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Measuring Globalisation and the IT Services Industry in Ireland

1. Introduction

The increasing globalisation of business and trade and the growth of new services industries pose significant challenges for National Statistical Institutes (NSIs) in meeting existing statistical needs as well as ever more demands for new data. This is particularly true for a small open economy like Ireland where the scale of multinational activity overshadows the activities of the domestic or indigenous industries. This paper describes the statistical data available that allow us measure and understand the impact of globalisation in Ireland with a particular emphasis on the IT services sector. It also provides an insight into a relatively recent but increasing facet of globalisation, the practice of *international sourcing* in that sector. It concludes by looking at some of the difficulties facing NSIs arising from the effects of globalisation and addresses some actions undertaken to address the challenges.

Globalisation or “international economic integration” is not a new phenomenon however technical advances, notably in transport and communication, have lowered costs and fostered rapid acceleration in recent years. There are a number of economic, social and political events that have contributed to this acceleration.

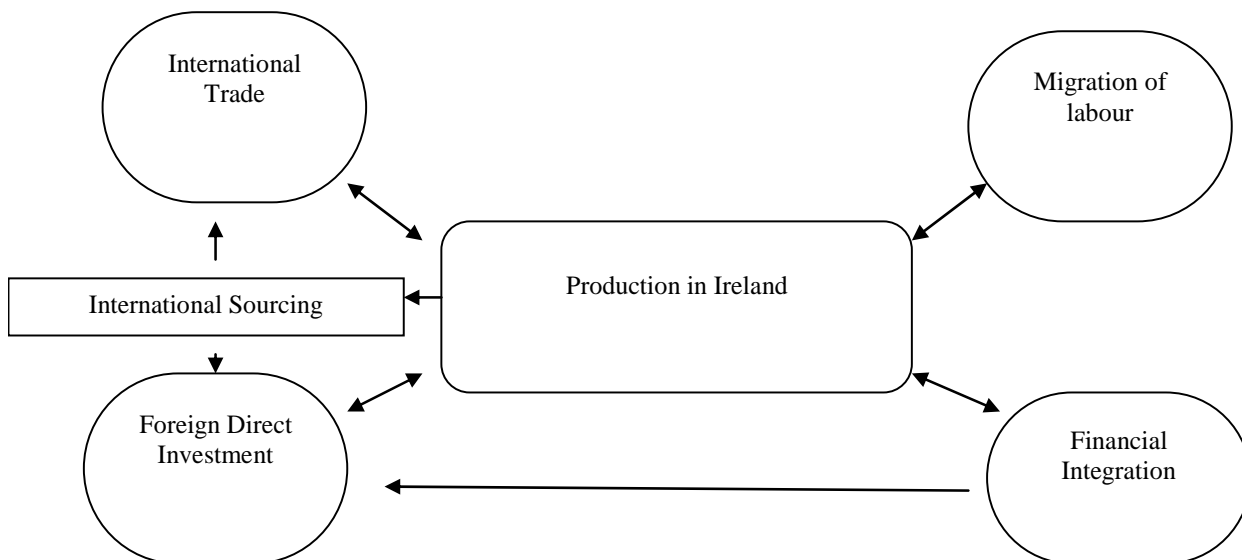
In November 1989 the Berlin Wall was dismantled, representing the collapse of the larger Iron Curtain, the Soviet Union and the end of the Cold War. Less than two years later, in August 6, 1991 the first website¹ was posted and the World Wide Web came into being. A few years later the business world was in the grip of a Y2K panic, and the uncertain implications of the year 2000 for global financial and business systems, giving Indian (and to a lesser extent Chinese) IT companies access to European and North American customers and a foothold in western markets. Around the same time (March 1998) PayPal was launched by Confinity, facilitating secure money transfer and ultimately providing the engine for electronic trade, allowing online stores such as ebay and Amazon to flourish. On Dec 11, 2001 China formally joined the World Trade Organisation (WTO) thus stabilising the legal and business environment for multinational enterprises wishing to invest there. These events, and many more like them, have had two effects. Firstly they have substantially increased the potential “global” economy, to include China, India, Russia, Eastern Europe and Latin America. In addition the development of the WWW and internet revolutionised the way many businesses operate (obvious examples would include retail banking, aviation and the music industry) creating a whole new distribution platform for enterprises to connect with each other and their customers. More importantly it has provided a mechanism for real time internationalisation, facilitating FDI and international sourcing.

¹ <http://info.cern.ch>

2. Traditional data sources on indicators of globalisation

Figure 1 demonstrates the key elements of globalisation in the context of a modern economy. Traditional sources of data exist for production, trade, migration of labour, financial market integration and foreign direct investment.

Figure 1 Globalisation and Ireland



Annual enterprise based surveys collect principal economic aggregates for all enterprises for each sector of the economy. Data collected on the location of the ultimate beneficial owner of the enterprise in these surveys enable us to produce key results on the extent of activity by foreign owned companies in Ireland.

