Journal of the Statistical and Social Inquiry Society of Ireland
Vol. XXVII, Part II

INDUSTRIAL POLICY, EMPLOYMENT POLICY AND THE NON-TRADED SECTOR

KEVIN H. O'ROURKE*
Department of Economics, University College, Dublin

(read before the Society, 24 November 1994)

This lecture is delivered under the auspices of the Barrington Trust (founded by the bequest of John Barrington, Esq.) with the collaboration of the Journal of the Statistical and Social Inquiry Society of Ireland.

1. INTRODUCTION

For decades industrial policy has been at the heart of Irish government economic planning, although Ireland is still a highly agricultural economy and services are accounting for a growing share of output. The neo-Physiocratic doctrine that industry is more valuable than the service sector has in Ireland been expressed by asserting that the non-traded sector is a purely derivative one, incapable of generating economic growth. Tax policy has reflected this belief, systematically favouring the traded sector over the non-traded sector; and of course the government has further discriminated against non-traded services in its allocation of subsidies to the private sector.

This official stance seems rather out of date. It is a commonplace observation that manufacturing employment is becoming relatively less important, and service employment relatively more important, throughout the affluent world. For example, in William Baumol's recent book on *Productivity and American Leadership*, it is shown that between 1960 and 1985 the share of total employment accounted for by services increased in every one of 19 OECD countries; the share of manufacturing declined in all but three cases: Japan, Spain and Ireland (see Table 1). In 1980, services accounted for more than 50 per cent of total employment in all 19 countries, barring Spain, Italy and Ireland. The share of manufacturing in Irish

*I thank Kevin Denny and Aoife Hannan for allowing me to make use of the CGE model developed jointly by us; to all those who commented on the paper at the lecture and in writing; and to Denny and Brendan Walsh for additional comments and technical assistance.

employment was 34 per cent in 1980, making it a more industrialised economy (by this criterion) than Sweden, Norway, the Netherlands, Denmark, Australia, Canada, the United States and New Zealand.

Table 1 Share of labour force in industry and services in 19 OECD countries, 1965-1980

Country	Industry		Services	
	1965	1980	1965	1980
Spain	35	37	32	46
Italy	42	41	34	48
Austria	45	41	36	50
Sweden	43	33	46	62
Switzerland	50	39	41	55
Japan	32	34	42	55
France	39	35	43	56
Finland	36	35	41	53
Norway	37	29	48	62
Belgium	46	36	48	61
Netherlands	41	32	50	63
Denmark	37	32	49	61
Germany	48	44	42	50
United Kingdom	47	38	50	59
Australia	38	32	52	61
Ireland	28	34	41	48
Canada	33	29	57	65
United States	35	31	60	66
New Zealand	36	33	51	56

Source: Baumol et al. (1989), Table 6.1, p. 120.

More recent OECD data show that manufacturing employment continued to decline between 1979 and 1990 in all OECD countries apart from Japan, Denmark and Greece; while employment in non-government services increased in every country.[1] Does it make sense to continue chasing industry, when it is becoming less and less capable of providing large scale employment in affluent societies? Does it make sense to discriminate against services, when it would appear that a small service sector is primarily a symptom of underdevelopment?

Irish policy makers have of course had their reasons for doing so. This paper will critically examine the assumptions on which their policies have been based, and suggest a more constructive role for government intervention. There are three quite distinct sections. The first section will outline the traditional theoretical basis for Irish government policy, and ask whether it makes sense. The second section argues

that the non-traded sector is the key to a country's competitiveness. The third section will investigate the effects on the Irish economy of opening up sectors, hitherto non-traded (due to government restrictions), to foreign competition. In particular, the employment effects of such a move are examined, using a computable general equilibrium model developed by the author, in collaboration with Kevin Denny and Aoife Hannan of UCD. I stress that the third section represents work that is still in progress; the calculations reported therein are to be regarded as purely illustrative.

2. IRISH INDUSTRIAL POLICY AND THE NON-TRADED SECTOR

The fact that the non-traded sector is largely made up of services must surely explain much of the official bias against the sector. As is well known, the Physiocrats of the eighteenth century viewed agriculture as the only true source of a country's wealth, with industry playing a derivative role. Faced with the enormity of the changes the Industrial Revolution was bringing about, Classical economists were bound to emphasise the role of manufacturing. Nevertheless, in his distinction between productive and unproductive labour, Adam Smith persisted in the view that some economic activities (in this case services) were second class:

> *The sovereign, for example, with all the officers both of justice and war who serve under him, the whole army and navy, are unproductive labourers...In the same class must be ranked, some both of the gravest and most important, and some of the most frivolous professions; churchmen, lawyers, physicians, men of letters of all kinds; players, buffoons, musicians, opera-singers, opera-dancers, etc...Like the declamation of the actor, the harangue of the orator, or the tune of the musician, the work of all of them perishes in the very instant of its production.*[2]

Classical economists emphasised the production of a physical surplus which could then be reinvested; not only did service sector workers not add to the surplus, their wages were paid out of it, reducing the amount available for accumulation.

From a neoclassical perspective, of course, classifying the service sector as second class makes no sense. As is so often the case, Marshall made the point best:

> *It is sometimes said that traders do not produce: that while the cabinet-maker produces furniture, the furniture-dealer merely sells what is already produced. But there is no scientific foundation for this distinction. They both produce utilities, and neither of them can do more: the furniture-dealer moves and rearranges matter so as to make it more serviceable than it was before, and the carpenter does nothing more.*[3]

Put more simply, if the end of all economic activity is consumption, then the production of services is as useful as the production of goods which can be prodded. Many governments, however, persist in viewing manufacturing as the key to prosperity, with all other productive activities having essentially no growth effects; indeed, until recently countries adhering to the views of a well-known Classical economist calculated their annual 'Gross Material Product', rather than GNP.

But there is more to the story than this, however, as the recent extension of manufacturing tax benefits to certain traded services indicates. It is the non-traded sector per se, rather than services alone, which the Irish government seems determined to discriminate against. Why?

Certainly there are numerous instances where official documents have downgraded the importance of the non-traded sector. In 1982 the Telesis report, devised by the architect of the Clinton health plan, noted that "the majority of good-sized, profitable, successful firms in Ireland are in non-traded businesses...from the point of view of the country, the absence of these companies from the effort to build a successful international export base is a serious problem".[4] Two of the report's policy recommendations were, first, that "as a general principle, capital grants and tax-based lending should not be directed towards non-traded businesses, except in cases of high-skilled sub-supply";[5] and second, that "a greater proportion of total government resources should be committed to promoting indigenous industry in traded businesses. Savings made from the previously mentioned budget cuts should be redirected towards this purpose".[6]

The 1984 White Paper on industrial policy accepted this conclusion of Telesis, while also examining more closely than previous documents the costs of non-traded inputs into traded businesses. The 1986 NESC report, *A Strategy for Development 1986-1990* was quite explicit on the subject of the non-traded sector:

> *It is the internationally trading sectors, embracing enterprises which compete on overseas markets and those which compete with imports on the home market, which comprise the locomotive of growth...It is only by means of securing output growth in the internationally trading sectors that sustainable growth in employment, both directly and indirectly through induced output and income changes elsewhere in the economy, can take place...those sectors of the economy which exclusively or predominantly serve the domestic market cannot be regarded as an independent source of sustained economic growth...the demand for the goods and services produced by these sectors is a derived demand and the output they produce and the level of employment they provide are ultimately determined by the size of the exposed sector and the strength of the linkages between the exposed sector and the rest of the economy.*[7]

Those of you familiar with simple trade theory, or any form of general equilibrium analysis, will already be wondering how one sector can be considered as derivative, and another as the driving force of an economy, when the size of both is ultimately determined by the tastes, endowments and technology of an economy and the world with which it interacts. Of this, more later.

