-facto* trends for the entire period and for the two-sub-periods separately, the trend projected from the latest five year NIE estimates available at the time the QEC initial forecasts were made, and a smoothed exponential forecast based on data available at the time of the QEC initial forecast.

In interpreting the table, it should be noted that the lower the standard error the more accurate the forecast, and that the method adopted, by squaring the annual errors, imposes a severe penalty for any year when, due to considerations of either timing or amplitude, the forecast diverges substantially from the actual result.

The first two rows of the table indicate that over the entire period, the QEC final estimates have proved as accurate a predictor of the latest NIE estimates of real GNP growth as have the preliminary NIE estimates.

Table 8: Standard Errors of Forecast - Constant Price GNP Growth

cf. NIE Latest Expenditure Estimate

		1984-89	1990-94	1984-94
1	NIE Preliminary	0.83	1.67 ¹	1.04 ¹
2	QEC Final Estimate	0.78	1.14	0.96
3	QEC Initial Forecast	2.10	2.38	2.23
4	Single Actual Trend	2.20	2.87	2.53
5	Divided Actual Trend	1.95	2.64	2.29
6	Projected 5-year Trend ²	3.08	3.55	3.3
7	Projected Exponential Smoothing ³	4.04	3.93	3.99

Notes: ¹Excluding 1994, when, by definition, NIE preliminary and latest are identical.
²Average growth rate in latest 5 years NIE estimates which were available during the preceding summer.
³ $\hat{x}_t = x_{t-1} + \frac{1}{2}(x_{t-1} - x_{t-2})$, where x = GNP growth rate, and t , etc., represent the relevant years.

Inevitably, the QEC initial forecast is less accurate. Nevertheless it performs significantly better than the application of a single observed trend line for the entire period. Even when the observed trend is split between the two sub periods, the QEC initial forecast outperforms it marginally over the entire period and significantly in the second sub-period.

Of course, the actual trend-line is unavailable at the time initial forecasts are made, and to that extent it does not provide a fair basis of comparison. However, its inclusion in the table is justified as a strict *post-facto* check on the utility of short-term annual forecasts, and as a reassurance to medium-term forecasters that, if they can accurately predict the average growth-rate over a period, the annual discrepancies are likely to be not much greater than those involved in ad hoc short-term forecasting.

The final two rows of Table 8 provide a fairer test of the efficacy of the QEC initial forecasts, as they are based on alternative projections using the information available at the time the forecast was made. The first represents a naive projection of the observed average growth rate over the preceding five years, while the second is based on the rate of growth in the latest two years. Both of these mechanical applications of past rates of growth produce standard errors of forecast substantially above those of the QEC initial forecast.

It seems reasonable to conclude that the judgement represented in the QEC initial forecasts yield slightly better results than the application of trend lines which can only be fitted with hindsight, and substantially better results than simple projections of past trends. It is also interesting to note that in absolute terms the quality of QEC forecasts and estimates has deteriorated in the second sub-period compared with the first, but that in comparative terms the QEC has improved its performance in the second sub-period. The explanation for the deterioration in most predictions for the second sub-period lies partly in the

greater variability in the annual growth rates, and partly in the reduced availability of up-to-date information on trade-flows.

4. Individual Years

The course of our real GNP forecasts, from the initial forecast to the final estimate, for each year from 1984 to 1989 was discussed in the 1991 assessment. We do not intend to repeat this exercise here for the earlier years, as the only change has been that the range of "actual" results has widened with subsequent NIE revisions. However, the approach is instructive in understanding the influence of contemporary events on the evolution of forecasts, and will therefore be adopted for the years since 1990. As in the earlier exercise, both current and constant price GNP forecasts will be considered.