In Ireland, administrative data as well as labour force survey and population censuses provide good estimates of migration of labour across international boundaries.

Both Ireland's CSO Balance of Payments unit and the Central Bank and Financial Regulatory authorities compile and disseminate statistics on international investment and financial flows which allow us evaluate the extent of financial market integration.

There is a long standing data series on international trade of merchandise which is sourced from a combination of Customs-based non-EU trade statistics and estimates from the Intrastat Survey of Irish traders involved in trade with other EU member states. Data on international trade in services in Ireland have been compiled since 2000 and are obtained as part of the enterprise surveys to collect Balance of Payments relevant data. These surveys collect data on all exports of services including those of resident manufacturing enterprises who have service activities. Information on inward and outward foreign direct investment are obtained from a number of sources including Balance of Payments surveys, annual structural business surveys, specialist annual survey of Irish enterprises with affiliates abroad.

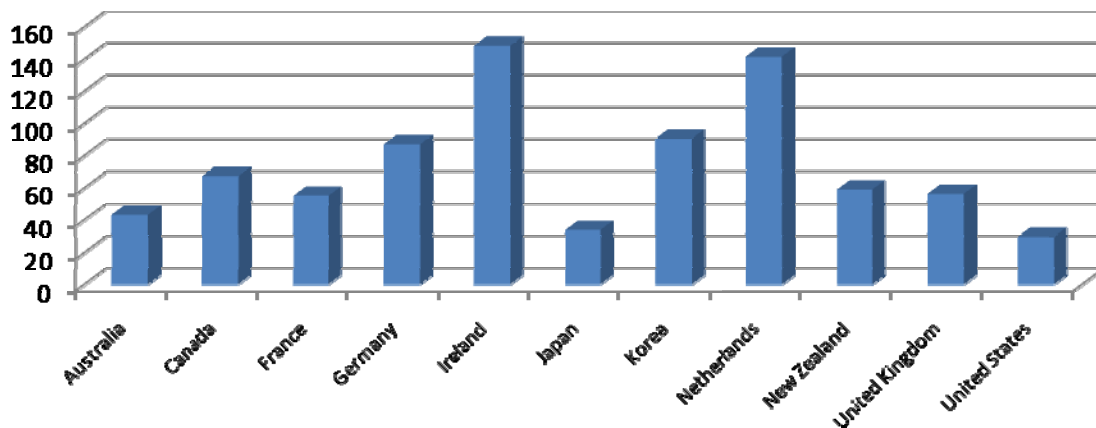
3. Traditional indicators : Ireland - a highly globalised small open economy

International Trade

Ireland is a small English speaking open economy in the Euro currency zone which is highly dependent on international trade in both merchandise and services.

The relative importance of international trade to Ireland is highlighted by the following table showing the international trade to GDP ratio of a selection of OECD countries.

Figure 2 International trade (total) to GDP ratio (%) in selected OECD countries, 2007



Source : OECD Stat Extracts

While manufactured goods still account for the largest share of international trade, globalisation increasingly extends to FDI and trade in services. Ireland is one of the world's leading service exporting countries worldwide, accounting for 2.7% of world services exports in 2007. See Table 1 below.

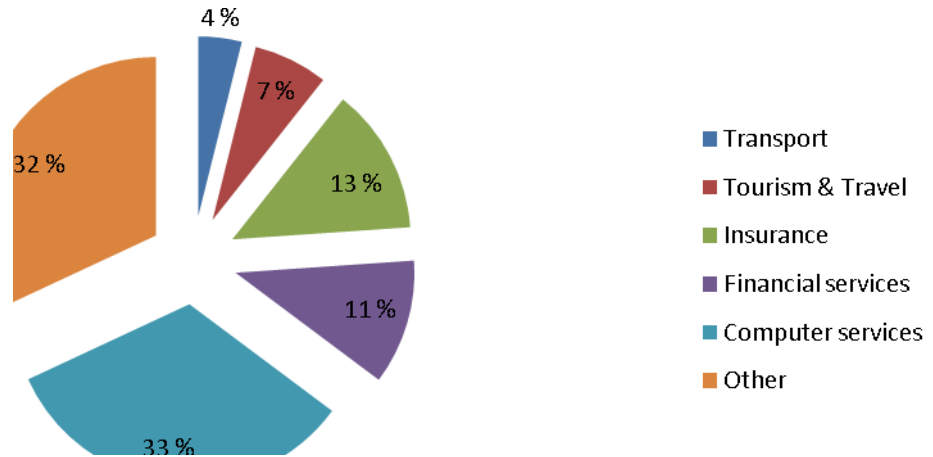
Table 1 The World's Leading Exporting Countries of Commercial Services, 2007

Country	Value Billion \$	Share %
United States	454	13.9
United Kingdom	263	8.1
Germany	197	6.1
Japan	136	4.2
France	130	4
Spain	127	3.9
China	127	3.9
Italy	109	3.3
Netherlands	91	2.8
Ireland	87	2.7
India	86	2.7
Hong Kong	82	2.5
Belgium	73	2.2
Singapore	66	2
Korea, Republic of	64	2

Source : WTO Online data

Computer-related services accounted for one third of Ireland’s total services exports for 2007. Figure 3 below shows the distribution of total service exports from Ireland by category for 2007.