The 1989 NESC report on 1992 reiterated the view that "the key to economic growth lies in the internationally exposed trading sectors. Those sectors of the economy which predominantly serve the domestic market, such as private non-traded service activities, cannot be regarded as an independent source of sustained economic growth."[8]

There is a theory of sorts underlying all this, which can most succinctly be summed up in the words of the 1984 ESRI report on employment and unemployment policy: "...a primacy attaches to the open or competing sector in that it is the only sector in which expansion will tend to alleviate rather than exacerbate the fundamental balance of payments and fiscal constraints" (which a small open economy faces).[9] This opinion leads Nolan and Nolan, in O'Hagan's well-known textbook, to state that "increases in the value of national output over time are driven by the expansion of the traded goods sector, with the non-traded sector playing an essentially passive role".[10]

This supposed primacy of the traded goods sector is frequently asserted by appealing to a somewhat curious thought experiment. Imagine an economy producing both traded and non-traded goods, initially in equilibrium. Imagine that trade is initially balanced: exports equal imports. This also implies that the production and consumption of tradables are equal: an excess consumption of tradables would imply a trade deficit, while an excess production would imply a trade surplus. Now arbitrarily expand the size of the non-traded sector. This increases national income, which implies a higher consumption of all normal goods. In particular, the consumption of traded goods increases. If the production of tradables remains unchanged, the economy now runs a trade deficit: increases in non-traded sector output unmatched by increases in traded sector output inevitably lead to current account problems.

Or at least, so goes the argument. And so in Ireland a mercantilist fixation on exports has been added to the physiocrat's disdain for services, to produce a policy mix strongly biased against the non-traded sector. A moment's thought, however, should suffice to see that the thought experiment just described is badly flawed, and the inferences drawn from it unjustified. The key is that this hypothetical economy was initially in equilibrium. If the non-traded sector expanded, this must have been due to some exogenous shock: sectors do not expand for no reason at all.

What exogenous shocks could lead to the non-traded sector expanding? Tastes could have shifted towards non-tradables; this would of course imply that they had shifted away from tradables, implying a decline in tradables consumption and an increase in net exports. The supply curve for non-tradables could have shifted out, as a result of changes in technology or the economy's factor endowment: the price of non-tradables would then fall, again implying a reduction in tradables consumption, which would again tend to improve the current account. If the economy was operating at full employment, of course, then an expansion of non-tradable production would imply a contraction in the tradable sector, which would reduce net exports; but in neither case would there be any particular reason to suppose that the current account would go into deficit.

This can be seen even more clearly if we think about the current account in modern macroeconomic terms. We all know that

$$Y = C + I + G + (X - M) \quad (1)$$

and that

$$Y + NFI + TR = C + S^P + T \quad (2)$$

where Y represents output, C consumption, I investment, G government expenditure, X exports, M imports, TR net current transfers from abroad, NFI net factor income, S^P private savings, and T taxation. It follows that

$$(X - M) + NFI + TR = (S^P - I) + (T - G) \quad (3)$$

or

$$CA = S - I \quad (4)$$

where CA is the current account, and S represents total national savings (i.e. private savings plus the government budget surplus).

In other words, the current account is identically equal to savings minus investment, which leads to the obvious question: why on earth would an increase in non-traded sector output change the current account at all?

There is in fact no reason to suspect that it would. Of course, if the cause of the non-traded sector expansion was an increase in the number of government employees, then you would indeed see a worsening of the current account (as occurred in the 1970s). This may indeed be the episode the official sources cited above had in mind when formulating their views on the role of the sheltered sector. But it is clear that even in this case, the current account deficit is due, not to an increase in non-traded sector output per se, but to the increase in government expenditure which caused it. And in any case, most of us would agree that more public sector employment is not

going to be a catalyst for growth in Ireland. The more interesting issue is surely whether it would not benefit the economy if the private sector were to create more jobs, in either the exposed or the sheltered sector.

Thankfully, there are signs that this strange doctrine, a hangover from the dirigiste thinking of earlier decades, has been quietly dropped. There was no mention of the 'primacy of the traded sector' in either the 1990 NESC report on a *Strategy for the Nineties,* or in the Culliton Report.[11] Tax policy speaks louder than words, however: it is still the case that while manufacturing and traded-sector service companies pay 10 per cent corporation tax, firms in the non-traded services sector pay a 38 per cent rate.

3. THE NON-TRADED SECTOR AND COMPETITIVENESS

The view that the sheltered sector of the economy is a derivative one is clearly intellectually incoherent. Indeed, one could easily construct large open economy models in which technological progress in the non-traded sector was preferable to progress in the export sector (for terms of trade reasons). But there is a more fundamental reason why policy makers should focus on the sheltered sector, rather than dismissing it as irrelevant: in an important sense, it is the sheltered sector alone which determines Ireland's competitiveness.

The argument is simple. Goods and factors which are internationally traded are available everywhere at the same price; only non-traded goods and factors can differ in price between countries. For example, wages are an important determinant of competitiveness precisely because labour is not perfectly mobile internationally.

Lest I be accused of adopting a quirky or original position, let me stress that this argument is not new at all: it crops up in various branches of economics in different guises. For example, in open economy macroeconomic models (Mundell-Fleming and Salter-Swan spring to mind) the real exchange rate plays a crucial role in determining a country's competitiveness. That exchange rate is most frequently expressed as follows:

$$e = EP^*/P \qquad (5)$$

where e is the real exchange rate, E the nominal exchange rate (the number of Irish pounds per unit of foreign currency), and P^* and P the price level abroad and domestically respectively. But the real exchange rate is also frequently expressed as

$$e = P_T / P_{NT} = EP_T^* / P_{NT} \qquad (6)$$

where P_T and P_{NT} are the domestic prices of tradables and non-tradables respectively, and P_T^* the foreign price of tradables. It is trivial to show that there is a

one-for-one correspondence between **(5)** and **(6)**: if traded prices are equal in both countries, then overall price levels will only differ due to differences in non-traded prices. If tradables prices are exogenous to a small open economy,[12] the only way for such an economy to achieve a real depreciation is to reduce non-tradables' prices (which, if non-tradables are only produced with labour, is the same thing as lowering real wages).

There is clearly nothing strange about the argument that non-tradables' prices are crucial for competitiveness; that the non-traded sector has been viewed as derivative in industrial policy documents is symptomatic of the compartmentalised thinking we can all be prone to. Of course, if it were the case that there were important external economies of scale in the traded sector, standard neoclassical theory would support subsidising that sector. But it is equally true that positive externalities in the non-traded sector would justify subsidising the sheltered sector; and in any case, these externalities should be empirically demonstrated before policy is made based on their existence. Moreover, the external economies of scale argument itself often relies on the existence of various non-traded inputs, which become available more cheaply to firms in a given sector as that sector grows in size. Once again, the focus is on non-traded inputs being produced efficiently.

Moreover, lest you be tempted to conclude that non-traded sector efficiency is only important insofar as it boosts traded sector competitiveness, consider the following statistics. The following 5 non-traded sectors - building, distribution, transport and communications, other market services and non-market services - accounted for 56 per cent of personal consumption in 1985. Include the utilities sector, which is largely non-traded, and you have 61 per cent of personal expenditure. You may believe that the chief end of economic activity is not merely personal consumption, but government expenditure as well; in that case, the non-traded sectors accounted for 71 per cent (75 per cent including utilities) of what interests you.

Clearly, the non-traded sector is not merely the only determinant of Ireland's competitiveness actually under our control; its health is the single most important determinant of our economic welfare. This becomes even clearer when you consider that a country's educational system, and its institutional infrastructure - its legal and tax systems, for example - are all components of the non-traded sector. The importance of human capital and institutions in determining a country's long run growth rate is now well understood. Rather than targeting grants at the traded sector, in an effort to compensate for the shortcomings of the sheltered sector, government should be attempting to ensure that the latter sector operates efficiently. Get the non-traded sector right, and the rest of the economy will take care of itself.

