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REFLECTIONS ON LINKAGE POLICY IN IRISH MANUFACTURING – POLICY CHASING A MOVING TARGET?

Country Paper for Session II

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REFLECTIONS ON LINKAGE POLICY IN IRISH MANUFACTURING – POLICY CHASING A MOVING TARGET?

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1. Introduction

Given the growing significance of foreign multinationals companies (MNCs) in the Irish manufacturing industries over the past forty years, the issue of the degree to which these multinationals are integrated into the Irish economy has always been a policy issue in Ireland.¹ The integration of MNCs into the structure of their respective sectors (with forward and, particularly, strong backward linkages through customer and supplier relationships with indigenous companies), rather than their operating as “enclave production units” with virtually no links to the domestic economy, has been seen as vital to determining their likely long-term commitment to Ireland and the extent to which they will contribute to the overall development of the manufacturing sector.²

The primary aim of this paper is to outline the evolution of linkage development policy in Ireland over the past 20 years and to review its success in attempting to influence the extent of linkages between MNCs and local companies (LCs) in the Irish economy over the past three decades.³ As will become apparent, Irish linkage policies have developed significantly in response to three factors: the changing needs of MNCs (especially associated with the increased globalisation of the sub-supply industry), the changing capacity and capability of LCs, and the change in the structures of government agencies involved in industrial and trade promotion. The difficulties encountered in attempting to measure the impact of linkage policies are outlined, and the consequent weakness in the assessment of policies are noted. Since the electronics sector has been the key sector where specific measures have been adopted, it receives particular focus.⁴ Finally the potential lessons that Irish policy may have for those transition countries currently pursuing linkage development strategies are discussed.

2. Irish Linkage Policy

2.1 Background

The Irish Republic, hereafter referred to as Ireland, received its economic independence from Britain in 1921. At that point, the economy was essentially a regional economy of the UK, highly specialised in agricultural production; most employment and economic activity related to agricultural production that took place on small family farms. In the 1930s, the combination of an economic war with the UK and the world recession led Ireland to introduce high levels of protection on industrial output in order to establish an industrial base.⁵ This policy continued up to the 1960s, by which time the Irish economy found itself with an industrial base that was inefficient and not capable of sustainable growth. Despite protectionism, LCs could not compete and imports soared causing severe balance of payments problems. The

* This paper has benefited from recent discussion of the Irish linkage programme with Tom Kennedy (Enterprise Ireland). It has also benefited from discussion with Mike Crone (NIERC), who provided me with a copy of the paper written on the Irish linkages programme for UNCTAD and used an input into the World Investment Report 2001. The paper also reflects discussions and joint research with Holger Görg (University of Nottingham) over a number of years. The assistance of Marcus Breathnach (Forfás) in providing data and of Ali Ugur (TCD) in data analysis is also gratefully acknowledged. The usual disclaimer applies.

¹ The importance of multinational companies for the Irish economy has been widely discussed in the literature. See, for example, Görg and Strobl (1999), Barry and Bradley (1997), Barry *et al.* (1999) and Ruane and Görg (1996, 1997).

² As Driffield and Mohd Noor (2000) point out, linkages provide evidence that multinationals have incurred sunk costs in the economy and are therefore less likely to leave the host country in the short term

³ Local companies are typically referred to as being “Irish owned” or “indigenous”.

⁴ See Crowley (1996) and White, 2000.

⁵ The economic philosophy of the time was to make Ireland economically independent and self-sufficient.

latter half of the 1950s saw the economy in crisis, with unemployment rising and rates of emigration increasing significantly.

In response to this major economic crisis, Ireland made fundamental changes to its economic policy – abandoning its inward-looking approach and aggressively promoting growth through the internationalisation of its manufacturing sector. From the 1960s onwards it promoted economic growth particularly by using automatic fiscal and discretionary financial supports to incentivise investment in “greenfield” export-oriented plants by MNCs in Ireland. The discretionary financial supports were administered by the Industrial Development Authority (IDA), an agency established with exceptionally generous budgets to promote and support industrial development in Ireland. Through this process, the aim of policy was to achieve a major restructuring of Irish industry – away from traditional manufacturing activities, in which Ireland was no longer competitive, and into the production of modern high technology (*high tech*) goods. At the same time, protection was wound down (with massive job losses) and the economy set out to join the EU (along with the UK and Denmark) as the earliest possible acceptance date, which was January 1, 1973.

While Ireland had no tradition in these high-tech sectors, there was a growing belief that, with its good educational base, it could succeed in becoming competitive as a production base in Europe for MNCs in the electronics and pharmaceutical sectors. These products were focussed on as having low per-unit-value transportation costs,⁶ which were readily suited to exporting from an island economy with a small population (3.7 million). The implicit, and at times explicit, expectation was that as such sectors developed, there would be a natural development of linkages with indigenous entrepreneurs so that the benefits of the high tech MNCs would assist the growth and development of the LCs.⁷

Ireland has pursued this general policy now for over thirty years, evolving it very gradually to meet changed circumstances in the economic, political and technological environment – the further integration and expansion of the European Union, the expanded pattern of global supply-supply associated with electronic communications, the options for outsourcing presented by vertical dis-integration in many sectors, and the development of internationally-traded services. Key features of the Irish industrial development programme since its inception have been its:

- Unambiguously positive attitude to MNCs, which were seen as being the means whereby Ireland could arrest a century of high emigration and high unemployment
- Project/Company level approach, which gave it a detailed knowledge of individual businesses
- Use of generous discretionary financial aids, which developed relationship between policy makers and executives within companies
- Promotion of Ireland as a base in Europe, with the natural market for MNC investors being seen as the European rather than the domestic market – this led naturally to an emphasis on the USA as a source of MNC investment.

While policy towards multinational linkages did not develop very significantly until the 1980s, the potential importance of linkages in the economic development process was recognised in the late 1960s and the early 1970s. Several studies examined inter-firm linkages in Ireland before the major linkage programmes were introduced, and indeed, these studies had an influence on the approach taken.⁸ They focussed primarily on backward linkages,⁹ both because of the available data and because of the expectation that the export-led-growth strategy which Ireland has pursued since the late 1950s would not be likely to generate significant forward linkages.^{10 11} Furthermore, since Irish LCs were not seen as having great strength in export marketing, the potential contribution of MNCs was primarily seen as lying in their potential to assist in building up an indigenous sub-supply network which would have a ready market

⁶ These products are often referred to as “weightless products”.

⁷ While the exact ways in which benefits would transfer were quite vague, there was an expectation that they would. For example, the work of Hirschman (1958) was well known in policy circles at that time.

⁸ Several of the studies were funded and supported by the Industrial Development Authority, which had *de facto* responsibility for policy at that time. See, for example, McAleese (1977), and O’Farrell and O’Loughlin (1980, 1981).

⁹ Papers by Stewart (1976), McAleese and McDonald (1978) and O’Farrell and O’Loughlin (1980) include some attempts at measuring forward linkages in Irish manufacturing.