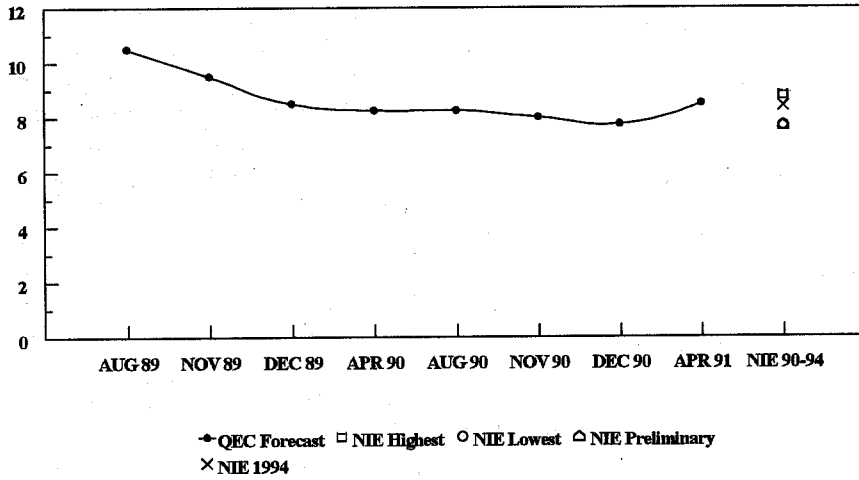
(a) 1990

As can be seen from a comparison of the (a) and (b) sections of Figure 2, the initial forecasts made in the summer of 1989 were slightly too high in current prices and too low in constant prices, implying too great an implied price deflator. During the remainder of 1989, both current and constant price forecasts fell, the former to within the correct range of outcomes and the latter further below the eventual result. In the case of the volume forecasts, the reduction in the main categories of expenditure, namely personal consumption, fixed investment and exports was broadly correct, but we failed to foresee the compensating rise in government consumption (after several years of decline) and stockbuilding, and the reduced rate of growth in imports and factor flows.

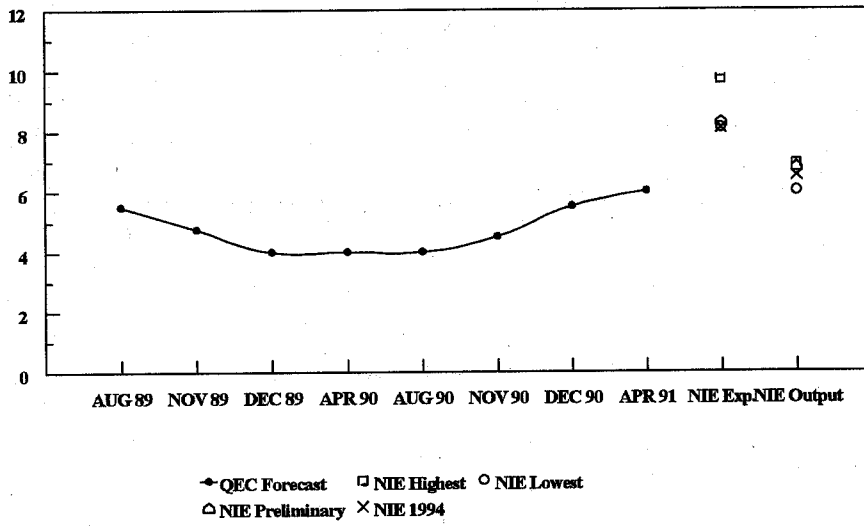
Through the first half of 1990 itself there was little change in the forecasts, as early indicators, especially in current prices, appeared to confirm the predicted trend. It was not until the second half of 1990 that it became apparent that export prices were much lower than anticipated, and that the gap between value and volume growth would be much narrower than we had supposed. Thereafter, while the current price forecast remained more or less correct, the constant price forecast moved steadily towards the correct outcome, although it never quite reached the actual range of estimates. At the same time considerable amendments were made to the forecast composition of GNP, the most important being a major shift from exports to stockbuilding as the dramatic impact of mad-cow disease became clear. Nevertheless, the final estimates of real expenditure components remained significantly at variance with official estimates. Personal consumption was overestimated, due to over-reliance on the retail sales volume index, government consumption was understated, largely through the application of an unduly high price deflator, and fixed investment was underestimated because much of the actual increase occurred in non-dwelling building and construction, for which, at that time, there were virtually no current indicators.