Figure 3 Distribution of Service Exports in Ireland by category, 2007



Source : Balance of Payments enterprise based survey

At almost \$US23bn in 2006 (the latest year for which global estimates are available), Ireland was the leading global exporter of computer and information services. See Table 2 below

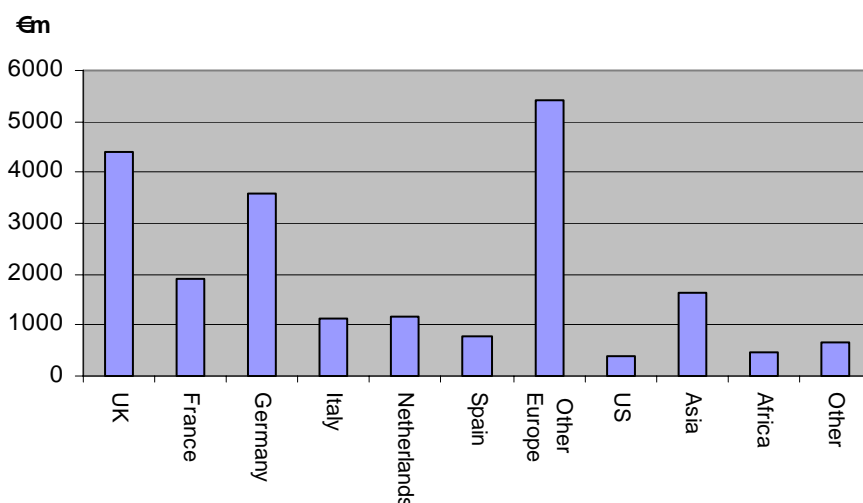
Table 2 The World's Leading Exporting Countries of Computer and Information Services, 2006

Country	Value \$bn
European Union (27)	70,085
<i>of which Ireland</i>	22,977
India	21,461
United States	10,096
Israel	5,289
Canada	4,034
China	2,958
Norway	1,376
Australia	1,060
Japan	966
Singapore	633
Russian Federation	632
Malaysia	572
Costa Rica	371
Hong Kong, China	358
Argentina	344

Source : WTO Online data

Figure 4 below shows the destination of Computer and Information Services exports for the latest available year, 2007. A large majority of these exports are to other EU member states.

Figure 4 Destination of Exports of Computer and Information Services, 2007



Source : Balance of Payments enterprise based survey

Foreign Direct Investment

External trade may be complemented or substituted by producing (and often selling) goods and services in countries other than where an enterprise was first established: this approach is known as foreign direct investment (FDI), whereby the enterprise concerned either invests to establish a new plant/office, or alternatively, purchases existing assets of a foreign enterprise. FDI is a type of international investment where an entity that is resident in one economy (the direct investor) acquires a lasting interest (at least 10 % of the voting power) in an enterprise operating in another economy.

The international investment position (IIP) is the balance sheet of the stock of external financial assets and liabilities of an economy. Direct investment in Ireland in the form of equity capital and reinvested earnings provides an indicator of inward FDI at a point of time in Ireland. Similarly, Direct Investment abroad in equity capital and reinvested earnings gives an indication of outward FDI. Levels of Other capital investments may be distorted by treasury activities of multinationals and may not provide such a good indication of levels of FDI.

Table 3 shows an extract of the international investment position in Ireland, UK and the EU 27 at the end of 2007.

Table 3 International Investment Position at 31/12/2007

Item	Ireland €m	UK €m	EU27 €m
Direct Investment Abroad			
Equity capital and reinvested earnings	86,620	1,235,570	6,816,974
Direct Investment in Ireland			
Equity capital and reinvested earnings	179,745	697,582	5,851,059
<i>of which in IT Services</i>	13,907	n/a	n/a

Source : Eurostat

CSO's annual structural business survey collects data on nationality of ownership of enterprises with 20 or more persons engaged. In the IT services sector in 2006, 54% of such enterprises were Irish-owned. Foreign-owned enterprises accounted for 70% of total employment and 90% of turnover.

Foreign-owned enterprises had an average of 162 persons engaged while Irish-owned IT service enterprises had an average of 60 persons engaged. The average GVA per person engaged of €175,691 in foreign owned enterprises was more than 2.6 times that of Irish owned enterprises in the IT services sector. See Table 4 below.