¹⁰ A glance at the existing international literature suggests that backward linkages have been the focus of most studies while there seems to be only little empirical work on forward linkages (see Blomström and Kokko, 1998).

¹¹ Since the main incentive for MNC investment was a corporate tax relief that applied only to profits on exports, MNCs investing in Ireland were almost 100 per cent exporting from the outset.

among MNCs.¹² The studies, based on one-off surveys of the patterns of expenditures by MNCs on Irish materials and services, noted that the expenditures were increasing over time, i.e., that there was a positive relationship between local input purchases and the length of time that a plant was in operation in Ireland. However, they also noted that it was not possible to determine whether the local purchases had reached their full potential, given the extreme openness of the Irish economy.

Another important influence on the decision to develop an active linkages programme arose from the analysis published in a major report on Industrial Policy (The Telesis Report) completed in 1992. The impetus to commission the report arose because growth in employment in MNCs had slowed down, and employment in LCs had contracted dramatically as the economy had moved to full free trade within the EU. In this context there was pressure on policy makers and agencies to identify new ways in which there could be benefits to the national economy from MNCs, over and above those arising from direct employment in MNCs themselves. The creation of synergies between MNCs and LCs through linkages was an obvious focus in this context.¹³ The Telesis Report identified three reasons why linkages had not developed in the Irish manufacturing sector: the lack of technical competence in LCs; the small scale of production in LCs, which meant that they could not meet requirements for sub-supply in terms of volume; and the lack of confidence of MNCs in, and knowledge of, the potential domestic suppliers. We now turn to look at the specific policies and programmes introduced to promote linkages, which were set in a general policy environment that promoted the concept of closer ties between MNCs and LCs.

2.2 Specific Policies

Ireland formally announced a National Linkages Programme (NLP) in 1984. The NLP was established in 1985, and its aim was “to increase the ability of Irish suppliers to serve the MNC market in Ireland” – in effect to build backward linkages between MNCs and LCs. The approach taken was to “focus on upgrading local suppliers by improving their technical know-how and ability”.¹⁴ While Ireland has continued to operate linkages programmes since that period, the programme in 2001 is very different from what was introduced in 1985, in terms of both approach and focus. Furthermore, the strategic importance attached to the programme has varied at different times during the period, as reflected in the resources allocated to the programme and the references to it in policy documents. To capture the evolution of the programme (which is not obvious from published documents), I will take a chronological approach to the evolution of policy that will help to show that the evolution has been a natural one.¹⁵

Returning to the Telesis analysis, it is clear that to develop linkages in Ireland, there were three key problems to be addressed:

1. To build the technical competence of the LCs, i.e., capability building
2. To assist capable LCs to achieve scale, i.e., capacity building
3. To build an awareness of the potential domestic supply potential among MNCs, i.e., communications building

Because of the company-level approach adopted by the IDA in promoting industrial development over the previous twenty years, the agency had very considerable knowledge of the needs of the MNCs and the capability of the LCs. It also had a relationship with the both sets of companies, which meant that its new role in developing linkages was seen by many companies as a natural evolution of its pre-existing role. In all its literature at that time, references were made to the fact that prospective linkages were seen as positive attributes of MNC investment proposals. The NLP as set up involved six key elements:

Mobilisation of goodwill and specific resources in MNCs to assist targeted companies
Identification of target LCs with the potential to trade with MNCs and export
Coordination between MNCs and state development agencies to support the chosen LCs
Identification of targets for the designated LCs
Provision of resources by MNCs and state agencies to address these issues
Coordination of the overall programme by IDA

¹² Over the past twenty years or so inter-firm backward linkages in Ireland have been subject to empirical research by various authors, including Stewart (1976), O’Loughlin and O’Farrell (1980), O’Malley (1989), Kennedy (1991), Crowley (1996) and most recently by Görg and Ruane (2000, 2001).

¹³ There was pressure not only for real linkage development between MNCs and LCs, but for these linkage developments to become a significant part of industrial policy.

¹⁴ See Crowley (1996), p 2-5

¹⁵ This section draws strongly on three sources: *An evaluation of the National Linkages Programme for the EU structural Funds Programme for Industrial Development* by Crowley (1996), *The Irish National Linkages Programme*, a short note prepared for UNCTAD by Crone (2001) and extensive discussions with Tom Kennedy, a senior executive in *Enterprise Ireland*, who has been involved with the programme since its inception.

It also involved the IDA's encouraging new and existing MNCs to establish autonomous purchasing departments in Ireland, by treating this factor positively in the determination of discretionary financial assistance when MNCs were establishing or expanding. The policy makers deemed it necessary to recognise formally that this new programme involved an entirely new type of partnership between MNCs, LCs and state agencies.¹⁶ While the programmes were entirely voluntary – with absolutely no element of compulsion involved – there was obvious concern of the potential risks of such pro-activity. A linkage marriage that “failed” and damaged an MNC (say because the LC did not deliver) could undermine an industrial development strategy that was heavily based on promotion of foreign direct investment, and the inevitability of selectivity amongst LCs chosen to participate in the programme could give rise to complaints from companies that were not selected.

To give the programme credibility, it was taken outside the existing industrial development agency structure, and headed by a private sector entrepreneur who was seen as having the market credibility that could not be assumed for the personnel in the existing agencies.¹⁷ The remaining staff members working on the NLP were seconded from the Industrial Development Authority and other state agencies. To minimize the problems associated with selectivity, a general database on sub-supply was established, to which all companies were given access – this had the effect of reducing the appearance of selectivity. This twin approach of general support for linkages combined with particular support for certain companies has characterised policy throughout the past 16 years and mirrors the general approach to industrial policy pursued in Ireland over the past four decades.¹⁸

The programme was launched with very media high profile (as a partnership between government, MNCs and LCs) and while the policy literature indicated that it was a general programme, the initial focus was, and continued to be, on the electronics sector. The target set for the NLP was that, by *building capability* within 50 LCs, it would lead to an increase in the share of materials purchases locally from the sector by one percent per annum over five years, from a base estimated at 20 per cent in 1985. (In fact it turned out that the true level of local component purchase was closer to 10 per cent. – see Chart 1 below.) Specifically, the stated expectation was that 66 per cent of the LCs assisted would succeed under the programme, which was allocated around 20 staff members.

In the first phase of the programme (1985-7), a two-pronged approach was adopted – identification of LCs that had sub-supply potential and negotiation with MNCs on how their sub-supply needs might be met. On the LC sub-supply side, there was already a considerable amount of information about the potential within companies (because of the aforementioned relationships between the IDA and the LCs), but there was the further need to determine which companies needed support, and which could manage without assistance, to improve their technical competence necessary to engage in serious sub-supply.¹⁹ This scheme started slowly and by 1986 there were just 55 LCs working with the NLP. The approach centred on the *capability building* rather than on scale (*capacity building*), and there is relatively little evidence of brokered linkages *per se*.