FIGURE 2: GNP FORECASTS, 1990

(A) Current Price, Annual % Change



(B) Constant Price, Annual % Change



(b) 1991

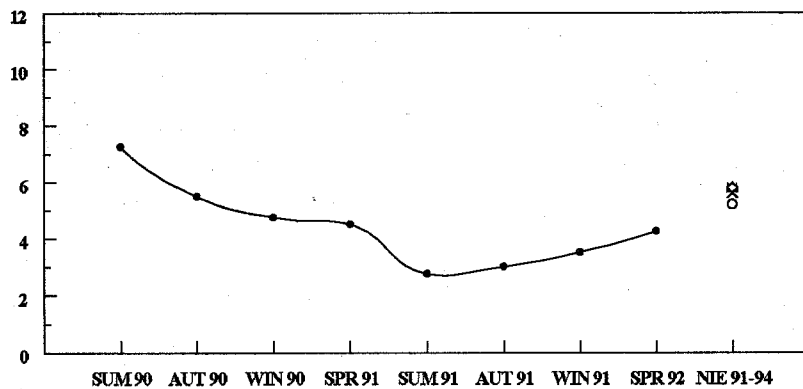
The initial forecast for 1991 was made in the summer of 1990. Although in retrospect it is obvious that the recession in the USA and UK was already established by then, this was far from clear at the time. Most international agencies were still predicting a slowdown in growth rather than an actual fall in output. Moreover the initial forecast was drawn up immediately before the Iraqi invasion of Kuwait led to the threat of a Gulf War, and a dramatic increase in oil prices. Thus the initial forecast of a reduced, but still substantial, growth in the value and volume of GNP in 1991 was not unreasonable in the circumstances.

As the extent of the recession in the major English-speaking economies became apparent, and as the situation in the Gulf developed, both the current and constant price forecasts were reduced. Throughout 1991 itself, the value and volume forecasts were fairly stable, although considerably below the actual range of outcomes. However, it is important to note that at all times the volume forecasts remained firmly positive, in contrast to those of some other analysts who were predicting stagnation or recession in the Irish economy. Finally in the Spring 1992 issue of the QEC a small upward revision in our estimates placed the volume increase within the range of NIE output estimates, although still below any of the NIE expenditure estimates. The final QEC value estimate remained below the range of NIE estimates.

The main reason for the discrepancy between our later forecasts of the volume of GNP and the official NIE estimates was a failure to predict a large fall in the volume of net factor flows. Throughout the period the QEC forecasts of real GDP growth remained within, or slightly above, the eventual range of outcomes. Gradual changes to predictions for most components of GDP brought them into reasonable line with the NIE estimates by the time of the QEC final estimate.