In the rest of this section, one particular way in which the government can help improve non-traded sector efficiency will be considered: competition policy. There are clearly a priori grounds for suspecting that concentration may be more of a

problem in the sheltered sector than in the exposed sector, especially in a small economy such as Ireland. And casual empiricism leads one very quickly to conclude that concentration is widespread in the Irish non-traded sector, in both product and factor markets. First, many of the industries involved (electricity supply, rail transport, and so on) are government monopolies. The implications for the national economy of companies like the ESB being exposed for the first time to foreign competition will be examined in the next section. Second, unionisation is widespread both in these industries and in the public sector generally. Third, there are many restrictive practices limiting competition in the private non-traded sector: the fact that there were more pubs in Dublin in Sir William Petty's day than there are today is a particularly good example.[13]

Concentration is not always bad for an economy. If an Irish export industry is monopolised, for example, it may charge high prices to foreigners, to the benefit of the Irish economy. No such benefit accrues, however, in the case of concentration in the non-traded sector. Such concentration reduces consumer welfare in the usual manner, or (in the case of an intermediate input) makes the traded sector less competitive through its direct effects on input costs. Moreover, there is evidence to suggest that in the long run commodity price increases are fully reflected in higher wages: in that case, all consumer goods can be regarded (indirectly) as intermediate inputs, and all sheltered sector concentration will reduce the competitiveness of the exposed sector.

The point can be easily made in the context of a simple trade model. The one presented here is less rich than that which John Fingleton has recently and independently developed, but it serves to get the point across.[14] The country under consideration is a price-taker on world markets, allowing us to aggregate all traded goods into one composite good. This composite good is supplied by a perfectly competitive industry using labour and a non-traded good as inputs. The non-traded good, which is uniquely an intermediate product, is supplied by an industry consisting of n identical oligopolistic quantity-setting firms. Only symmetric equilibria are considered. As is well known, under these conditions, the price cost margin for the non-traded industry, also known as the Lerner index of monopoly power, can be expressed as

$$PCM = (1 + L)/n\eta \qquad (7)$$

where PCM is the price cost margin, η is the elasticity of derived demand for the non-traded good, and L is the familiar conjectural variation (i.e. it is the marginal effect, perceived by each firm, of changing its own output on the sum of the other firms' outputs). Reducing n can be thought of in some sense as increasing the degree of monopoly power in the non-traded sector; as will be seen this leads to a decline in national income.

The traded goods sector is assumed to produce the traded good T according to

$$T = N^{\alpha}L_T^{1-\alpha} \tag{8}$$

where N is the non-traded input, L_T the labour input into the production of T, and $0 < \alpha < 1$. In general, η, the elasticity of derived demand for N, is given by

$$\eta = \{(\varepsilon + e) + ke(\varepsilon - \sigma)\} / \{\varepsilon + e - k(\varepsilon - \sigma)\} \tag{9}$$

where ε is the elasticity of demand for T, e is the elasticity of supply of labour, k is the share of N in total cost, and σ is the elasticity of substitution in the production function.[15] It is possible to considerably simplify this expression. First, the Cobb-Douglas assumption means that $k = \alpha$ and $\sigma = 1$. Second, assuming that the labour supply is fixed implies that $e = 0$. Third, the small open economy assumption implies that ε is infinite. Taking limits, this implies that

$$\eta = 1/(1 - \alpha) \tag{10}$$

The oligopolists in the non-traded sector use labour alone to make N, which they supply to the T-good industry. It is assumed that the production function in the N-industry displays constant returns to scale, with the unit labour requirement for N being set equal to 1 for simplicity. Thus,

$$N = L_N \tag{11}$$

where L_N is the labour input into the N-industry. The problem for a typical firm in the N-industry is therefore

$$\underset{N_i}{\text{Max}}\ (pN - w)N_i \tag{12}$$

where p is the price of the non-traded good, w is the wage rate, and N_i is the output of the i'th firm. It is assumed that firms in the non-traded sector have enough information to know what the effect of increased output on the price of their product will be; and that they have formed a conjecture as to what the response of other firms' output will be to a change in their own output. However, it is not assumed that they know enough about the structure of the economy to be able to work out what the effect of their actions on general equilibrium factor prices will be. Thus they take w as given.

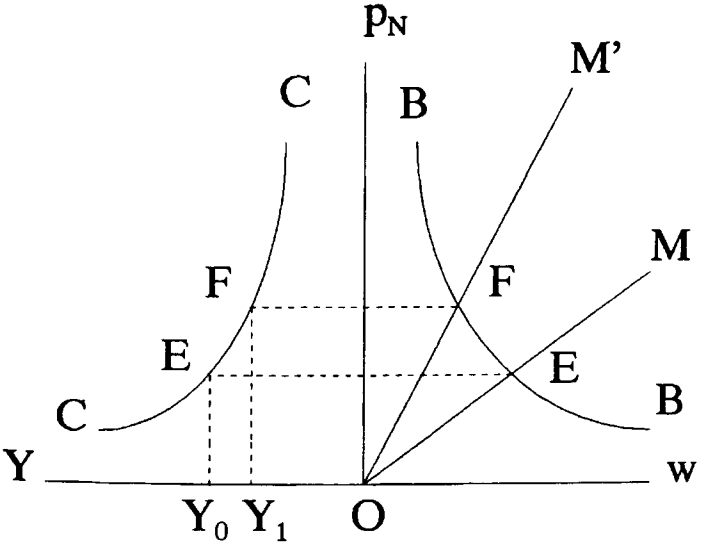
The solution to **(12)**, taking **(10)** into account, is

$$p_N (n - (1 + L)(1 - \alpha)) = nw \qquad \textbf{(13)}$$

(It is here assumed that the element in the brackets is positive. This will certainly be true in the Cournot case; i.e. when L = 0.)

Equation **(13)** is the first of three key relationships which together determine the model. It expresses the price of the non-tradable as a mark-up over wages. Equation **(13)** is represented in Figure 1 by the line OM drawn in p_N-w space. Reducing n, the number of firms in the industry, or increasing L, increases the mark-up as expected. Both shocks have the effect of rotating OM in a counter-clockwise direction.

Figure 1 Graphical illulstration



The second key relationship is the full employment condition:

$$a_L (w,p_N)T + a_N (w,p_N)T = L \qquad \textbf{(14)}$$

where a_i is the traded-good industry's unit input requirement of input i (remember **(11)**).

The third key relationship stems from the fact that the non-traded good is purely an intermediate good. This implies that all income is spent on the tradable:

$$wL + (p_N - w)a_N(w,p_N)T = T \quad (15)$$

Equations **(14)** and **(15)** together imply that

$$w^{1-\alpha} = Bp_N^{-\alpha} \quad (16)$$

where B is a constant, equal to $(\alpha/1-\alpha)^{\alpha}(1-\alpha)$ This negative relationship is drawn as BB in Figure 1.

What is the relationship between national income and the price of non-tradables? **(16)** implies a negative tradeoff between wages and p_N; a higher non-tradables price boosts profits but reduces wages. At first sight, therefore, the relationship would appear to be theoretically ambiguous. However, from the assumption of Cobb-Douglas technology it follows that

$$Y = p_N wL/(\alpha w + (1-\alpha)p_N) \quad (17)$$

Taking the derivative of Y with respect to p_N, using the chain rule and bearing in mind **(16)**, we have

$$dy/dp_N = -\alpha LC^2 p_N^{-2\alpha/(1-\alpha)}(1 + L)(1 - \alpha)/X \quad (18)$$

where $C = B^{1/(1-\alpha)}$, $X = [\alpha w + (1-\alpha)p_N]^2[n - (1+L)(1-\alpha)] > 0$, and the derivative is negative. A higher non-tradables' price lowers national income: the relationship is graphed as CC in Figure 1.

The effect of changing concentration in the non-traded sector on national income is now clear. The economy is initially in equilibrium at point E, which corresponds to a national income of Y_0. Reducing the number of firms shifts OM to OM' in Figure 1. Its effect is thus to lower wages and boost non-traded sector prices and profits. This in turn shifts the economy up CC, to a new equilibrium, F, involving a lower level of national income Y_1. Moreover, since in equilibrium national income equals the value of traded sector output, it is also the case that increasing concentration in the sheltered sector reduces the size of the exposed sector.

4. SOME PRELIMINARY GENERAL EQUILIBRIUM RESULTS

What might the effects be of increased competition in the non-traded sector? How would this impact on output levels both in that sector and elsewhere in the economy? What would be the effects on migration or employment?

What is needed to answer these questions is a model of the Irish economy which explicitly takes account of the many links between the different markets in the

economy: in other words, a general equilibrium model. The model should be empirical: in the jargon, a computable general equilibrium, or CGE, model. A CGE model is a series of theoretically based simultaneous equations describing the behaviour of an economy at a point in time. The equations are fitted, or 'calibrated', to the data for an economy in a given base year; they are next solved on a personal computer, to yield the equilibrium configuration for the economy in that base year. The modeller can then selectively change individual equations, and solve the model again, to see what the impact would be on the entire economy of an individual shock taken in isolation.