Table 4 Principal aggregates for the IT Services sectors by Nationality of Ownership, 2006

	Unit	Irish	Foreign	Total
IT Services (20+ employees only)				
Number of enterprises	No.	115	99	214
Persons engaged	No.	6,923	15,994	22,917
Turnover	€m	1,393	12,211	13,604
Gross value added	€m	462	2,810	3,272
Average persons engaged per enterprise	No.	60	162	107
Average turnover per enterprise	€m	12.1	123.3	63.6
Average gross value added per enterprise	€m	4.0	28.4	15.3
Average gross value added per person engaged	€	66,734	175,691	142,776

4. Need for new measures of globalisation

The offshoring of services has been increasing in recent times, driven by the liberalisation in services sectors as well as technological advances. Improvements in technology, standardisation, infrastructure growth and decreasing data transmission costs have all facilitated the sourcing of services from abroad. Rapid advances in ICT have also increased the tradability of many service activities and created new kinds of tradable services. In particular, 'knowledge work' such as data entry and information processing services and research and consultancy services can easily be carried out via the Internet and e-mail, and through tele- and videoconferencing.

The phenomenon of international sourcing has generated widespread debate and commentary in recent decades. However, these debates have taken place in the context of very little data and are usually only supported by anecdotal evidence that is difficult to compare on an international level. Therefore the Central Statistics Office (CSO) Ireland in conjunction with EUROSTAT, the statistical office of the European Commission, and a number of the national statistical offices in the Member States launched an ad-hoc survey on international sourcing. The value of data from this survey was further enhanced by linking it to the mainstream annual business surveys. This provided additional evidence of the effects of international sourcing on key economic variables.

International Sourcing Survey

Background

This ad hoc survey focused primarily on the relocation of Irish domestic production of goods and services to producers located abroad. The overall objective of the survey was to provide policy-makers, researchers and other users with relevant statistical evidence and information about the level, patterns and possible impacts of international sourcing for the Irish economy. Issues addressed in this survey include; the motivations behind international sourcing, the perceived barriers to international sourcing and the impact of international sourcing on individual enterprises in terms of competitiveness, employment and the reduction of costs.

The statistical unit used in this survey was the enterprise. The target population was all enterprises in the non-financial sector having 100 or more employees. A census was conducted on the currently active

enterprises on the CSO's central business register within the selected NACE sectors and having 100 or more employees. The survey questionnaire was addressed to the Chief Executive Officer of each enterprise. The survey was conducted in 2007 and participation in the survey was voluntary. In total 1,292 enterprises were surveyed and 636 enterprises responded giving an overall response rate of 49%. The reference period for this particular survey is the 6-year period from 2001 to 2006. If international sourcing took place prior to this period it is excluded from the results. Enterprises were also asked to detail their future plans on international sourcing over the period 2007-2009.

Definitions

Sourcing refers to the movement of activities from one enterprise to another enterprise within the same enterprise group or to an unrelated enterprise. The movement of activities from one enterprise to another enterprise within the same enterprise group is referred to as insourcing. The movement of activities from one enterprise to an unrelated enterprise is known as outsourcing. The movement of activities within Ireland is referred to as either domestic insourcing or domestic outsourcing. The movement of activities outside the state is either international insourcing or international outsourcing.

Table 5 provides a conceptual framework for analysing international sourcing.

Table 5 Definition of insourcing and outsourcing		
CONTROL	LOCATION	
External production outside the enterprise or enterprise group	Domestic Sourcing (Outsourcing)	International Sourcing (Outsourcing)
	<i>Production outside the enterprise or group by non-affiliated enterprises but within the Ireland.</i>	<i>Production outside the enterprise or group and Ireland by non-affiliated enterprises. This involves foreign subcontracting.</i>
Internal production within the enterprise group	Domestic Sourcing (Insourcing)	International Sourcing (Insourcing)
	<i>Production within the enterprise group to which the enterprise belongs and within Ireland.</i>	<i>Production within the group to which the enterprise belongs but abroad (by affiliated enterprises).</i>

5. Principal findings of International Sourcing Survey

The results from the survey of enterprises with 100 or more employees show that 38% of Irish enterprises engaged in international sourcing. Figure 5 places the Irish levels of international sourcing in an wider EU context. With the exception of the UK, the level of International Sourcing amongst Irish enterprises for the reference period is significantly higher than the levels reported for most other European countries.

Figure 5 Level of international sourcing 2001-2006 within the EU. Percentage of Enterprises Engaged in International Sourcing.