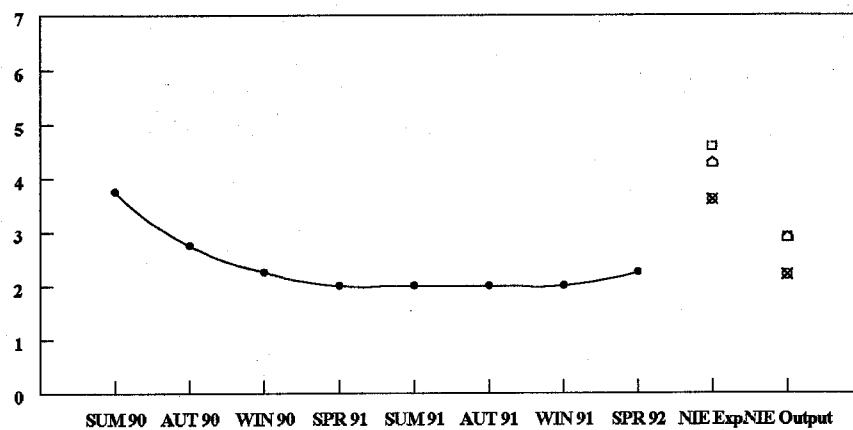
FIGURE 3: GNP FORECASTS, 1991

(A) Current Price, Annual % Change



• QEC Forecast □ NIE Highest ○ NIE Lowest
 ◻ NIE Preliminary × NIE 1994

(B) Constant Price, Annual % Change



• QEC Forecast □ NIE Highest ○ NIE Lowest
 ◻ NIE Preliminary × NIE 1994

(c) 1992

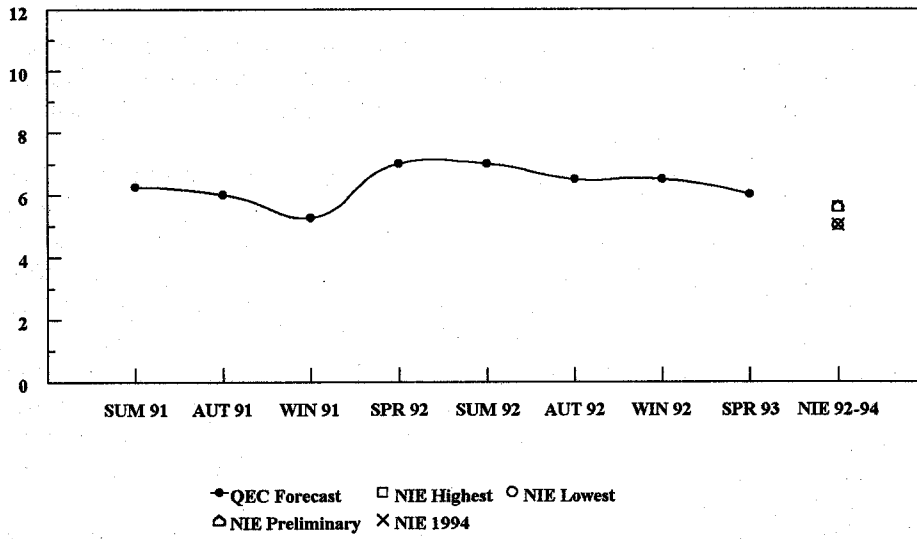
Uncertainties concerning the state of the international economy led to some fluctuation in the first few forecasts of GNP growth in 1992. Early optimism concerning a relatively speedy recovery from the US and UK recessions faded, leading to downward revisions in the Autumn and Winter QECs. However, growing evidence of an upturn in domestic demand and strong export figures for the early months of the year encouraged upward revisions to our forecasts in the Spring and Summer issues.

Then came the currency crisis in September. Although several previous *Commentaries* had warned of the dangers of a sterling devaluation before the end of 1992, Britain's decision to leave the ERM rather than to devalue within it had not been foreseen. The severe loss of short-term competitiveness and, more vitally, the escalation of interest rates obviously damaged the confidence on which the recovery in domestic demand earlier in the year had been based.

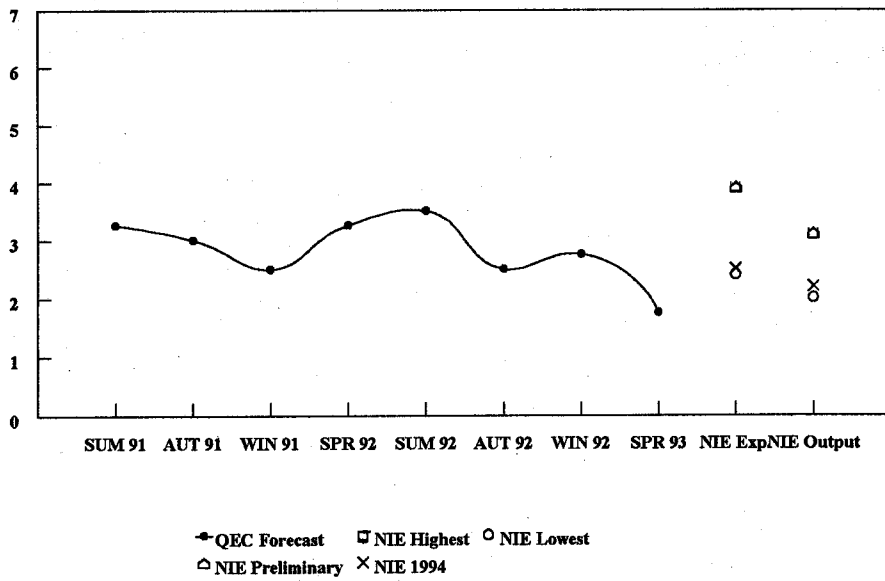
Accordingly the predicted rate of GNP growth for 1992 was reduced in the Autumn QEC, and again in the final estimate in the following Spring issue. Strangely, through all these amendments, the forecasts of volume GNP growth remained within the range of outcomes, until the final estimate which was rather too low.

The main reason for this final estimate being too low was an overestimate of the export price deflator, which meant that from accurate export value figures the extent of the volume growth of exports was underestimated. This same failure to predict the degree of decline in average export prices is one of the main reasons why the value forecasts of GNP growth remained too high almost throughout the period.