On the MNC side, the *communications building* approach taken was to engage MNCs in the process of linkage development by assisting them in building their *European* sub-supply chains generally, and within in that context, identifying potential within Ireland. This European rather than national approach meant that the MNCs did not see the programme as constraining them, but rather as providing further support for them. This reinforced their willingness to become involved with it. (The approach adopted reflected a belief that, with the approach of a Single European Market, it was sensible for US MNCs, and therefore sensible for Irish policy, which was promoting investment by US MNCs, to find European sub-suppliers.²⁰) A further advantage of the approach was that it allowed contact to be made and information to be collected on MNC requirements as Irish LCs were building up technical capability.

The second phase of the NLP ran from 1988-1990. Over the period, the staff resources of the programme fell (from 16 to 12), reflecting some waning of enthusiasm in policy circles for the programme as well as general fiscal constraints at that time. New and more realistic targets were set – the number of target companies was increased to 74, as the practice of working with 50 companies had failed to achieve the target of a one percent per annum increase in the market share of LCs. It was also recognised that the success rate of companies in the programme would be around 50

¹⁶ Hitherto all state involvement in manufacturing was essentially on a separate company basis, whereas what was being proposed raised new demands on the MNCs to cooperate with LCs.

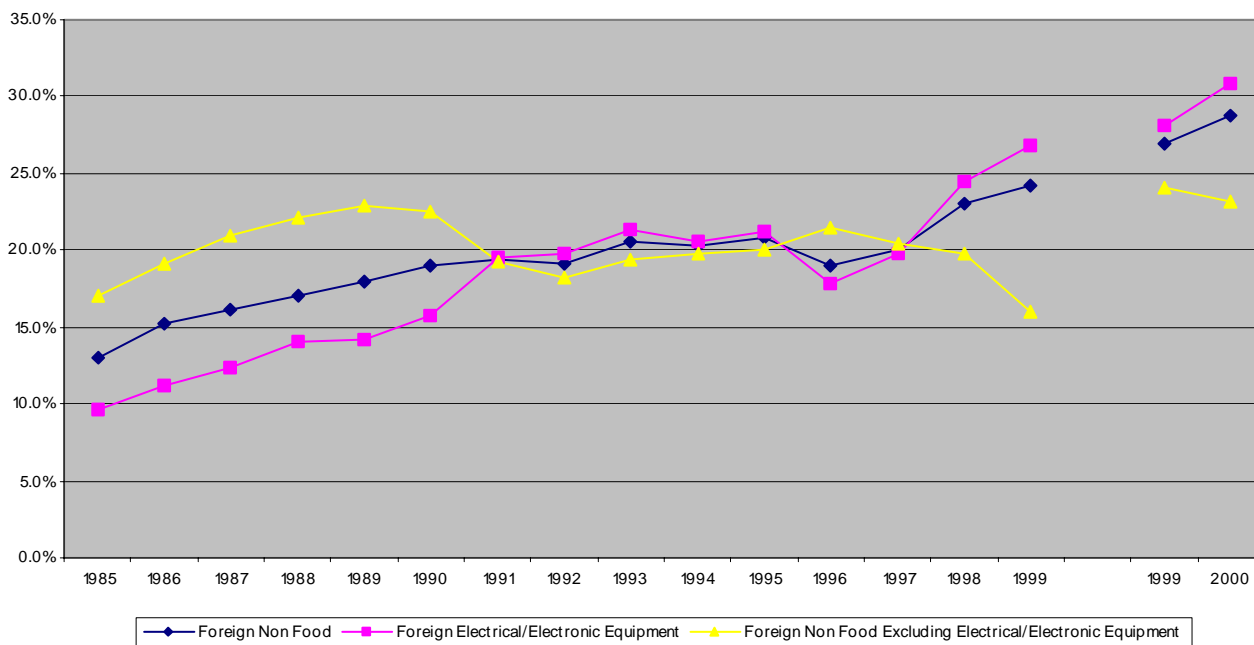
¹⁷ As the promotion of linkages would have been seen as an objective of general industrial policy over the previous decade without receiving any real attention in practice, it was probably essential to take it out of the existing structure to achieve a real focus on this issue at that time.

¹⁸ The approach adopted in implementing industrial policy in Ireland from the late 1960s was one where all projects were eligible for support but that particular sectors were given more focus in terms of both support and the marketing drive to secure MNC investment.

¹⁹ Achieving internationally recognised quality standards (the equivalent of today's ISO 9000) was seen as crucial.

²⁰ This was the era when people were beginning to talk about 'Fortress Europe' as a possibility.

CHART 1
 Proportion of Materials Sourced in Ireland by MNCs, 1985-1999, 1999-2000
 (Per cent)



Note: There is a discontinuity in the data with two figures for 1999 – at this point a new survey was introduced which has better coverage than the old IEE survey. The difference in the two figures for 1999 suggests that the older survey understated the extent of local purchases by MNCs

percent rather than 66 per cent. During this period the greater emphasis remained on *building capability* within the LCs, especially in terms of the technical competence, with brokerage continuing to assume a relatively background role.

The third phase of development (1991-1997) saw the separation of the NLP into two component parts – distinguishing electronics and other sectors – and its being established within IDA as a Linkage Division. To promote the former, an Electronics Linkage Team (ELT) was created in recognition of the sector’s “becoming increasingly important with distinctive support requirements” (Crowley, 1996, 2-9). The focus of this team was to increase horizontal and vertical cooperation by becoming actively engaged in brokerage (*communications building*) and to begin to deal with issues of scale (*capacity building*) and more specialist skills development (*capability building*). In effect, what was introduced was the type of full linkage policy envisaged by the Telesis Report, involving LCs building company development strategies within a comprehensive sectoral framework.²¹ It also saw some increased resources (provided from the operational plans for industry under the EU structural funds programmes, 1989-93 and 1993-99). This additional funding was integrated into the IDA budget making it difficult to identify the actual cost of the programme.²² The total number of personnel working on the two parts of the programme increased to 21 in 1992 and over the 1990s gradually reduced again to around 15.

The consolidation of the NLP within the IDA represented a significant change in the policy of having a separate entity to promote linkages (headed by a private sector executive). It reflected both the acceptance and maturity of the programme, as well as the recommendations of a review of the programme, which pointed to the need to have a single agency involved in dealing with all companies. The single agency argument effectively came from an analysis wherein the Linkage Programme was seen more as an element within the total industrial development programme rather than as a separate entity. It coincided with the establishment of two separate agencies to promote and support industrial development: IDA Ireland (IDA) to handle MNCs and Enterprise Ireland (EI) to handle LCs, with the latter taking responsibility for the linkage programme, but with the cooperation of the former agreed.²³ Additional resources and

²¹ A further review of industrial policy in 1992 by the Industrial Policy Review Group also supported the need to have MNCs also more integrated into the Irish economy.

²² See Crowley (1996)

²³ This recognised that the effort required to make linkages happen was with LCs and not MNCs.

more direct agency involvement with LCs (through, for example, EI taking equity in LCs that were growing *capability* and *capacity*) greatly accelerated the progress made in LCs during this period, particularly in electronics. (As noted above, this structural change in the organisation of the industrial development agencies had an impact on the linkages programme, and by its being located in EI rather than IDA, the emphasis on *capacity and capability building* was increased.)