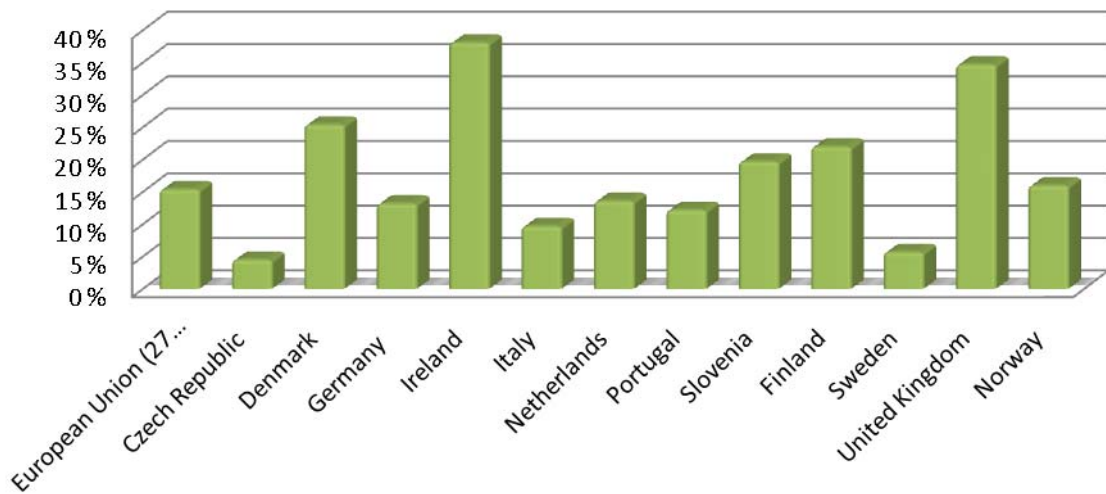
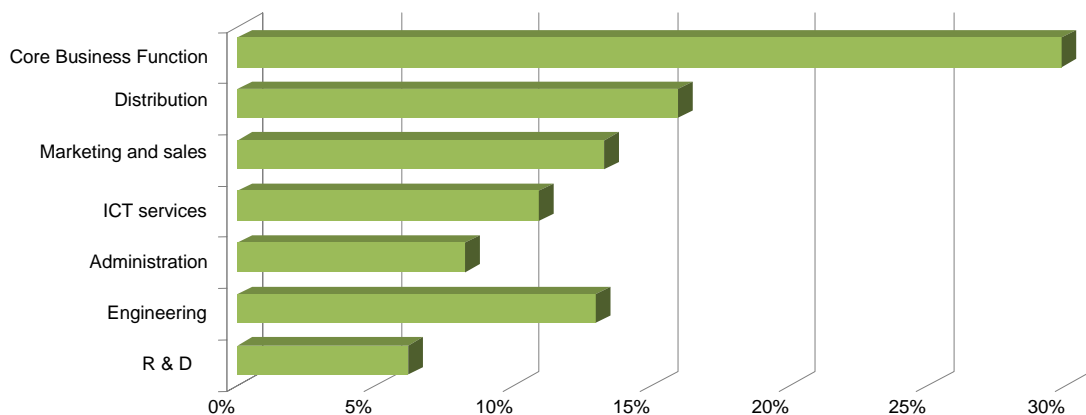


Figure 6 shows the distribution of business function sourced internationally by Irish enterprises during the reference period. The results show 30% of all Irish enterprises sourced core business internationally. Furthermore, 29% of the enterprises sourced support business functions internationally. Just 11% of all enterprises indicated that they sourced ICT services internationally.

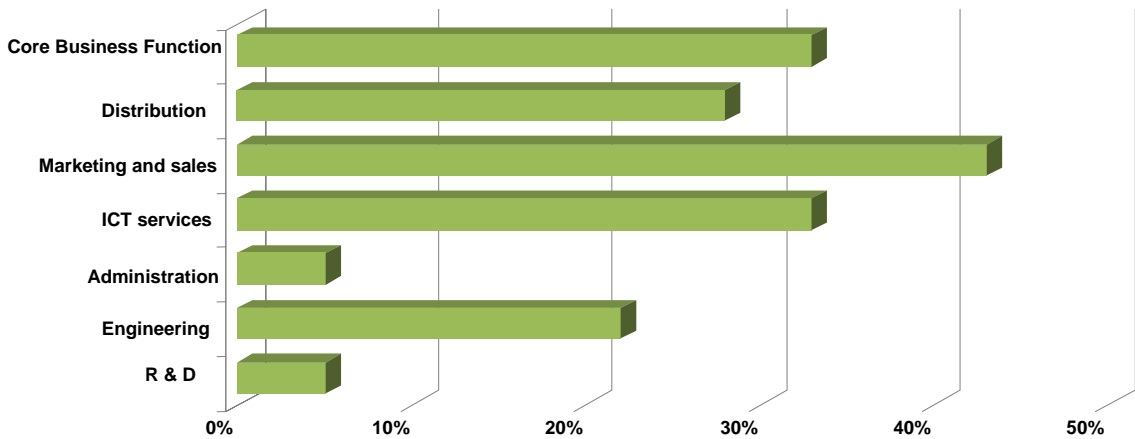
Figure 6 International sourcing of Irish business functions 2001 - 2006.