FIGURE 4: GNP FORECASTS, 1992
(A) Current Price, Annual % Change



(B) Constant Price, Annual % Change



(d) 1993

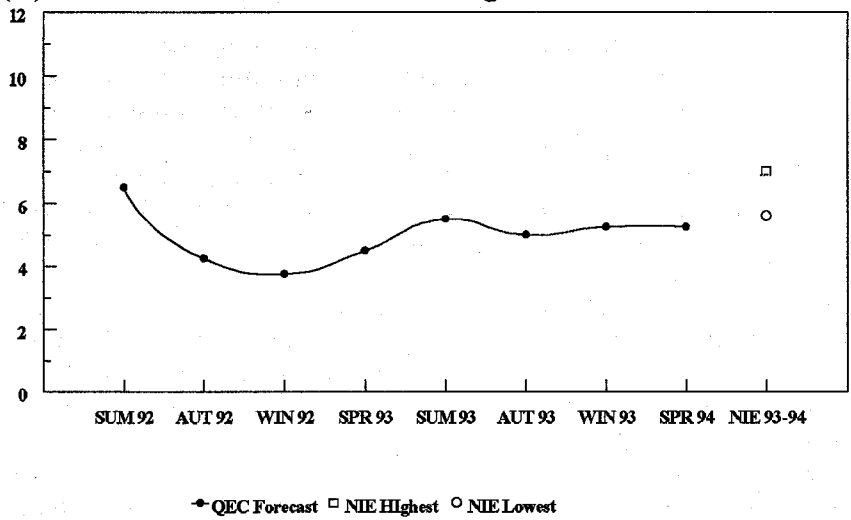
The initial forecasts for 1993 were made immediately before the currency crisis. It seemed reasonable at the time to project a continuation of the moderate increases in personal consumption and fixed investment which were becoming established in the first half of 1992. A slight slowdown in the rate of growth of exports was predicted as a consequence of the assumed devaluation of sterling within the ERM.

Once the currency crisis had broken, it was obvious that uncertainty, coupled with very high interest rates, would adversely affect the trend of consumption and fixed investment. Exports were also likely to be impeded by the sheer scale of sterling depreciation and the cost of working capital to some Irish exporters. Throughout the autumn and early winter it remained unclear when and how the currency crisis would be resolved, and even after the devaluation of the Irish pound at the end of January, it was not immediately apparent what course Irish interest rates would follow in the remainder of the year. Thus it is not surprising that forecasts were reduced sharply in the Autumn and Winter *Commentaries*. As in the Gulf War period of 1991, it is noteworthy that the QEC forecasts remained positive throughout the currency crisis, even if they did dip below the eventual outcome.

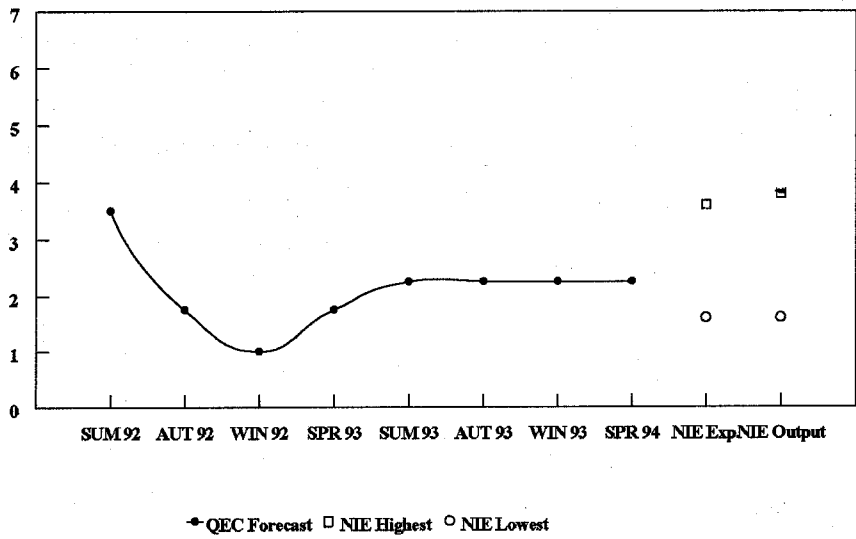
Even when it became clear that the interest rate penalty for devaluation was much less than had been feared, and when sterling appreciation fully restored Ireland's competitive position, the speed of recovery was difficult to predict. It was impossible to monitor fully the progress of the Irish economy in the remainder of 1993, because of the lateness of trade statistics and their lack of comparability with previous years due to the change of methodology imposed by the implementation of the Single European Market. In the circumstances it is remarkable that the QEC forecasts from the Summer 1993 issue onwards remained both steady and relatively close to the NIE 1994 estimates of growth in 1993.