By 1997, the view was emerging that in the electronics sector, LCs has achieved its potential *capability* of sub-supplying both to the MNCs within the manufacturing sector and to the MNCs within the rapidly growing internationally-traded service sector in Ireland. There was a growing belief that there was no further potential for increasing local sub-supply into the sector. At the same time, MNCs were increasingly aware of the aware of local sub-supply capabilities, had developed local purchasing autonomy in many instances, and were requesting that Irish companies become global sub-supplier for other affiliates within their corporations.²⁴ The success of *communications building* had generated a new issue – while Irish LCs now had the *capability* of sub-supply in electronics and they had built up the *capacity* for local sub-supply, they did not have the capacity for *global* sub-supply. In effect, by 1997 the electronics industry had come to the fore as the most globalized industry in the world, leading to policy makers to question the meaning of *local linkages* in this context. Thus, while the linkage programme had contributed successfully to building up a local sub-supply industry, the goal posts had completed shifted so that the potential for this whole industry was now under threat unless it globalized.

The fourth and present (starting in 1998) phase of the linkage programme now reflects this globalisation phenomenon. It also reflects the merger (in 1998) of the national export board (ABT) with Enterprise Ireland, so that the export promotion and industrial development policy framework facing LCs is now more fully integrated.²⁵ Within this expanded EI agency, an *International Business Linkages Division* has been established, so that the concept of linkages being international rather than national is now formally recognised in the structures.²⁶ Using the linkage team approach, various different strategies have been used to assist in the globalisation of the local sub-supply industry, to help it to achieve the capacity for survival:

Assistance for LCs in finding global partners to assist them in meeting scale targets

Procuring international owners to purchase LCs that could not succeed under (i), so that the local plants can continue to operate in Ireland

Assistance for LCs engaged in electronic sub-supply finding international markets for their outputs, often piggy-backing on the parents of affiliates who purchase locally

Assistance for LCs successfully, currently engaged successfully in sub-supply, in finding/building cheaper sub-supply sources in CEE countries where their Irish cost base is under threat

Assistance for successful LCs in becoming sub-assemblers rather than sub-suppliers, drawing on sub-supplier outputs produced in Ireland and/or CEE countries.

This recent phase of linkages is in marked contrast to what had been undertaken previously – and indeed is a new interpretation of the concept of linkages that were hitherto seen as sub-supply links between locally-based MNCs and locally-producing LCs. From the Irish policy perspective, there are now no border distinctions in this international business context: the MNCs can be based anywhere; the LCs may not even be producing locally. Is it correct to call

²⁴ As parent companies were continuously seeking to reduce the number of sub-supplying companies (in order to guarantee standards and reduce costs) the local affiliates were under pressure to change away from their local sub-suppliers unless they could persuade the parent companies to take them on as regional or global sub-suppliers.

²⁵ The non-inclusion of the national training agency (FAS) in this body means that the system is as yet not fully integrated.

²⁶ The new approach is evident in this excerpt from the [Enterprise Ireland](#) Web site, which describes the organisation as offering the following services to international business seeking sub-suppliers in Ireland:

- “We consult with you to ensure that we fully understand your requirements.
- We deliver confidential support designed to meet those requirements.
- We supply detailed information on the capabilities of suitable Irish suppliers.
- We can organise travel and accommodation. We will provide you with an itinerary that will make the best use of your time. We can provide you with office facilities if you need them. We can provide interpreters where required.
- We will make the initial introductions to potential suppliers. Then we can help you with follow-up contacts and arrangements.
- We know the value of your time. We will save you time and connect you with better sources. We will ensure that you profit from working with suppliers from Ireland.

This website includes information on more than 3,000 Irish exporting companies with links to many of their own web sites. It can also connect you with any of our offices throughout the world. We look forward to helping you source in Ireland.”

this a linkage programme at all? These are certainly not linkages in the traditional terms – but the concept of brokerage, which has always been central to the linkage idea is still very much in evidence.

Thus far this new kind of linkage is primarily an electronics sector phenomenon, though it may be expected to emerge in other sectors as technology develops and especially as the numbers of Irish MNCs grow.²⁷ In terms of what many associate with traditional (national) linkages, the approach is moving increasingly towards the building of supply-networks and supply-chains rather than direct MNC-LC linkages. The context for this is the increased emphasis on strategic capability programmes for companies within the LC sector and greater concern with regional links between companies. These policy developments are not described as linkages - the use of the term “linkage” in this context appears to have completely disappeared from all Irish policy literature with the terms linkages now being seen as an international rather than national phenomenon. In sectoral terms there is some expectation that the healthcare sector can grow local linkages on a similar basis to that done by the electronics sector over the 1990s, but, even here, the approach is more network-based rather than brokerage.²⁸ This is being pursued in a regional context, reflecting the sector’s geographical clustering Ireland’s less developed region that is designated an “A” Region for EU structural fund purposes.²⁹ However, the recent experience of the electronics sector is reflected in the recognition that all local sub-supply arrangements must now be seen in a global context – if the LCs cannot reach global (as opposed to local) scale within the planning time frame, the sub-supply sector will grow initially only to diminish quickly, so that local linkage formation is seen as just the first step in the process of MNC/LC relationships.

3. Assessment and Measurement

In terms of the regular overall monitoring of the NLP in Ireland, the focus has been primarily on the macro type data, based on data collected for the *Forfás Irish Economy Expenditure Survey (FIEES)*³⁰. The survey of MNCs and LCs is undertaken annually and includes output and employment data as well as detailed information on each company’s expenditure on labour, materials and services. The survey is sent to a sub-sample of companies, *viz.*, those with thirty or more employees, and thus it under-represents smaller companies. However this may not be a major issue for MNCs as most of them have more than thirty employees within a year of being established. It is not compulsory for companies to take part in the survey, but response rates are generally good, estimated at accounting for around 60-80 per cent of employment of the target population each year (O’Malley, 1995).³¹ These data allow us to examine how the proportion of materials (raw materials and intermediate good inputs) that MNCs are sourcing locally has changed since 1985. In looking at the Irish data, we focus on the total *excluding* the food sector, since the use of agricultural inputs in food processing would totally distort the effects that we are trying to capture, namely the induced effects of MNCs on LCs.

Before turning to look at the Irish data for the period 1985-2000, it is important to note that the use of materials purchased locally to measure the extent of the growth of linkages suffers from two very significant problems in the Irish case. First, as pointed out in Görg and Ruane (2000), the Irish data do not distinguish whether the purchases are made from local (Irish-owned) companies (LCs), or whether they are from other MNCs, *i.e.*, Irish-based, foreign-owned companies. While this is a problem for most countries, and one that cannot be readily solved, the problem is particularly acute in Ireland. Because of the extent of foreign ownership in Irish manufacturing (48 per cent of manufacturing employment is in foreign-owned companies), and the emphasis of policy on building agglomerations, it is highly likely that many materials purchased locally by MNCs are from other MNCs. Thus the use of this measure *overstates* the extent of linkage development in the past decade.