International Sourcing in the IT Services Sector

We now confine our analysis to the IT services sector (Nace Rev 1.1 Division 72). This covers the following activities : hardware consultancy; software consultancy and supply; data processing; database activities; maintenance and repair of office, accounting and computer machinery; other computer service related activity. The level of international outsourcing is significantly higher in the IT Services sector with almost two thirds of enterprises reporting international sourcing for the period in question. International sourcing of support business functions is much more prevalent in this sector.

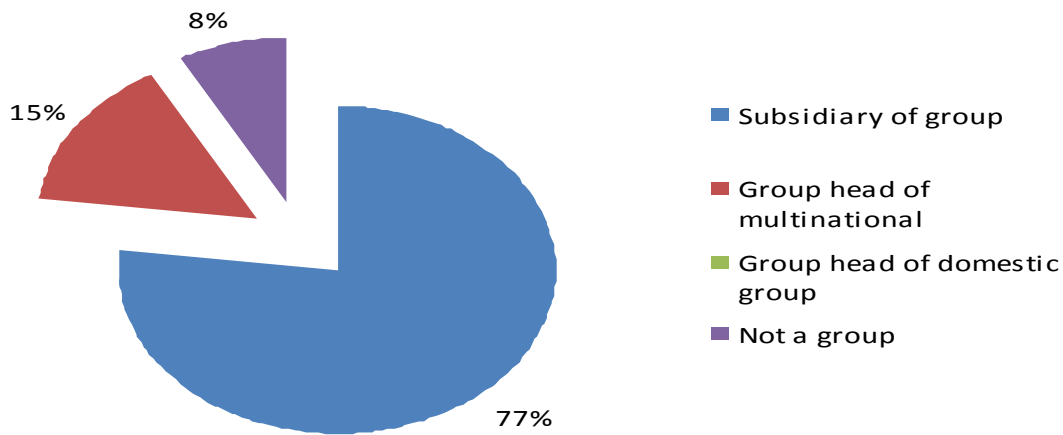
Figure 7 International sourcing of Irish IT Services business functions 2001-2006.



Group structure of enterprises engaged in International Sourcing

Figure 8 provides a breakdown of Irish IT sector enterprises engaged in International Sourcing by the overall group structure that the enterprise operates within. It is evident that the high level of foreign ownership of IT service enterprises in Ireland is a contributory factor to the relatively high levels of international sourcing of activities for this sector.

Figure 8 Irish enterprises having sourced internationally 2001-2006 broken down by group structure

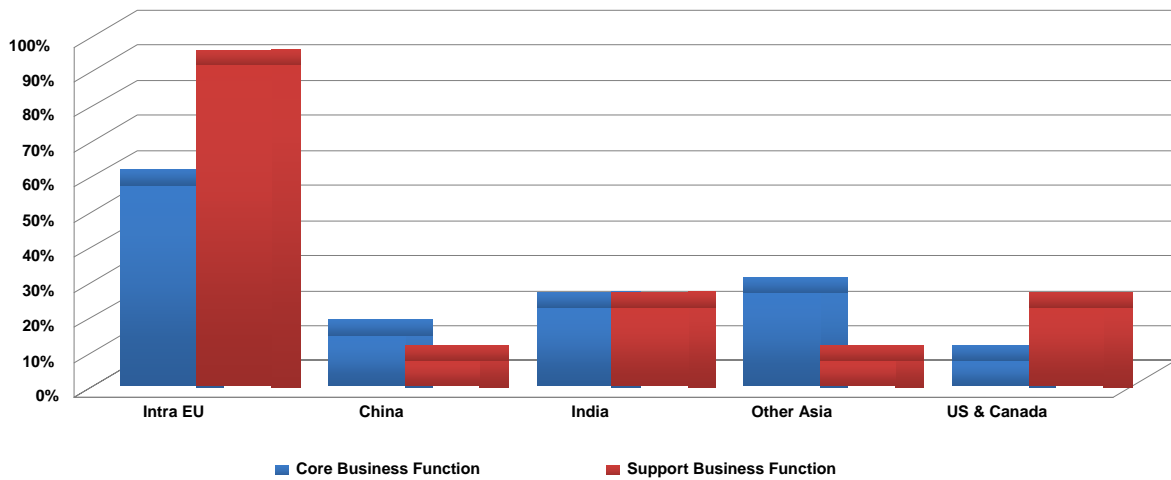


Destinations for International Sourcing of IT Service enterprises

Figure 9 provides information on the distribution of international sourcing by destination. By far the most popular destination for Irish international sourcing activity during the reference period was the other member states of the EU. Of those Irish enterprises engaged in international sourcing during the reference period 92% sourced some business functions within the EU. India was the next most popular destination with just over 42%. Almost a quarter of enterprises sourced some support business function to the USA and Canada. If we compare these results with our International Trade in Services results from our Balance

of Payments sources, as expected we see a similar pattern emerge. Figure 4 above shows the majority of international exports of IT services are to EU member states.