FIGURE 5: GNP FORECASTS, 1993

(A) Current Price, Annual % Change



(B) Constant Price, Annual % Change



(e) 1994

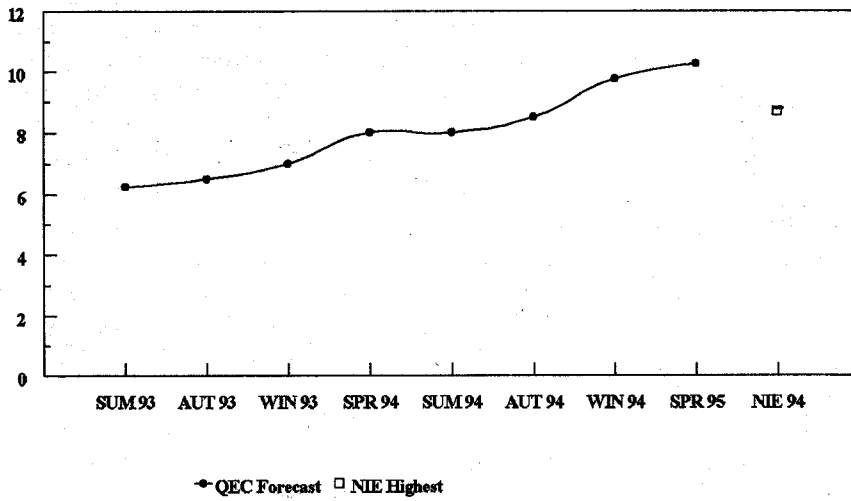
The initial QEC forecast for 1994 was, with hindsight, the poorest in the entire series since 1989, with the volume growth prediction over 4 per cent below the preliminary NIE estimate of expenditure growth. In mitigation, it can be pointed out that, when the forecast was made in the summer of 1993, most European analysts were predicting continued recession, the Irish recovery from the currency crisis was only beginning, and no trade statistics were available to show the strong export performance which was already taking place. Moreover, the forecast did show an increase of 1 per cent over the growth rate then predicted for 1993, and the text of the *Commentary* did make it clear that the forecast was a cautious one and might well be exceeded. Our caution was conditioned by the finding in our *Spring 1991 Assessment* that we had tended to underestimate the time-lags in responses to economic stimuli. Thus, while predicting that an economic recovery was due, moderate in Europe but strong in Ireland, we considered it most likely that the highest rate of growth would occur in 1995 rather than in 1994.

From the Winter QEC onwards we revised our forecasts upwards fairly regularly as evidence accumulated that a major upswing had occurred earlier than had been expected. The delays in obtaining trade and balance of payments data were a contributory factor to our continuing to underpredict export growth and overpredict net factor outflows throughout 1994, while our tendency to overestimate the export price deflator led to the continuation of an undue gap between the value and volume forecasts.

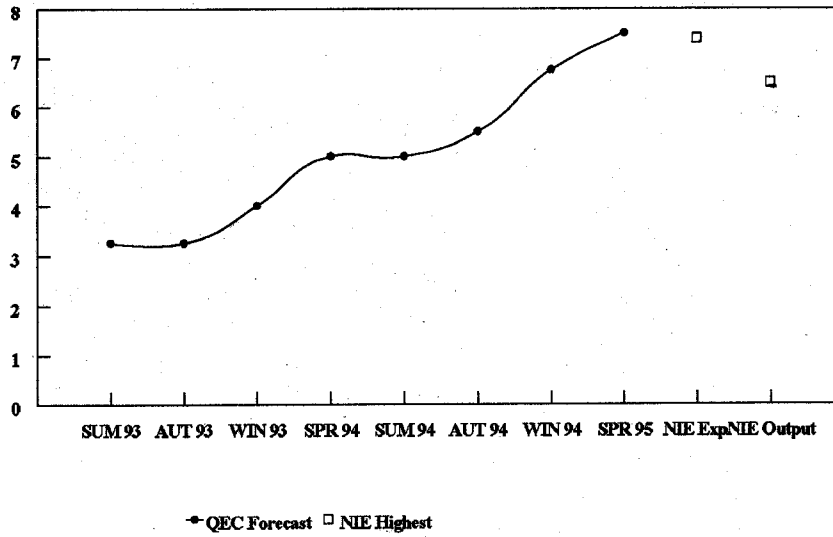
The final upward revisions made in the early months of 1995 took our value forecasts above the level of the preliminary NIE estimates and our volume forecasts close to the preliminary outcome. Of course, there is no way of knowing yet how future revisions to the NIE estimates will alter the picture of the economy in 1994. Our suspicion is that NIE estimates of the growth in domestic demand might be revised upwards, bringing them closer to the final QEC estimate, but that estimates of net exports, adjusted for factor flows, might be revised downwards, leaving little change in the estimated growth of real GNP.