The second problem is arguably even more serious and lies in the use of input expenditures themselves to measure the extent of the linkages. The concept of linkages is implicitly attempting to capture the induced effects of an MNC presence on LCs. The use of expenditures on local inputs to measure this ignores the fact that the purchases may themselves may be products which contain significant amounts of imported inputs, so that the extent of real value added in Ireland induced by the MNC presence may be quite small. Furthermore, if the production processes in a particular sector tend to be vertically dis-integrated (which is very common in electronics but much less so in pharmaceuticals),

²⁷ The phenomenon of Irish MNCs is very new but becoming increasingly prevalent. They exist primarily in financial services, food processing, electronics and building and construction.

²⁸ The healthcare sector (NACE 33) is growing rapidly and its linkage rate is about two thirds that of the electronics sector.

²⁹ This means that levels of aid up to 40 per cent (with an additional 15 per cent for SMEs) can be given to support the development of companies in this region.

³⁰ Forfás is the policy and advisory board for industrial development in Ireland

³¹ The decision to collect these data was taken in 1980, when employment growth in the MNC sector slowed down and when questions were beginning to be asked about the quality of the employment being generated by MNCs and to what extent they were really embedded into the economy.

then the possibilities for double counting in these data are very considerable. (In effect if MNC_A buys an input from MNC_B which in turn buys its inputs from LC_C which in turn imports many of the raw material and inputs to produce its output, the use of aggregated local expenditures to measure the impact of the two MNCs on the local economy would wildly overstate the true picture.³²) Again, this problem is common in many countries but especially acute in Ireland because it is such an open economy. Thus while it is useful to have these measures to look at the impact of MNCs, the attribution of all upward trends to policy interventions is likely to overstate very considerably the success of policy in this area.

While recognising all of the caveats, we now look at data for the period since 1985. These data show clearly that the extent of local purchasing is higher in 2000 than it was in 1985 when the linkage programme was introduced. For the MNC non-food manufacturing sector, the share of local purchasing has risen from 13 per cent in 1985 to almost 29 per cent in 2000 – an almost doubling in that period. See Chart 1. However, when this total is decomposed into the electronics and non-electronics components it becomes clear that the apparent improvements in total linkages have been driven primarily by the electronics sector. For the non-electronics sector the scale of linkages was around 17 per cent in 1985 and by 2000 it had risen to 23 per cent – an increase over the period of 35 per cent. By contrast, the share of locally-sourced materials in electronics (the key target of the linkages policy) rose by over 300 per cent in the same period, from below 10 per cent to above 30 per cent.

In the early to mid 1990s there was little change in the proportion of local sourcing giving rise to the belief in policy circles that 20 per cent was the “expected rate” “natural ceiling” of the local purchasing share. This led to a major questioning of the arguments for continuing with a national linkage programme – as the potential for progress was seen as very limited when several years passed with no change in the share of local purchasing.

The apparent down-turn in 1996 and the rapid recovery over the following two years is almost certainly the impact of three factors – the beginnings of global outsourcing by MNCs in Ireland (particularly in electronics), the rapid increase in the growth of new electronics MNCs which had yet to find local sub-suppliers, and very possibly, problems with the data coverage in the survey. The recent period since 1997 shows a clear upward pattern in electronics and a downward pattern in the remainder of the sector.

While the published reports on linkages cover these macro data, there have been reviews of the linkage programmes themselves, primarily in the context of EU funding. The major review in the mid 1990s was by Crowley (1996). It was undertaken at the time when the share of inputs that were purchased locally had stagnated (See Chart 1.) It pointed to the significant difficulties in measuring the impact of linkage programmes – which are common to virtually all programmes that involve “soft” measures. He pointed to the need to have data for general evaluation purposes and to have data that would develop the management information systems of the development agencies and hence allow them to be more effective in supporting linkage development. He also focused on the need to collect specific data on Linkage companies (as opposed to sectoral data of the type reported in Chart 1. In this regard, he suggested that other indicators/targets should be introduced: indicator to capture the changes in the scale (capacity) of LCs in response to previously set targets; measure of the extent of value added by LCs in the linkage programme; target for sales levels to MNCs by LCs; indicators of supply chain links (joint-ventures, share of LC sub-supply going to single MNCs, joint research collaborations). These were proposed in the context that the NLP should develop into a full Supply Development Programme incorporating linkages as just one element in that programme. As discussed above, this is what appears to have happened in the period since 1998.

4. Electronics

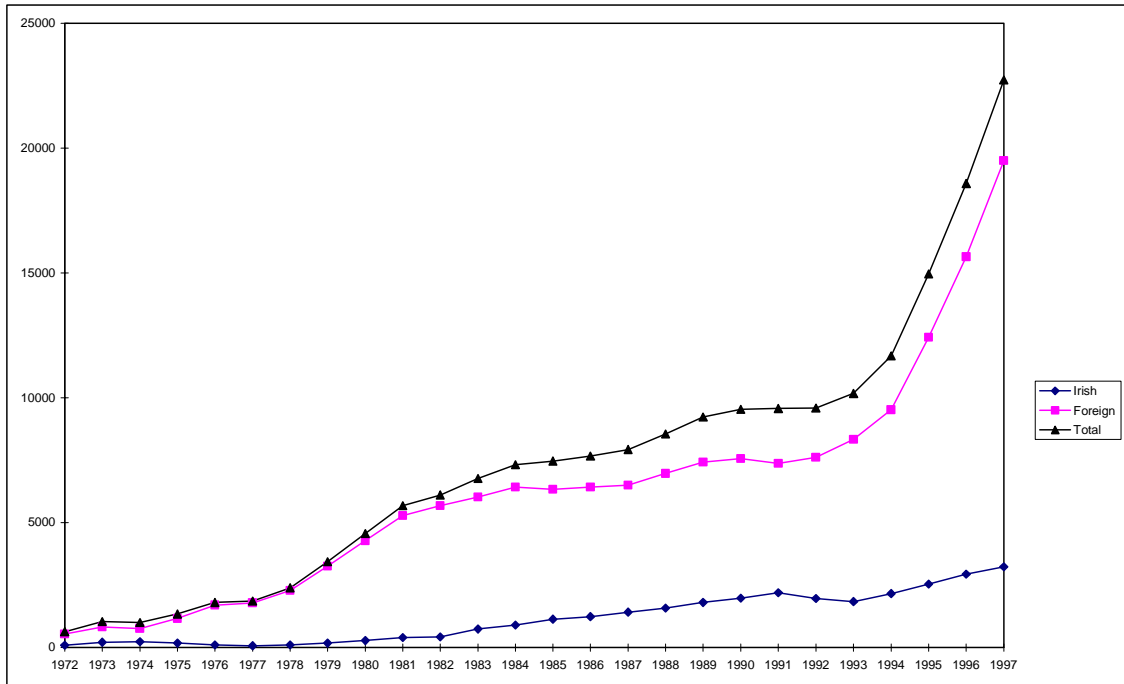
Because of the importance attached to the Electronics sector and in the establishment of the ELT, in this section we draw on earlier work by Görg and Ruane (2000, 2001) to look in some further detail at this sector.