Kevin Denny, Aoife Hannan and I have recently constructed the first ever economy-wide CGE model developed to study contemporary Irish policy issues.[16] It is calibrated to 1985 data, since that is the most recent year for which detailed input output data are available. The model is a relatively small scale one by international standards, but contains some unusual features. What follows is a cursory verbal description of the model: for further details, see Denny et al. (1995a). For the moment the model assumes perfect competition and constant returns to scale, although this could be modified in later work. Production sectors produce 11 producer goods, using domestic and imported producer goods, labour, and capital as inputs. Producer goods and imports are transformed into 10 consumer goods, which are then used to produce an aggregate consumption good. Producer goods can also be exported, or used to produce other aggregate goods (private and public investment, and government consumption).

The representative consumer is endowed with labour and capital, and receives transfers from the government and from abroad. At one level the consumer has to choose between savings and consumption, and at the next level, between different consumption goods. The government levies taxes on consumption, on inputs into production, and on exports (the latter taxes being for the most part negative). It also receives transfers from abroad, and borrows to finance its deficit. It is endowed with capital, but pays interest on the national debt. It makes transfers to households, and consumes the public investment and government consumption aggregate goods.

The treatment of international trade is standard. Import prices are exogenous; however, imported goods are not perfect substitutes for their domestic equivalents. Domestic goods which are exported face downward sloping (but very elastic) demand curves overseas. These two features of the model ensure that domestic tradables prices are not formally exogenous. The economy runs an initial trade deficit, the nominal level of which is taken to be exogenous.

The unusual features of the model concern the markets for capital and labour. There are three types of capital in the model: agricultural, high-tech, and other. The first two types of capital are used only in agriculture and the high-tech sector respectively. 'Other' capital is fully mobile between all other sectors. Supplies of

agricultural and other capital are fixed; high-tech capital is however perfectly elastically supplied by the rest of the world; its post-tax return is thus fixed. This assumption is obviously made in an attempt to model multinational investment in the economy, which falls mainly in the high-tech sector.

The model's labour market specification can handle both unemployment and migration. The real wage is fixed exogenously, although it is to a small degree sensitive to the unemployment level: this is what generates the unemployment in the model. External migration is then a function of the Irish expected real wage (i.e. the real wage times the probability of finding work).

As mentioned, the model currently assumes perfect competition, which means that it is unable to deal with issues of concentration and competition policy. To incorporate imperfect competition, we would have to have such information as monopoly mark-ups by sector. Unfortunately, there has been far too little work done on applied industrial organisation questions in Ireland; this must surely be a major area for applied economists to study in the years ahead.

Without the required data, we are stuck with a perfect competition model. It is however possible to use that model in an effort to see if the welfare effects of high non-traded goods prices are likely to be big or small. As is well known, one of the best anti-trust policies available is free trade. The 1992 programme is pro-competitive largely because it is taking sectors that were formerly non-traded (telecommunications or electricity, say) and transforming them into traded sectors. What are the effects of introducing foreign competition into sectors that had previously been sheltered? This is the sort of question that the model as currently set up is able to deal with. It is also, as we are all aware, a question that will assume great policy significance in the years ahead. Policy makers tend of course to be primarily concerned about the effects of such competition on the particular sectors involved, and in particular on employment within those sectors. Headlines emphasise the negative employment consequences of such competition for companies which have been traditionally featherbedded by the state. How many jobs will be lost in the ESB, or Telecom Éireann, they ask. Frequently lost in the debate, however, is the following crucial question: what are the broader implications of such competition for the economy as a whole?

It should be stressed that the following exercises are purely illustrative. At most they can give a handle on the order of magnitude of the effects of foreign trade: are they likely to be big or small? It all depends, of course, on how much cheaper foreign products are, and on the degree to which they are able to penetrate the Irish market. In what follows I look at the effects of introducing foreign competition into the utilities, distribution, and transport and communications sectors. I arbitrarily assume that foreign prices are 10 per cent lower than Irish prices. In the case of utilities, there were already some imports in the benchmark year (although the sector is

clearly largely non-traded): the shock imposed on the model is thus simply to reduce their price by 10 per cent. In the case of the other two sectors, there were no imports in the benchmark year. The shock involved was thus to introduce the possibility of importing foreign competing goods, 10 per cent cheaper than their Irish counterparts. An additional piece of information was needed to conduct the experiment: the initial market share that would be achieved by imports in each sector.[17] In both cases, I look at three possible initial figures: 10 per cent, 25 per cent and 50 per cent.[18]

The results are given in Table 2. As can be seen, cheaper utilities, distribution, and transport and communications each implies expansion in other sectors of the economy. Especially strong are the effects of more efficient distribution on traditional and high-tech manufacturing. What stands out most strongly from these results, however, is the impact of foreign competition on unemployment. Of course employment and output fall in the sectors newly exposed to such competition; but this decline in employment is more than compensated for by increases in employment elsewhere in the economy. The net effect is a fall in unemployment of between 0.5 per cent and 1 per cent in each of the three cases. The greater the market penetration achieved by foreign imports, the greater the increase in overall employment. Cheap imports in all three sectors together implies a drop in the unemployment rate of 2 percentage points, with traditional and high-tech manufacturing rising sharply, and high-tech investment increasing by 10 per cent (the 'ALL' run in Table 2).[19]

A 2 percentage point fall in the unemployment rate is not trivial, but neither is it the answer to all our problems. The size of the decline in unemployment is not, however, the real issue. The important point to take from Table 2 is that, despite all the worries about job losses in semi-state companies, the net impact of these imports is positive, not negative. In terms of the earlier discussion, the reason seems plain enough: key commodities are being made more cheaply available to the Irish economy; the result is equivalent to a real devaluation.[20,21]

5. CONCLUSION

It makes no sense to regard the non-traded sector as derivative; rather, its health is the key to our competitiveness. Instead of bribing foreign firms to stay here, despite the inefficiencies which plague certain non-traded sectors of the economy, government should target the non-traded sector directly. This may involve working more vigorously to promote competition within the sheltered sectors of the Irish economy.

It would appear that foreign competition in sectors which have up to now been non-traded may have beneficial implications for Ireland. While the calculations presented above are meant to be suggestive rather than conclusive, they suggest that

further study into non-traded sector efficiency is warranted. Moreover, the calculations understate the positive impact of foreign competition, to the extent that such competition would involve not just lower prices, but an end to monopolistic market structures and associated welfare losses.

Industrial organisation has often been a neglected field among applied Irish economists. This may be partly because economists assume that the Harberger triangles involved are trivial alongside our macroeconomic problems. But in an economy as distorted as this one, microeconomic policy can have a profound impact on employment levels and economic welfare.

Table 2 CGE Results

Variables	UTIL	DI50	DI25	DI10	TC50	TC25	TC10	ALL
AG	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.2
TR	1.4	20.4	10.3	4.1	6.7	3.4	1.4	15.2
FP	0.4	4.6	2.6	1.1	1.6	0.8	0.3	3.7
HT	2.3	10.7	5.8	2.4	4.5	2.3	0.9	10.3
U	1.5	5.1	2.6	1.0	2.2	1.1	0.4	5.3
B	1.8	-1.6	-0.8	-0.3	-2.2	-1.1	-0.4	-0.1
DI	1.1	-45.1	-22.2	-8.8	0.4	0.2	0.1	-21.2
TC	0.9	0.1	0.1	0.0	-49.9	-25.1	-10.1	-24.2
OMS	0.8	-0.3	-0.1	0.0	1.4	0.7	0.3	1.4
NMS	0.3	1.2	0.6	0.3	0.6	0.3	0.1	1.2
TS	0.6	60.3	28.7	11.1	23.0	11.4	4.5	41.7
UE	17.30	16.60	17.40	17.90	17.70	18.00	18.10	16.20
IMMIG	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.07
EMIG	0.00	0.01	0.01	0.01	0.03	0.01	0.01	0.00
DFI	2.34	10.68	5.75	2.41	4.48	2.32	0.95	10.30

Notes: Variables AG, TR, FP, HT, U, B, DI, TC, OMS, NMS, TS: percentage change in outputs.
AG: agriculture
TR: traditional manufacturing
FP: food processing
HT: high-tech manufacturing
U: utilities
B: building and construction
DI: distribution
TC: transport and communication
OMS: other market services
NMS: non-market services
TS: traded services
UE: percentage unemployment rate (benchmark rate = 18.2 per cent)
IMMIG: immigration as percentage of benchmark labour force
EMIG: emigration as percentage of benchmark labour force
DFI: percentage change in investment in high-tech sector

Scenarios

UTIL: 10 per cent fall in price of foreign utilities
DI50, DI25, DI10: introduce imports of distribution services with initial market shares of 50%, 25% and 10%
TC50, TC25, TC10: introduce imports of transport and communication services with initial market shares of 50%, 25% and 10%

ALL: all three shocks (assuming 25 per cent initial market shares for distribution and tranport and communication).