FIGURE 6: GNP FORECASTS, 1994

(A) Current Price, Annual % Change



(B) Constant Price, Annual % Change



5. Qualitative Implications

Apart from presenting numerical forecasts, the QEC has an important role in providing qualitative assessments of the state of the economy and in drawing implications for policy from such assessments. It is obviously not feasible to present a detailed review of the conclusions of each *Commentary* since 1984, or even 1990. However it is possible to consider the major recurring themes in the QEC over the period and also to highlight any specific instances in which, with the benefit of hindsight, the advice given might have been counterproductive.

In the *Spring 1991 Assessment* we found that we could stand fully over the advice we had offered during the eighties. This initially stressed the absolute need to reduce the Exchequer Borrowing Requirement, and later advocated a consensus approach to economic policy within which reducing the debt ratio would remain a major, but no longer an overriding, aim, along with pay moderation, currency stability and social justice. A further recurring theme was the desirability of sectional groups taking a long-term view of their members' interests. From the perspective of an extra five years, this still appears to have been an appropriate corpus of advice, and, coincidentally or not, much of it has been adopted.

Turning to the nineties, the dominant theme of the *Commentaries* has been that the Irish economy has been consistently outperforming its EU partners in terms of GNP growth, employment trends, price stability, the current account balance of payments and restrained public borrowing. This has been interpreted as indicating that the broad consensus economic strategy has been successful, and that the policy debate should be concerned with the balance of priorities and relatively minor modifications within the framework of this strategy, and not with any radical change of direction. In this context of strategic continuity, support has been offered for the formalisation of the consensus approach through the renewal of national agreements, but only on the condition that their pay provisions remained sufficiently moderate to maintain Irish competitiveness. Particular stress has been laid on the need to reform the public service pay arbitration system, and, since this reform has been achieved, to ensure that indirect methods to achieve excessive increases in public service pay or conditions do not become established.

While welcoming the explicit trade-off between pay moderation and gradual reductions in effective income tax rates, we have retained doubts about more radical tax reform as a panacea, and have been sceptical concerning the willingness of the electorate to accept alternative taxes as the price of reducing income tax rates.

In general, the thrust of these analyses of domestic policy issues still seems to have been valid, and to have been borne out by the development of the economy. There are, however, two issues on which our analysis appears at times to have been deficient, and which could have led to inappropriate advice.

With regard to the currency, in common with other analysts, we failed to foresee the effective break-up of the ERM, and prior to the summer of 1992 tended to take the stability of exchange rates for granted. Although we warned of a possible devaluation of sterling, we assumed that this would take place in

an orderly manner and would have no lasting consequences beyond a temporary improvement in UK competitiveness. Even after sterling and the lira were removed from the ERM, we tended to underestimate the speed with which UK interest rates would be reduced, the strength of the speculative forces against the remainder of the ERM, and the degree of market linkage between sterling and the Irish pound. In retrospect the suggestion in the Autumn 1992 QEC that a strong internal adjustment package could have enabled parity to be maintained with the DM within a narrow band ERM was not realistic. This attempt to seek an alternative to devaluation was coloured by the fact that, along with many others, we overestimated the likely impact of devaluation on inflation and interest rates in the particular circumstances of 1993.