Chart 2 shows that employment in LCs in the electronics sector was negligible in 1973. It has risen since then and especially since the mid-1980s when the linkage policy was introduced. However, its scale remains small when compared with employment in the sector overall – less than 20 per cent in 1997. Of course the linkages between MNCs and LCs are not limited to the LCs in the electronics sector and hence the growth in LC employment in this sector is only a partial indicator of the extent of the MNC impact on the economy. The likelihood that the purchases by MNCs in electronics are from other MNCs is evident in the structure of MNC employment, which shows that it is spread across all sub-sectors of electronics. See Chart 3.

³² In the extreme case the LC may be simply the importer/distributor for the product – but from the point of view of the MNC it is a local purchase.

CHART 2

Employment in Computers/Office Machinery/Electrical Engineering

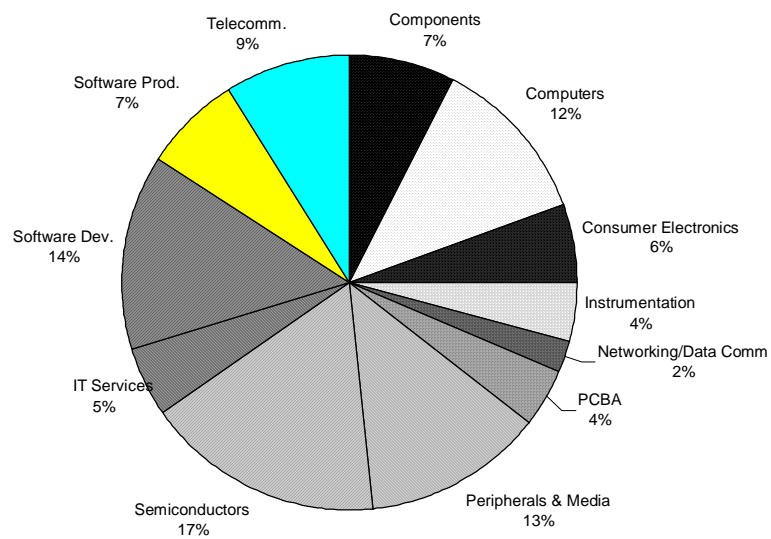


Source: Görg and Ruane (2001); derived from Forfás Employment Survey data.

CHART 3

Structure of the MNC Electronics sector in 1995
(Per cent)

Employment Shares of Multinational Companies in Electronics Sub-sectors, 1995



Source: Görg and Ruane (2001); Extracted from Forfás Employment Survey data.

Clearly vertical relationships in production within the sector are very likely to be among MNCs and are to be expected given the policy of building up an agglomeration in the electronics sector pursued by government agencies since the 1980s, which turned out to be highly successful.³³ Despite the increased local sourcing rates of MNCs, the linkage rates of LCs in the sector are still higher than those of MNCs although the gap has narrowed. This is often suggested a reference point as to why more linkages can be expected from MNCs but when one reflects on the different activities of both, that is questionable. Using data on a sample of companies covered in the FIEES, Appendix 1 shows the considerable variation in purchasing patterns for materials and services for both MNCs and LCs across different sub-sectors between 1982 and 1995.³⁴ In general firms in the downstream sub-sectors have higher greater backward linkages, reflecting possible the development of the upstream sectors that can supply inputs to them.

Görg and Ruane (2000,2001) find, using econometric panel data methods to analyse linkages in a large sample of companies in the Irish electronics sector for the period 1982-95, that companies increase their linkages over time.³⁵ In effect they find a non-linear relationship between linkages and the length of time an MNC has been located in Ireland. This may indicate that foreign firms start off with a relatively low extent of local linkages, but, as they get accustomed to the local sub-supply environment, they proceed to develop local input linkages.³⁶ It is also consistent with the effectiveness of the NPL. In addition the Görg-Ruane results show that large companies have relatively lower local linkage rates than smaller companies. This is consistent with what policy makers have suggested, namely that LCs do not have the necessary scale to provide appropriate quantities and qualities of inputs to large scale MNCs. This suggests that the new policies to increase the capacity of LCs by moving them into a more global arena are appropriate.³⁷

Finally before turning to look at the relevance of the Irish Linkage policy to Transition Countries, we look at the charts on the following page. These show employment growth rates for three groups of sectors: Nace 30-33 (the target sectors for the linkages programme in recent years; All Manufacturing (the traditional reference sector for linkages) and the Manufacturing and Internationally Traded Service sectors combined. The Internationally traded service sectors are primarily software, professional and financial services which have been a target for MNC investment in the past decade. They are linked in many instances to the development of Electronics and thus are useful to view in this context.

It is clear that the NACE sectors have grown significantly faster than the Manufacturing average in terms of employment – which is not surprising, given global developments in that sector and Irish policy to promote it. The extent of the growth in internationally traded services in MNCs is evident in their having grown from a negligible employment base in 1985 to over 38,000 in 2000, which was slightly more than the absolute growth in employment in NACE 30-33. To the extent that these sectors are linked in terms of agglomerations and skill sharing, the impact of promoting a strong electronics sector is understated by concentrating on the manufacturing sector. The pattern of employment in LCs is similar. From a base of around 4,000 in 1985, employment in LCs in the internationally trading service sector is now 25,000. It is undoubtedly the case that many of these companies are the direct off-shoots of MNCs and that for many of them, their original markets grew from dealing with MNCs.

These data point to two issues – where skills are shared across sectors, the linkages generated by MNCs can spread far beyond NACE sub sectors in manufacturing and indeed beyond manufacturing itself. This is especially so in electronics. Secondly it points to the dearth of information in most economies on the service sector, at a time when it is a key sector in terms of growth, employment and productivity.

³³ See Krugman (1997)

³⁴ Note that the figures in Table A1, especially at the sub-sectoral level, fluctuate considerably over the years. This is due to the changing number of firms responding to the survey which would, in particular, affect sub-sectors with only a very small number of respondents. However, the general trend of increasing linkages in foreign firms is also confirmed in the published figures in Forfás (1996) where the percentages of Irish-sourced raw materials for non-food manufacturing firms are reported. These fluctuations should not pose a problem for the econometric analysis below since we use firm level data for this estimation.