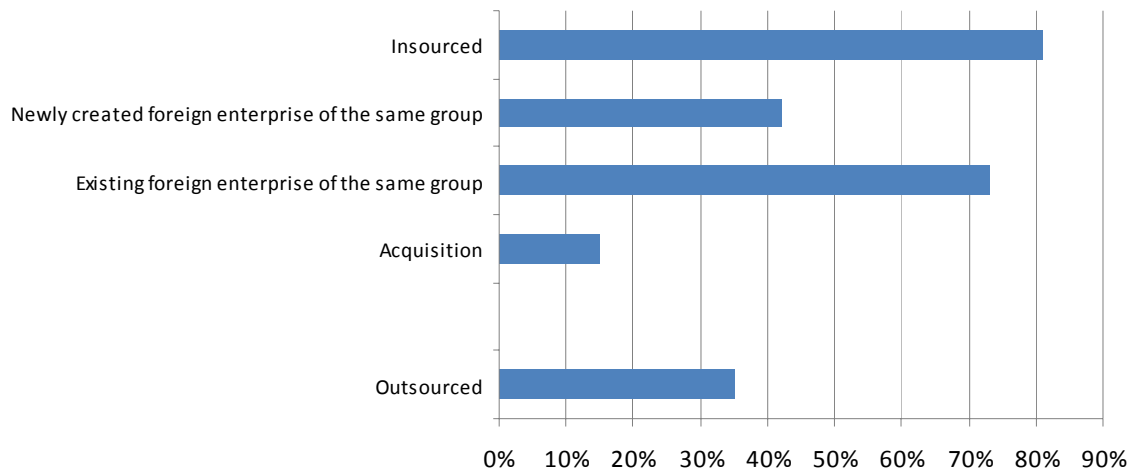
Figure 9 International sourcing of Irish IT sector business functions broken down by destinations.



Types of Business Partners for International Outsourcing

Figure 10 provides information on the business relationship between the IT service sector enterprise sourcing business activity abroad and the foreign enterprise accepting the sourced activity. Just over 81% engaged in international sourcing source to another enterprise within the same enterprise group, i.e. insourcing. For those Irish enterprises engaged in international insourcing 73% sourced to an existing enterprise within the enterprise group, 15% sourced to an existing enterprise acquired by the group and 42% sourced to a newly established enterprise. A much lower share (35%) engaged in international sourcing to an unrelated enterprise outside of the enterprise group, i.e. outsourcing.

Figure 10 International Sourcing by Irish IT Service enterprises broken down by relationship with business partner

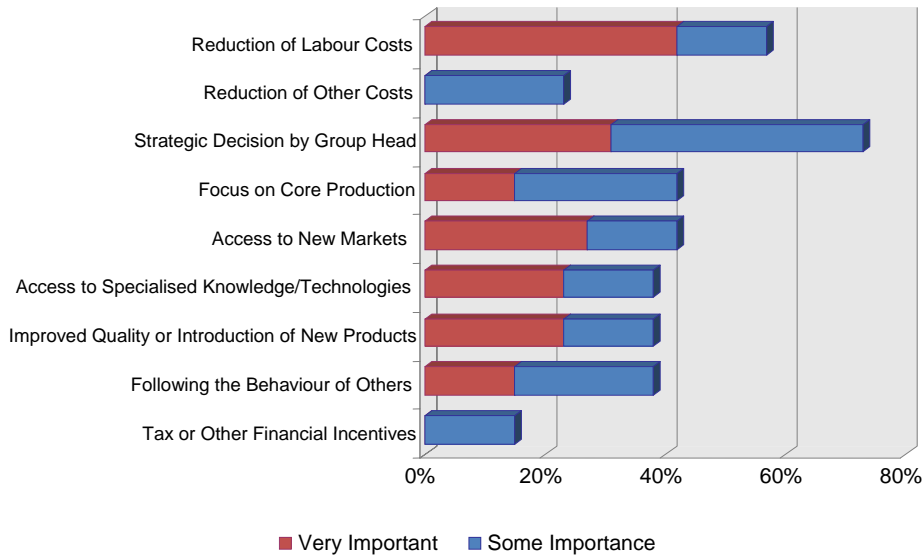


Motivations for International Sourcing

Figure 11 outlines the initial motivation of Irish IT service enterprises to engage in international sourcing. It is no surprise that the highest motivation factor is the strategic decisions taken by the group head considering such a large proportion of large Irish enterprises are subsidiaries of larger groups. Efficiency

seeking factors also motivate Irish enterprises to source internationally. The reduction of labour costs features as a strong motivating factor in IT Service enterprises decision to source internationally.