Since the broadening of the ERM bands in the summer of 1993, our assessment has been that allowing both the currency and interest rates to vary should prevent excessive changes in either, and enable the trade weighted value of the Irish pound to remain reasonably stable. So far, this prescription has remained valid, although, as we have frequently warned, sterling weakness could pose the awkward question as to whether Ireland should maintain its current parity within the ERM if this requires both higher interest rates and a further loss of competitiveness *vis-à-vis* the UK. Meanwhile, we would certainly still stand over our repeated advice that individual companies should protect themselves as far as possible against currency fluctuations, particularly with regard to sterling.

The other major area where, with hindsight, our analysis appears questionable is that of unemployment. Our preoccupation with the need for sustained net job creation to tackle the twin social evils of unemployment and involuntary emigration requires no justification. Nor does our repeated assertion that balanced economic growth would result in a substantial rise in employment. However, our reports on progress in this direction have tended to be unduly pessimistic in tone, because of an undue reliance on the Live Register as a short term measure of unemployment trends. A failure to recognise and highlight the large and growing divergence between the Live Register and the consistent *Labour Force Survey* measure of unemployment could have contributed to a national perception that the present economic strategy was incapable of delivering a substantial reduction in total unemployment.

On balance, however, and despite these two cases of deficient analysis, most of the discussion in the QEC over the past eleven years seems able to withstand the scrutiny of hindsight. In particular, errors of forecasting, with regard either to the composition of growth or to its timing, do not appear to have precipitated serious misdiagnosis of economic problems or dangerously inappropriate prescriptions.

6. Conclusions

- (a) Judged against the range of subsequent official estimates, the QEC forecasts and estimates since 1984 show little or no consistent bias in relation to the key economic variables of GNP, employment and consumer prices. If anything, there was a slight tendency towards the pessimistic, especially in the second sub-period from 1990 to 1994.

- (b) The QEC initial forecasts correctly predicted the strong improvement in the trend of these major variables between the 1984/89 and the 1990/94 sub-periods.
- (c) At a less aggregate level, the initial QEC forecasts tended to over-predict the growth in domestic demand, especially fixed investment, and under-predict the growth in net exports.
- (d) The degree of revision in NIE estimates for many components of GNP, are themselves rather disturbing, and complicate the task of assessing the accuracy of forecasts.
- (e) The most glaring bias in the QEC forecasts related to the Live Register. This apparent optimism arose entirely from a failure to predict the massive divergence between the Live Register and labour force measures of unemployment. Influenced by contemporary Live Register trends, QEC forecasts of labour force unemployment tended to be too pessimistic.
- (f) The accuracy of final QEC estimates in tracking the cyclical path of economic growth deteriorated compared with the result found in the 1991 assessment. This can be attributed partly to late NIE revisions for the 1984/89 sub-period and mainly to the absence of up-to-date trade and balance of payments statistics for part of the 1990/94 sub-period.
- (g) The temporal fit between the initial QEC forecasts and the latest NIE estimates was rather better in the second sub-period than the first, despite the occurrence of such unforeseen external shocks as the Gulf War and the effective collapse of the ERM. Even the failure to incorporate the strong recovery in 1994 in the initial forecast for that year was mitigated by suggestions in the accompanying text that the rapid growth then expected for 1995 could in fact come in 1994.
- (h) Statistical tests demonstrate that the standard error of forecast of the QEC initial forecasts was considerably lower than that of alternative naive projections, and slightly better than that obtained by fitting *post-facto* trend lines to the period.
- (i) The accurate early prediction of cyclical turning points remains an endemic problem. One major difficulty in this regard is that the international agencies and sister institutes in other countries, on which we rely for forecasts of the international economic environment, themselves have a very indifferent record in predicting the timing and amplitude of international economic cycles.
- (j) Even with the benefit of hindsight we would be prepared to re-iterate most of the qualitative analysis and policy recommendations made during the period under review. The two issues on which we would now at least change our emphasis, namely the currency crisis in late 1992 and the intractability of the unemployment problem, appear to be more than counterbalanced by the consistent support given to a balanced, consensual, economic strategy which has been a fundamental factor in Ireland's relatively good economic performance since the late '80s.

- (k) We believe that this exercise has shown that, despite some continuing weaknesses, the QEC has presented reasonably accurate and consistent forecasts over the past eleven years, and has offered generally sound analysis and advice over the same period. However, aspects of such an exercise are always salutary, and we shall continue to stress the considerable degree of uncertainty which inevitably is attached to any economic forecast.