Footnotes

1. OECD (1994), Table 1.1, p. 3.

2. Smith (1776), Book 2, Chapter 3.

3. Marshall (1920), p. 53.

4. Telesis (1982), p. 112.

5. Ibid., p. 229.

6. Ibid., p. 230.

7. NESC (1986), p. 147.

8. NESC (1989), p. 302.

9. Conniffe and Kennedy (1984), p. 43.

10. Nolan and Nolan (1991), p. 222.

11. But see the reference to the 1993 *Task Force on Services Report* in Professor McAleese's comment on this paper.

12. The nominal exchange rate being fixed.

13. Petty (1691, 1970 edition, p. 13) states that "in Dublin, where are but 4000 Families, there are at one time 1180 Ale-houses, and 91 publick Brew-houses"; today, there are approximately 850 licensed public houses in Dublin (information kindly supplied by the Licensed Vintners' Association).

14. Fingleton (1993).

15. Bronfenbrenner (1961), p. 257. The formula holds for a constant returns to scale production function with two factors of production.

16. Denny et al. (1995a, 1995b).

17. More formally, the pseudo-production function transforming domestic goods and imports into the relevant Armington aggregate has to be calibrated.

18. This issue could be avoided if I assumed that domestic and foreign products were perfect substitutes. In that case, however, domestic production of the

newly-exposed goods would collapse to zero, an absurd result, and precisely the sort of scenario which the Armington assumption is designed to avoid.

19. In this case I assume an initial 25 per cent market share for foreign products.

20. In fact, the exercises carried out understate the impact of foreign competition on overall employment. When the economy begins to 'import' distribution services, these imports are treated like any others; in particular, there is no Irish employment associated with these imports. This is of course absurd; if US-style discount warehouses, say, were to be established in Ireland, they might not employ huge numbers of people, but they would employ some: domestic distribution is an inherently non-traded activity.

21. In my talk to the Society, I reported an experiment which allowed for taxes on labour to be determined endogenously, subject to an overall government budget constraint. Allowing for endogenous labour taxes gave rise to implausibly large employment effects: the initial reduction in unemployment swelled government revenues, allowing for tax reductions, further employment increases, and so on. In fact, Denny, Hannan and I have more recently discovered that whenever taxes on employment are determined endogenously in this model, there is the potential for multiple equilibria. The reason is simple. Let t denote the tax on labour, w the wage, and E be employment. Imagine for simplicity that labour taxes are the only taxes available to government, and that the government needs to generate a constant amount of tax revenue, C. Government faces a budget constraint of $tE = C$. If unions bargain for a constant post-tax wage, W, then $w = W + t$. Finally, employment depends on w: $E = E(w)$. The potential for multiple equilibria is obvious; allowing C to vary, and allowing for other types of tax revenue, only increases this potential. It seems safest, therefore, to only report equilibria generated by models with exogenous labour taxes, since these will be unique.

References

Baumol, W. et al., 1989. *Productivity and American Leadership: the Long View*, Cambridge, Massachusetts, M.I.T. Press.

Bronfenbrenner, M., 1961. "Notes on the elasticity of derived demand", *Oxford Economic Papers* 13(3), pp. 254-261.

Conniffe, D. and Kennedy, K. (Eds.), 1984. *Employment and Unemployment Policy for Ireland*, Dublin, ESRI.

Denny, K., Hannan, A. and O'Rourke, K.H., 1995a. "A computable general equilibrium model of the Irish economy: technical appendix", *CER Working Paper WP95/2*, UCD (January).

Denny, K., Hannan, A. and O'Rourke, K.H. 1995b. "Harmonizing Irish tax rates: a computable general equilibrium approach", *CER Working Paper WP95/3*, UCD (January).

Fingleton, J., 1993. "Competition policy and employment: an application to Ireland", *Economic and Social Review*, 25(1), pp. 57-76.

Marshall, A., 1920. *Principles of Economics* (8th edition), London, Macmillan.

NESC, 1986. *A Strategy for Development 1986-1990,* Report No. 83, Dublin, Stationery Office.

NESC, 1989. *Ireland in the European Community: Performance, Prospects and Strategy*, Report No. 88, Dublin, Stationery Office.

NESC, 1990. *A Strategy for the Nineties: Economic Stability and Structural Change*, Report No. 89, Dublin, Stationery Office.

Nolan, D. and Nolan, S. (1991). "Economic growth: theory and analysis", in J. O'Hagan (Ed.), *The Economy of Ireland: Policy and Performance*, 6th edition, Dublin, IMI.

OECD, 1994. *The OECD Jobs Study: Evidence and Explanations, Part I,* Paris, OECD.

Petty, W., 1970. *The Political Anatomy of Ireland*, Shannon, Irish University Press.

Smith, A., 1776. *The Wealth of Nations.*

Telesis Consulting Group, 1982. *A Review of Industrial Policy*, NESC Report No. 64, Dublin, Stationery Office.

DISCUSSION

Dermot McAleese: I propose this vote of thanks to Dr O'Rourke with great pleasure. His paper addresses an important topic and reaches sound conclusions of practical importance - just as a Barrington lecture ought to do. It does so in a provocative and timely way. Each of the three themes of the paper - the neglect of the services sector in public policy, the theoretical link between lack of competition in the services sector and national income, and the first-ever application of a computable general equilibrium model to the Irish services sector - offers useful insights. The general equilibrium (GE) analysis reports on the application of this approach to estimating the effect of a liberalisation of trade in services on this sector itself and on the other parts of the Irish economy. GE model building is a field in which Dr O'Rourke has built up special expertise and we are indebted to him for original and, on the whole, rather encouraging findings.

Irish economic policy has indeed been slow to appreciate the importance of the services sector. Dr O'Rourke attributes this to the belief that the services sector was derivative. For many decades the conventional wisdom held that the priority was to establish export-oriented manufacturing industry and that once this was obtained all other economic activities would follow. Tourism of course has received assistance for many years but this may be a case of the exception proving the rule. Latterly the favoured sector has been extended to include internationally traded services, of which the IFSC project is an outstanding example. However, discrimination for tax purposes between traded and nontraded activities still remains. Indeed, as recently as December 1993 the Task Force on Services Report concluded that "the growth in nontraded activities is in many ways determined by the growth in the traded sector" (p. 21). As regards equal fiscal treatment to the two sectors, the Report found that "while there is merit in [tax] neutrality [between the traded and nontraded sectors], it is believed that the arguments in favour of a differential policy based on contribution to net foreign earnings outweigh the advantages". The Report recommended that lower rates of taxation should be applied to traded than to nontraded goods and services.

Dr. O'Rourke ascribes the policy bias against the nontraded sector to "a mercantilist fixation on exports added to a physiocrat's disdain for services". This is a marvellous and memorable phrase. But is it a fair and accurate description of the rationale of the policy? I have some reservations about this, for several reasons.

One important qualification is mentioned in the paper: the identification of the sheltered sector with the public sector. This was a leading theme, for example, in the NESC's *Prelude to Planning*, authored by Professor Louden Ryan. The main thrust of that influential document was that the economy needed a strong private sector in order to finance and sustain a large public sector and that sustainable growth could not be achieved by expansion of the public sector alone. The public sector was, in

other words, derivative. of course, as Dr O'Rourke argues, "most of us would agree that more public sector employment is not going to be a catalyst for growth in Ireland". Alas, as our national debt/GNP ratio of nearly 100 per cent testifies, support for the wisdom of this observation was not quite as universal in the 1970s and 1980s as it has since become.