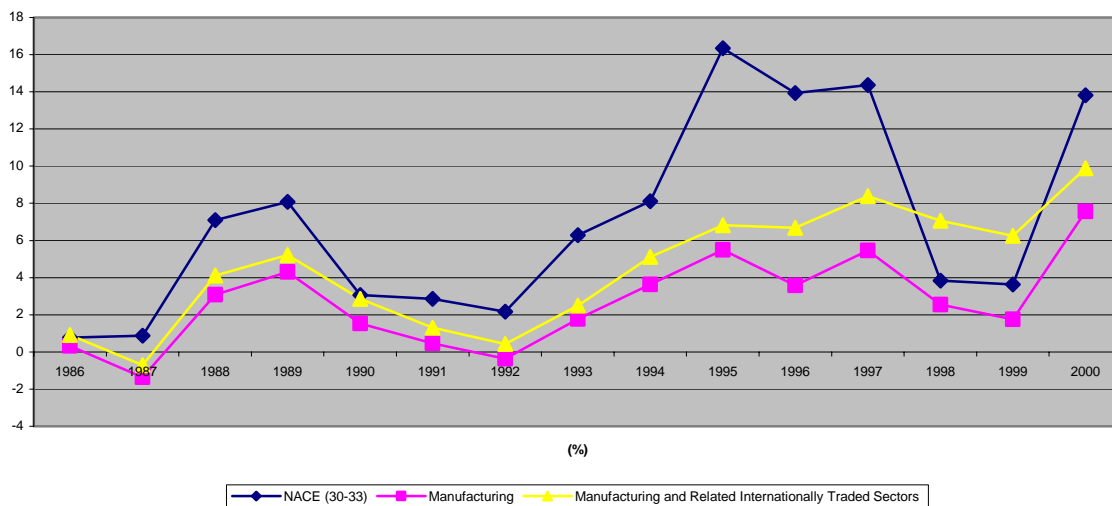
³⁵ The general approach taken by Görg and Ruane is set out in Appendix 2.

³⁶ This result is also suggested by Kennedy, 1991.

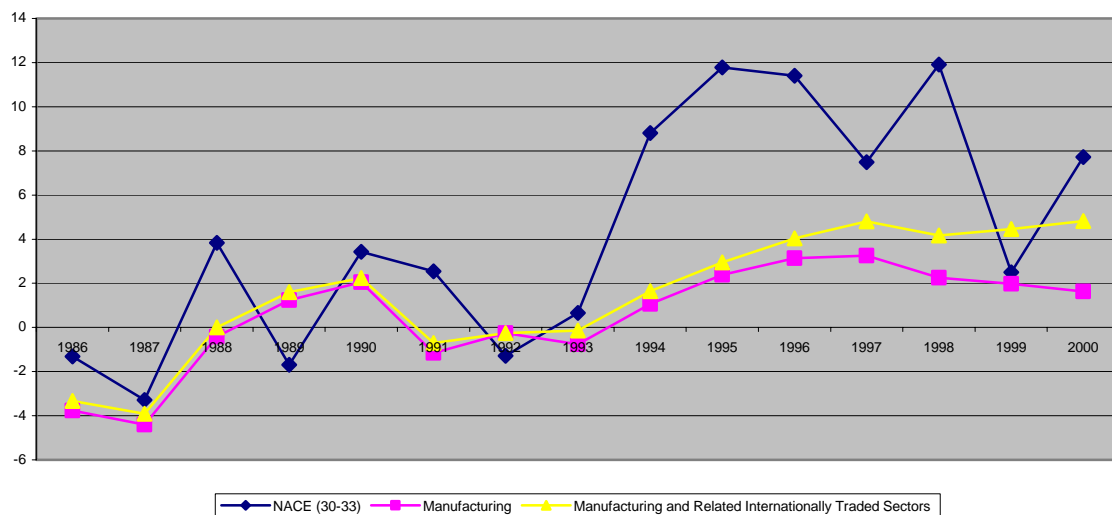
³⁷ Görg and Ruane (2001) also attempt to identify the extent to which the growth in employment in LCs may be attributed to MNC linkages, by looking at the induced employment effects of expansion in down-stream companies on employment in up-stream companies. While these results are tentative, they suggest that per 100 additional jobs generated in downstream MNCs approximately 21 additional jobs are generated in upstream LCs. This ratio is higher than the ratios for total manufacturing obtained by O'Malley (1995), who found 12 and 16 indirect jobs per 100 direct employees in MNCs in total manufacturing in 1983 and 1991 respectively. The Görg-Ruane higher result is consistent with the potential for linkages associated with the electronics sectors.

CHART 4

Permanent Full-Time Employment in Foreign Firms, Annual Growth Rates 1985-2000



Permanent Full-Time Employment in Irish Firms, Annual Growth Rates 1985-2000



5. Relevance of Irish Linkage Policy to Transition Countries

There are some very strong similarities between the situation of the Transition Countries and Ireland’s situation when it joined the European Community (EC) in 1973. Although it was unpopular to say so at the time, Ireland was in fact a semi-developed economy in the early 1970s, exhibiting the characteristics of both developed and less-developed economies. Membership of the EC immediately propelled the economy into a situation where the dominant thrust was the “developed economy” one, and without a doubt, the inflow of MNC investment (especially from the USA) which followed that membership played a crucial role in Ireland’s “catch-up” with the rest of its EC partners.³⁸ The real benefits came to the fore when the Single European Market (SEM) began to become a reality, allowing Ireland’s role as a manufacturing base for high-tech, low-weight products within the EU to grow rapidly.

³⁸ See, for example, Gray (1997), Braunerhjelm et al., 2000.

There are other respects in which the Irish economy at the point of entry into the European market was very different from those of the transition economies – it had opened up to international flows (of products and capital) over a much longer period than most of the transition countries, and all of its MNC investment was essentially “greenfield”. Such “greenfield” investment is much more likely a priori to have the potential to develop additional linkages effects than would takeovers of existing plants. Ireland joined the EC at a time when the scale of FDI and world trade was much less than it is today. Furthermore, it joined as a very small country with just two countries, one of which was very large in Community terms and both of which had, at that time, above EC average GDP per head. Thus it was gaining membership in a context that did not put any undue strain on Community resources.

The transition countries are entering the EU at a time when the world economy is more integrated, in terms of products and factors than it was for all earlier entrants. Consequently the traditional notions of local outsourcing may be less realistic than they were, say, for Ireland in the 1980s, let alone the 1970s. The approach Ireland is adopting today, namely of building a globally-focussed sub-supply (or intermediate goods) industry would seem to be the direction that transition countries to aim to move very quickly.

If Irish linkage policies have been successful, and it is hard to either totally prove or disprove this, it is probably because of the positive long-standing business relationship between development agencies in Ireland and both MNCs and LCs. In the absence of a positive relationship, the process of brokerage can quickly be seen by MNCs as constraining rather than assisting them, as a burden rather than a benefit. In an era of mobile investment, an economy that gained a reputation for constraining the purchasing behaviour of MNCs would quickly lose out on existing and new MNC investment.