There are other qualifying considerations. First, anyone looking at the evolving structure of employment in 1971 would have observed the following: agriculture a declining sector (53 per cent of the workforce in 1926 compared with 26 per cent in 1971); industry a growth sector (up from 13 per cent to 31 per cent); and services indeterminate (up only 5 percentage points from 34 per cent to 43 per cent). Within the industry sector manufacturing was the fastest growing component. If public investment was to be put anywhere, these figures would have suggested that manufacturing was the best bet for externalities and dynamic growth.

Incidentally, belief in the overarching importance of the manufacturing sector is not yet entirely passé. Witness the literature on the de-industrialisation problem; continuing concern at Europe's poor showing in high-tech industry; and measures to promote the competitiveness of US and European manufacturing industry. Or consider the statement of the French Minister of Industry in a recent interview in Le Figaro.

> *I believe that there is no strong and durable economy without a strong industry, without large competitive corporations playing a lead role and without an integrated industrial network. In effect, it is industry more than services which contributes to the geographical balance of the country.* (Wednesday 9 November 1994)

Second, the notion of a balance of payments constraint may sound ridiculous to an Irish audience of the 1990s with Ireland's current account surplus running at 7 per cent of GNP. But twenty years ago, when the exchange rate was fixed, capital much less mobile and foreign borrowing much more problematic than nowadays, the balance of payments effects of an investment programme did have to be factored into the costbenefit calculations. This was all the more imperative since the Irish government had set its trade policy in a deliberately anti-mercantilist direction by reducing tariffs, unilaterally first and then under AIFTA (1966) and the EEC (1973).

The belief that manufacturing jobs were "superior", to service jobs may also have influenced policy. Thousands of jobs in the personal services sector, ranging from domestic service, farm labourers, to restaurants and small scale distribution businesses fell into this category (Banks, insurance, public sector and professional occupations were, of course, obvious exceptions.). Most people at work in these occupations thought a job in a factory was immeasurably superior, as well as being better-paid.

No doubt this list of possible reasons for the official bias towards manufacturing is not exhaustive. It would be worthwhile exploring the whole issue in more detail than was possible in the paper.

Time and circumstances have changed, and with it official policy. Aid to industry has become more selective, more related to a true estimation of externalities which Dr O'Rourke advocates. Small and medium industries are actively supported. Services industries are rising in stature and can compete for assistance alongside manufacturing industry. Technology change, deregulation, liberalisation of trade in services and mobility of capital have together spawned a whole new range of job possibilities in the services sector. People realise that an acceptable living can be obtained from many formerly disdained activities. It is significant that a Task Force on Services has been set up at all and, in fairness, the Report made a strong case for further upgrading the quality of support to that sector, and eventually for putting it on an equal footing with other sectors.

The benefits of such a policy are effectively outlined in the paper. "Get the non-traded sector right, and the rest of the economy will take care of itself" is another memorable phrase. Section 3, based on a full employment model, shows that competition in the highly unionised and protected services could yield a multitude of Harberger triangles and raise national income, on the assumption of full employment. The CGE approach relaxes the full employment assumption and shows that it could be good for employment also. The reason? Costs in the traded sector would fall and demand for its output would increase.

Dr O'Rourke is surely right in his assertion that this last type of linkage has been poorly appreciated until recently. Most Irish economists were too focused on the macro picture. A few made what at that time was a lonely case for opening up transport, telecom and electricity to competition.

The paper's depiction of Ireland now being caught in a high tax and high unemployment equilibrium sounds very sensible even if derived from a CGE model with lots of simplifying assumptions. High income taxes discriminate against the labour-intensive marketed services sector. The higher corporation profits tax rate (CPT) on the nontraded sector does likewise and is becoming harder to justify with the passage of time. Admittedly one cannot dispense with the higher CPT without considering alternative sources of revenue or better ways of curbing public spending. But continuing movement in this direction is needed. This excellent and provocative paper not only opens up avenues for further research, but it will help to speed up these necessary changes in Irish economic policy. This is why I am so pleased to propose the motion of thanks to its author.

Dan Flinter: Kevin O'Rourke has done us a great service with his provocative paper on the role and potential of the non-traded Services sector in the development of the economy. He has, in particular, presented a significant challenge to those who have responsibility for implementing development strategies.

It has become increasingly clear that a highly competitive and efficient non-traded Services sector is essential from the point of view of the competitiveness of the entire economy. This paper articulates this case and practical experiences over the past decade give testimony to this thesis. For example, competitively priced and efficiently delivered utilities are essential to the competitive position of many firms within the economy. While it is recognised that the statistical analysis presented in the paper is of a preliminary nature, nonetheless. the conclusions are somewhat surprising in terms of scale if not their direction.

The emphasis on the role of the non-traded sector and the inherent scepticism of the potential of the traded sectors, appears to ignore the limitations for growth at least in the short/medium term, where such growth is primarily originating in the domestic economy. The paper, in my view, gives inadequate weighting to the size constraints of the domestic economy and the "scale potential" of trading internationally.

The model for the economy utilised in the analysis could benefit from further development in at least two respects. Within the Manufacturing sector, it is necessary to recognise the difference in the competitive nature and organisation structure between Irish and Overseas owned firms. The development of the model over time has to be capable of recognising changes in sources of competitive advantages. For example, in recent years the increase in the number of fashion cycles in any one year in Europe has opened a potential source of competitive advantage to local clothing suppliers in terms of speed of response which the Far Eastern suppliers are finding difficulty in coping with due to the length of the supply chain.

Economic models have increasingly recognised the dynamic role which technology and innovation can and does play in accelerating change and growth - a static technological scenario is no longer acceptable. This applies to developments in Ireland as well as overseas. There is, however, a further aspect which needs to be recognised in the context of developing Irish companies and that is time. Time is necessary to build up appropriate management skills, market recognition and penetration and the ongoing financial strength to meet the competition from international firms with "deep pockets". We must, therefore, find a way of factoring in the time/experience issue in any relevant economic model for the economy.

In summary, I warmly welcome the recognition which this paper attributes to the role of the non-traded sector in enhancing the overall competitiveness of the economy. However, in stating the case for this area of the economy, the paper does

not fully recognise the constraints placed on the overall development of the economy where demand is primarily domestic in origin.

Kieran Kennedy: I have no difficulty in agreeing with Dr O'Rourke about the significance of improving the efficiency and cost competitiveness of the non-traded sector, and about the importance of encouraging greater competition as a means to this end. Nevertheless, I find the way in which he presents the case for this approach in the early part of his paper unconvincing as well as unnecessarily combative. Terms of abuse like physiocratic, and 'mercantilist' are fired indiscriminately in shotgun fashion, while the Telesis report is damned because the authors later produced the Clinton health plan! I believe the paper would carry greater conviction through a more systematic consideration of the key issues at stake. I will give two examples.

First, the author asserts that there was an "official bias against the (non-traded) sector". I would question the accuracy of this as a general statement. Irish governments have massively subsidised health and education, which are non-traded services, while there are several research papers suggesting that housing was also very heavily subsidised. There has been no lack of expansion in Ireland, under government auspices, of many of the services branded (wrongly, we all now agree) by Adam Smith as "unproductive"! Other traded sectors, besides manufacturing, were also heavily supported by government grants, subsidies, and tax concessions (e.g. agriculture). Before asserting that manufacturing was uniquely favoured, the author should go behind the rhetoric, and present a systematic picture of the actual situation as it evolved.

Second, the author justifies the significance of services partly with throwaway remarks about the growth of service employment that take no account of the vast development literature (ranging from Kuznets to Chenery) on well-established patterns of differential sectoral growth in the course of development. Typically as the agricultural share of total employment falls, the manufacturing share rises at first, and later declines as the services share takes over. The fact that the affluent countries now have declining manufacturing employment shares does not mean that less developed countries like Ireland should not still be concerned to increase their manufacturing employment share. I know of no highly developed country where the manufacturing share did not rise above 25 per cent and often much higher, and the rapidly expanding NICs are currently repeating the same pattern. Now in Ireland the manufacturing employment share never went above 21 per cent or so - and even that was in a context of an overall employment performance falling seriously short of our needs. The fact that Ireland "skipped the industrialisation phase" (to use the apt phrase coined by Des Norton) was undoubtedly a major cause of our mediocre overall employment record. If Ireland does manage to become an affluent, fully employed, economy, without raising its manufacturing employment share further, then it will be altogether unique. Perhaps it may do so, but surely there is strong

onus on those denigrating the concern about manufacturing to demonstrate why Ireland alone can expect to succeed with such a different pattern.

Notwithstanding Dr O'Rourke's arguments, I remain convinced that the traded goods sector has a pivotal role in the development of a small economy. The reason is simple: expansion of the nontraded sector is, by definition, limited to the scale of the domestic market, whereas the traded sector has virtually unlimited potential for expansion abroad. Recognising this is not to deny that the expansion abroad of the traded sector can be greatly helped by an efficient non-traded sector - a point I have always insisted on. The fact is, however, that some countries, such as Japan, have achieved enormous growth through the traded goods sector even with a relatively inefficient and high cost non-traded sector, whereas it would be impossible to conceive of a small country expanding greatly without rapid growth in the traded goods sector. Now up to the last 10-20 years or so the overwhelmingly important traded sector with a potential for expansion was manufacturing, and to a lesser extent tourism. As an economic historian, Dr O'Rourke will be well aware that judgements on policy should properly take account of the historical circumstances in which the policy-makers operated. More recently, because of technological and other changes, the range of activities with potential for expansion of traded output has widened considerably, and that aspect must of course be taken on board in formulating policy. But to recognise that many activities which were formerly non-tradable have now become tradable in no way diminishes the pivotal role of traded activities.

Consequently, I maintain that the often-expressed concern of Irish governments and policy-makers about the inadequate rate of development in Irish manufacturing was well founded. Whether or not that concern translated into appropriate policies is a separate matter, but the concern itself was not a mere mercantilist phantom: it had, and may still have, a good basis in the universal experience of countries in the course of development.

When we turn to the issue of appropriate development strategy, we need a broader framework than simply a reaction to the policies of the past, whether the latter are justified or mistaken. Together with my colleagues, Eoin O'Malley and Rory O'Donnell, I tried to sketch such a framework in our report to the Culliton Group on *The Impact of the Industrial Development Agencies,* published in 1992. We proposed that the range of government policies affecting the traded goods sector could be classified under three heads (1) policies affecting the macroeconomic environment, notably the general level of taxes, interest rates, wage rates, exchange rates etc.; (2) the structural environment, as influenced by the physical infrastructure (transport, communications, energy etc.), the human resources infrastructure (education, health etc.), and the administrative infrastructure (competition policy, planning laws, etc.); and (3) selective policies directed at specific sectors or companies.

Though admittedly not always emphasised enough in Ireland in the past, policies in categories (1) and (2) can have a major impact an the success of the traded goods sectors, and policies in category (3) should not be regarded as a way of compensating for remedial defects in the first two categories. Equally, however, even with the best possible macroeconomic and structural policies, there may still be a case for selective industrial policies.

The various reasons why selective intervention may be justified are well known in the economic literature, and I need not detail them here. Obviously, the interventions should not be justified by theory alone: the facts of the situation should concur with the theoretical propositions. One theoretical justification which seems to me to create a strong presumption in favour of selective intervention in Irish manufacturing relates to market failure. Every report over a long period that has reviewed the experience of indigenous manufacturing has found it to be unsatisfactory. So much was this the case that Ireland was forced to attract foreign enterprise on a scale unmatched by any other European country. If we want to continue to compete for foreign enterprise, we must pay the going market rate by offering incentives comparable to those available in many other countries more developed than Ireland. In regard to indigenous manufacturing, by far the most systematic and comprehensive analysis to date of the reasons for its failure to develop is that of Eoin O'Malley based on various entry barriers facing latecomers, which the firms alone are unable to overcome without state assistance. Not everyone accepts his evidence, however, and there are those who hold that if only the policies in categories (1) and (2) above were right, then there would be no need for selective intervention. Until the latter view is founded more, on empirical verification than on faith alone, however, policy-makers would be unwise to forsake all attempts to improve matters through appropriate selective policies.

Des Norton: If they had been expressed more than a decade ago, I would have regarded the general thrust of the arguments in the earlier parts of Dr O'Rourke's paper - to the effect that efficiency in the non-tradables (sheltered) sectors is crucial to competitiveness and growth - as both important and fairly novel; however, I would not have been so assertive as to state, in Dr O'Rourke's words, that "policy makers should focus on the sheltered sector, rather than dismissing it as irrelevant".

The immediate reason why I would have agreed with the author's general argument is that early in 1984 I prepared a report which reached similar conclusions, for the National Economic and Social Council (NESC). Marketed services - most of which are nontradable internationally - then accounted for about 30 percent of employment in Ireland and, as elsewhere, the share of that sector was increasing. The Irish input-output tables showed that over 50 percent of such services were *inputs* to the productive system; they were producer services rather than consumer services.

Hence, the competitiveness of the tradables sectors depended crucially on efficiency in such services, even though the latter were mainly non-traded internationally.

The 1984 report was not published by the NESC. However, its main points appeared in my paper "Public Policy for Private Sector Services", *Journal of Irish Business and Administrative Research*, October 1984, pp. 86-105. As means of increasing our share of world markets, and hence employment, the policy conclusions emphasised maximisation of the pace of technical change in producer services, as in other sectors, and strengthening of competition policy. Similar arguments were made in my paper "On Demand and Supply Side Policies in an Open Economy, 1960-2000" (Department of Economics, UCD, 1991) and, more recently, under the section-heading "Non-Traded Services are Important for Competitiveness" in Chapter 23 of my new book *Economics for an Open Economy: Ireland*, which, by chance in timing, can be bought tomorrow.

What is new about Dr O'Rourke's paper is the attempt to apply a computable general *equilibrium* (CGE) model of the neo-classical type to Irish data. This poses several problems, including:

First, if Leontief-type (input-output) technologies were assumed instead of the author's preferred neo-classical approach, the manner in which import competition would alter the relevant coefficient matrices need not require assumptions any more ad hoc than those of the author. The static input-output approach allows (say) capital in use to vary at the same time as variation in labour employed. Its assumption that within each productive activity constant returns to scale apply in the utilisation of capital, labour, etc. seems reasonable for an economy with plenty of slack. By contrast, CGE models of the neo-classical type confuse (say) the capital stock in use with the capital stock in existence: by making the demand for labour an ordinary partial derivative, they implicitly assume that all factors of production, other than labour, are always fully employed. Any policy inferences from such models might require radical qualification when it is recognised that some factors of production, other than labour, are not always fully employed.

Secondly, and more seriously, nonlinearities in the CGE model can (and in the author's case, apparently do) lead to multiple solutions for the endogenous variables, corresponding to any given set of exogenous variables and parameters. How, then, can one know which particular solutions are those which correspond to the real world? For purposes of illustration, suppose that the author's model consists of only two equations in two endogenous variables, x and y, and that the exogenous variables are initially fixed. Letting dots denote derivatives with respect to time, the author's model is a special case of the more general dynamical system:

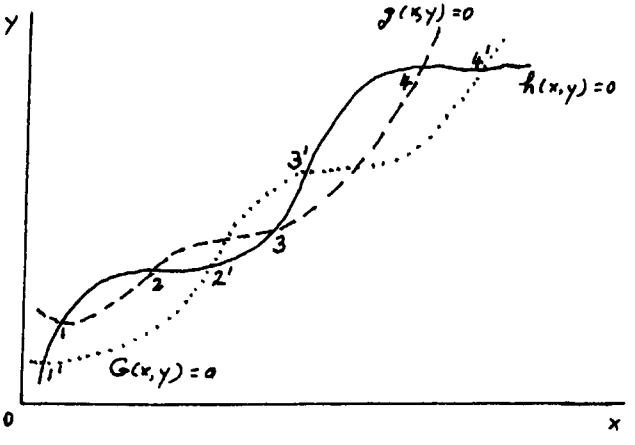
$$(1) \qquad \dot{x} = h(x, y); \qquad \dot{y} = g(x, y)$$

Because the author is concerned with equilibrium solutions only, his CGE approach sets $\dot{x} = \dot{y} = 0$, and seeks to solve the static system:

(2) $\qquad h(x, y) = 0; \qquad g(x, y) = 0$

Suppose that the graphs of (2) are as represented by the solid and dashed loci in Figure 1. It can be seen that the model has four solutions - those in the diagram labelled 1, 2, 3 and 4. Would the algorithm used by the author reveal all four solutions? If the answer is yes, and if the model is being solved for any year other than the base year (when the actual values of both exogenous and endogenous variables can be observed) , then how would the author know which of the four was the empirically relevant solution? If the answer is no, if the model is being solved for any year other than the base year, and if the algorithm yielded only one of the four solutions, how would the author know that the empirically relevant solution had been found? It seems that a serious problem arises in either case.