In the Irish case, *Enterprise Ireland* is playing an increasing role as an information disseminator across the broad range of sectors. This is becoming easier today than in the past through web technology – and investment in a good system of information provision would seem to have considerable potential as part of any linkage strategy over the coming years. The Irish experience suggests that it takes time for MNCs to acquire local suppliers and active policy that can reduce the “learning phase” about local supply may increase the speed at which linkages occur and assist in building up LCs. Support of supply networks of LCs (which has only recently become a part of Irish policy) would also clearly have potential; however, this is costly in terms of time and effort.³⁹

A key policy supporting Ireland’s successful building of inter-company relationships has been the development of a good database on companies at national level. The Irish data bank has been built up steadily over thirty years and though it is not without its faults, it has recently been improved and integrated data are now available to all government agencies dealing with companies.⁴⁰ Achieving this has required a huge effort but one which will undoubtedly pay off in the longer term. Given the pressures of global sub-supply, and the desire to build up supply chains and networks, it is essential that the relationships between MNCs and LCs be monitored continuously. In the Irish case the quality of the inputs in the linkage chain will have to improve if the Irish suppliers are to survive the expected competition from Transition countries in less complex material inputs, given the increasing cost base in the Irish economy over the past five years. For the Transition countries the need to be globally competitive, in terms of capability and capacity is essential from the earliest point possible.

Irish industrial development policy sees itself as entering a new era, with increased competition from other countries of globally mobile investment. In this setting, the role of traditional linkage programmes has changed and they are now seen as just one part of a development strategy which integrates MNCs further into the Irish economy and develops the capacity of LCs. The former is now focussed strongly on building relationships between MNCs and universities, and the latter is concentrating on building up skills and R&D in LCs in a networking context. This separation of approach reflects both the stages of development and the institutional framework, which has altered very significantly in the past five years. The recent downturn in the world economy has drawn attention to the need to continue to build an internationally trading LC sector – some have begun to question the strategy of linkage creation in terms of the risk in places for increased dependency of the LC sector on the MNC. For an economy as open as the Irish economy, the wider portfolio of sub-supply relationships which LCs have provides a better hedge to a downturn than would a narrower portfolio which links the LCs to the range of local MNCs. In this context, the wisdom of the shift from local to global linkage relationships in recent years appears to be a very valid development.

³⁹ It is often discussed in the Irish case but progress has been slow. This may reflect the historically low manufacturing base. See Cooke, 1998, O’Doherty, 1998

⁴⁰ This goes a long way to meeting the recommendation as set out in Crowley (1996), 7-4.

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Appendix 1:

Linkages by Sample Firms in the Electronics Sector in Ireland, 1982-1995
(Percentage of raw materials, components and services purchased in Ireland)

	1982	1984	1986	1988	1990	1991	1992	1993	1994	1995
Total Foreign	0.17	0.26	0.26	0.26	0.31	0.37	0.40	0.34	0.36	0.39
Components	0.30	0.27	0.26	0.28	0.35	0.32	0.33	0.27	0.31	0.27
Computers	0.15	0.24	0.24	0.22	0.27	0.28	0.34	0.35	0.19	0.28
Consumer Electronics	0.27	0.31	0.24	0.30	0.29	0.32	0.33	0.32	0.33	0.35
Instrumentation	0.29	0.44	0.26	0.39	0.36	0.28	0.23	0.28	0.40	0.36
Networking/Data Com	-	-	-	0.25	0.17	0.36	0.27	0.26	0.16	0.19
PCBA	-	-	-	-	0.29	0.19	0.16	0.18	0.26	0.23
Peripherals and Media	0.37	0.31	0.24	0.30	0.44	0.42	0.28	0.27	0.44	0.50
Semiconductors	0.22	0.23	0.18	0.22	0.16	0.12	0.20	0.17	0.13	0.20
Services	-	-	0.80	0.83	0.55	0.66	0.68	0.44	0.41	0.42
Software Development	0.16	0.29	0.23	0.10	-	0.57	0.63	0.44	0.45	0.47
Software Production	-	-	-	-	0.72	0.82	0.81	0.91	0.75	0.76
Telecommunications	0.20	0.43	0.48	0.53	0.47	0.51	0.42	0.37	0.39	0.29
Total Irish	0.48	0.41	0.44	0.50	0.42	0.44	0.46	0.43	0.49	0.49
Components	0.20	0.21	0.33	0.50	0.51	0.54	0.52	0.39	0.44	0.43
Computers	-	-	-	-	-	-	-	-	-	-
Consumer Electronics	0.48	0.37	0.59	0.55	0.32	0.25	0.34	0.36	0.35	0.27
Instrumentation	-	-	-	-	-	0.54	0.55	0.66	0.64	0.73
Networking/Data Com	-	0.32	0.52	0.43	0.46	0.17	0.33	0.37	0.22	0.22
PCBA	0.75	0.35	0.40	0.28	0.39	0.30	0.31	0.22	0.37	0.41
Peripherals and Media	-	-	0.23	0.82	-	0.59	0.47	-	0.55	0.54
Semiconductors	-	-	-	-	-	-	-	-	-	-
Services	-	-	-	-	0.80	0.83	0.62	0.71	0.65	0.64
Software Development	-	-	-	-	-	0.91	0.74	0.66	0.82	0.83
Software Production	-	-	-	-	-	0.63	0.61	0.72	0.63	0.54
Telecommunications	-	0.90	-	0.90	0.44	0.60	0.54	0.52	0.44	0.47

Source: Görg and Ruane (2001); estimated from FIEES data

Note: The considerable fluctuations at the sub-sectoral level in some cases are due to the changing number of firms responding to the survey which would, in particular, affect sub-sectors with only a very small number of respondents.

Appendix 2

In their research, Görg and Ruane relate the extent of backward linkages (BL) in a company i at time t to a number of independent variables,

$$BL_{it} = \beta_0 + \beta_1 foreign_i + \beta_2 mature_{it} + \beta_3 mature^2 + \beta_4 size_{it} + \dots + \beta_5 exrat_{it} + \beta_6 ind_{j,t-1} + \beta_7 eer_{t-1} + \beta_8 D_j + u_{it} \quad (1)$$

where β_0 is a constant assumed to be equal for all firms and u_{it} is the error term which is assumed to consist of two components, viz., $u_{it} = \mu_i + \varepsilon_{it}$ with μ_i capturing a company specific permanent and unobservable effect, such as the influence of a particular production technology or management technique, and ε_{it} being the remaining period specific error term, assumed to be independent across firms and over time. The equation is estimated with the following variables as independents:

$foreign_i$: a dummy variable to account for nationality of ownership differences in the extent of linkages (1 if a firm is foreign).

$mature_{it}$ a variable to account for the development of linkages as the firm matures. This variable is set equal to one when a firm enters the sample for the first time and then increases by one every year.⁴¹ To allow for a “learning effect” the square of the maturity proxy variable $mature_{it}^2$ is included in the estimation.

$size_{it}$: the log of average employment is included as a proxy for firm size.

$exrat_{it}$ the firm’s export ratio is included to capture the companies links to global markets

ind_j , a proxy for the size of industry j , measured as the (log of) total employment is included to capture the size and capability of the local industry to provide inputs demanded.

eer_t , the effective exchange rate at time t , is included to account for changes in the macroeconomic environment over time

⁴¹ If we take the maturity variable to be an appropriate indicator of age, the coefficient on the variable will capture the marginal effect of age on BL, since the firm-specific constant μ_i accounts for the difference in age levels across firms.