Figure 1 Graph of functions in Equations (2) and (2')



Next, suppose that the models for the base year are as above, that the author wishes to simulate the effects of an exogenous shock (e.g. a change in policy), and suppose that this disturbance affects only the relation g in (1) and (2). The relevant models (the new dynamical system and the equilibrium conditions) then become

(1') $\qquad \dot{x} = h(x, y); \qquad \dot{y} = G(x, y)$

(2') $\qquad h(x, y) = 0; \qquad G(x, y) = 0$

The author is confined to comparative static equilibrium analysis only - to comparison of "the relevant" solution in (2) with "the relevant" solution in (2'). In

order to highlight the point about to be made, ignore the discussion which immediately followed (2) above, and suppose that point 1 in the diagram is initially the empirically relevant solution (i.e. for the base year). The author seeks to compare this equilibrium with "the" new equilibrium. The immediate problem is that a new equilibrium solution exists at points 1', 2', 3' and 4' in the diagram, and the method favoured by the author has no way of determining which of these is the "relevant" equilibrium. Questions of dynamics aside, if the algorithm employed yields only one of the new equilibrium solutions, and if that is the "wrong" equilibrium, then the predictions of the simulation may be hopelessly wrong (even if all of the parameter estimates are perfectly accurate).

Thirdly, the method of comparative static equilibrium analysis makes sense only if the equilibria under investigation are stable. Unstable equilibria are more likely the larger the model and the more non-linear equations there are in the model. If equilibria are unstable, then predictions based on the assumption that they are stable will certainly be wrong: although such an equilibrium exists, it will never be attained, and the system under investigation may explode progressively further away from it. However, application of comparative CG *equilibrium* analysis cannot tell us whether an equilibrium is stable or unstable. If nonlinearities are present, and if some of the multiple equilibria are unstable, then policy simulations with a CGE model may yield results which hopelessly misguide the policymaker.

A general solution to a system of differential equations consists of equilibrium plus deviation from equilibrium. Dynamic analysis asks the question whether deviation from an equilibrium gets progressively smaller as time elapses; if not, the equilibrium is unstable and it will never be attained. Predictions that it will be attained would then be wrong. In order to determine local stability in model (2) above, we would need to investigate solutions to model (1) or to linearisations of model (1) in neighbourhoods of equilibrium solutions. Similar remarks apply in the case of model (2') above. At best, in a model with significant nonlinearities, the exercise implemented by the author is tantamount to comparing a point like 1 in the diagram with points like 1', 2', 3' and 4'; however, for a given law of motion (1'), some of these points will almost certainly be irrelevant. Furthermore, CGE provides the analyst with no way of determining which of these points are relevant.

For the foregoing reasons, even if all of the data used by a CGE model are perfectly correct, there is a danger that actual policy changes based on those suggested by CGE simulations will lead to consequences which are less favourable than those associated with no change in policy. With reference to the final sentence in Section 3 of Dr O'Rourke's paper, the results might well be "surprisingly large" (unfavourable or otherwise) - surprising the CGE analyst as well as the policymaker. Such a surprising outcome would be more likely, the more severe the nonlinearities in the model. Although I maintain my deep scepticism in regard to applications, I nevertheless wish Dr O'Rourke success in his endeavours with a CGE model.

Bob Curran commented that he understood Dr O'Rourke as arguing for neutrality as between the traded and the non-traded sectors, but that he was not clear about what level Dr O'Rourke would see this neutrality operating at. Neutrality could, in principle, be achieved in two ways, either by abolishing grants to industry and those non-traded activities that now get them, and raising the tax rate on industry to a higher level, or by extending grants to virtually the entire non-traded sector which is in private ownership, and by cutting the tax rate in that sector to the level now applying in manufacturing industry. These were, of course, the two ends of the spectrum. In general, debate with representatives of the various sectors tends to be on whether change should follow the direction of the latter course.

If that course were followed, the questions would arise of how the budgetary cost would be met, and what the economic consequences would be. An economy in which virtually every part of the private sector was subsidised by the State, in one way or another, did not seem attractive. The tax payer would have to carry the cost, and this could lead to pressure on wages. Administrative costs would also arise. The net effect might be to set up a system in which economic welfare was reduced, and the private sector, through higher wage rates, would in effect be partially financing a system of transfers within itself.

More generally, if one is in favour of policy neutrality as between sectors, should one be in favour of neutrality as between differing uses of resources? Should policy be neutral, for example, as between the consumption and savings decisions of households?

Reply by Kevin O'Rourke: I am grateful to Dermot McAleese for his generous vote of thanks, and to Dan Flinter for seconding the vote.

I agree with McAleese that a closer look at the official thinking behind the Government's policy decisions in the post-war period would be a worthwhile exercise in intellectual history. It is certainly true that the balance of payments was a more significant constraint in the 1950s and 1960s, when capital was only imperfectly mobile internationally, than it is today, and that this can justify official concern with the current account. The fact remains, however, that the links between non-traded output and the current account are ambiguous. Nonetheless, I am in broad agreement with McAleese, and in particular with the argument that excessive public sector expansion may have influenced the official thinking which I criticise in the paper. I also agree with Dan Flinter that scale economies and domestic market size provide a more powerful rationale for intervention than those cited in my paper. Nonetheless, demonstrating a theoretical case for intervention in certain circumstances is one thing; erecting a convincing argument for intervention in the real world, where government failure is as much a reality as market failure, is quite another.

I agree with Kieran Kennedy that the share of manufacturing in total employment has tended to increase in most countries before declining again, and this appears to be the Irish experience as well. Such patterns are however of descriptive, rather than prescriptive, significance. They do not suggest that government should intervene in an attempt to achieve 'desirable' levels of manufacturing employment. Moreover, the 1990s differ radically from earlier decades, in that comparative advantage in many traditional manufacturing activities seems to be inexorably shifting to the third world. The Irish government should be wary of investing too much money in a pursuit of manufacturing activities that may never again be competitive in a high-wage economy such as our own.

The argument that non-traded inputs are crucial for competitiveness is by definition correct. A country like Japan is not a counter-example. In the paper I stress product markets, since these have been too often ignored by policy makers; but clearly labour is a crucial, largely non-traded, input, and Japanese labour has been made available to Japanese industry on famously good terms since 1945. Moreover, there are very few who would deny that Japanese consumers would be much better off with a more competitive non-traded sector. I suspect that Kennedy would not disagree with me on either of these points.

Bob Curran is quite correct to point out that there are a number of ways in which neutrality can be achieved, and it will come as no surprise to him to learn that I favour the zero-expenditure route to achieving neutrality. In general I feel, as do most economists, that Government needs to be a lot more rigorous in identifying areas where intervention is necessary; and that such a process should not just involve glib invocations of 'market failure', but serious empirical research.

Finally, I should point out that the multiple equilibria to which Des Norton refers are not present in the version of the model which is used in this draft of the paper. Multiple equilibria *do* arise in versions of the model in which employment taxes are determined *endogenously*, for reasons spelled out in footnote 21. These multiple equilibria are interesting in their own right, and Denny and I will be addressing them at greater length in future work. However, for policy purposes models with multiple equilibria pose severe problems, as Norton points out. Sticking with *exogenous* labour taxes thus seems to be the correct strategy for a paper such as this one.