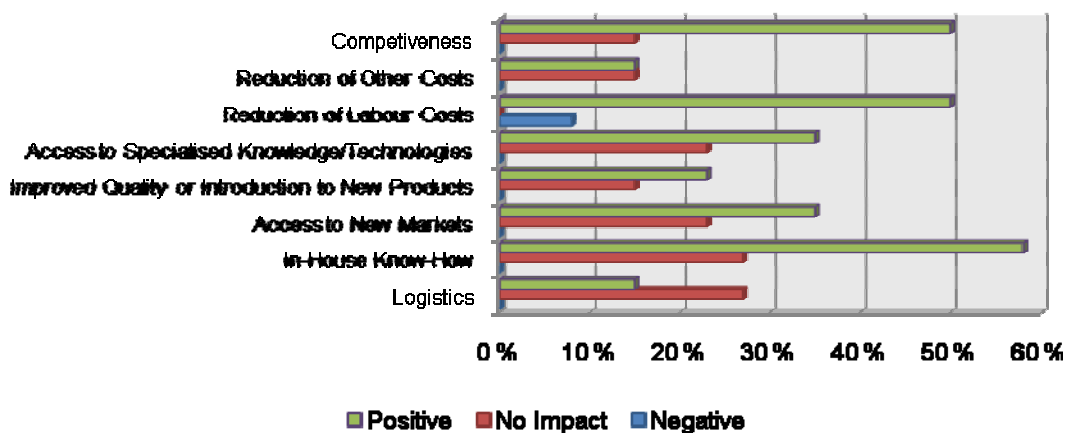
Figure 11 The importance of motivating factors for international sourcing for IT Service enterprises



Perceived Impacts of International Sourcing

Figure 12 outlines whether international sourcing has had a positive or a negative impact on the IT services sector enterprises engaged in international sourcing. Looking at Figure 12 it is clear that management within enterprises engaged in international sourcing have found international sourcing to have had a positive impact on the enterprise. The largest positive impact on Irish enterprises of international sourcing is in terms of improved in-house know how. Over half of enterprises reported that international sourcing improved their competitiveness while other prominent positive impacts include the reduction of labour costs.

Figure 12 Perceived Impact on Irish IT Service enterprises of International Sourcing



In the original survey form enterprises were asked to report the actual number of job losses and job gains that resulted from international sourcing during the reference period. Unfortunately, the response level for this sensitive information was insufficient to make results available.

Measured Impact of International Sourcing

Returns from the International Sourcing survey were linked at a microdata level with responses to the annual structural business survey. This provides additional data on the enterprise's gross value added (gva) and numbers of employees. We can now compare the apparent labour productivity for those enterprises who engaged in internationally sourcing with those who did not source abroad. Table 6 below shows consistently higher levels of gva per employee for those enterprises who sourced their main service activity internationally. This measure of labour productivity should however be treated with caution given some of the measurement issues with multinational company returns. See Section 6 below - *Challenges facing NSI*. It should be noted that the levels of gva per person employed in Table 6 are significantly lower than those contained in Table 4 above. This is explained by a small number of key multinationals with very high levels of gva per person employed who did not respond to the International Sourcing survey.

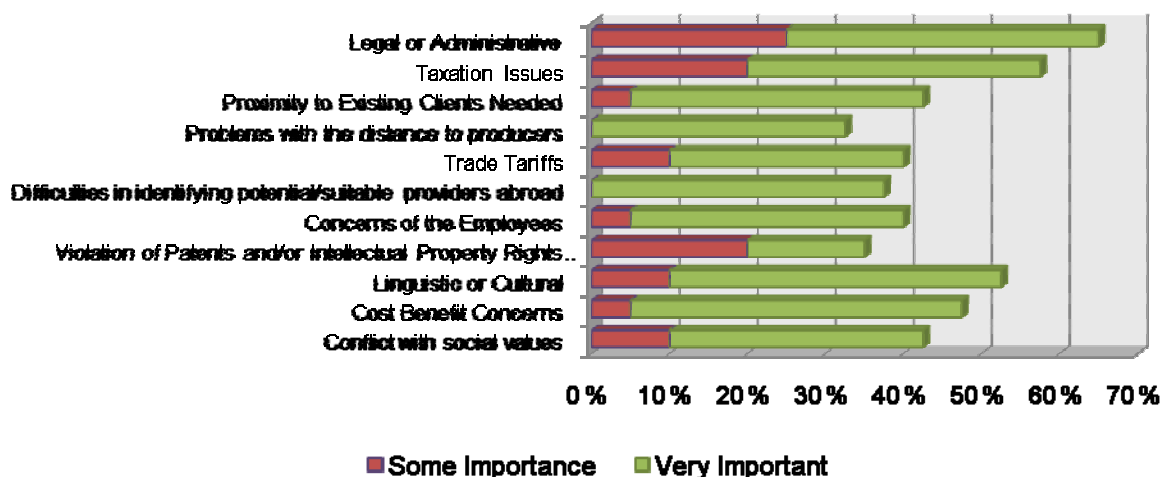
Table 6 Gross value added per person employed for enterprises in the IT Services sector who responded to the International Sourcing survey, 2003 – 2006

Year	Core business sourced internationally	
	Yes €	No €
2003	46,506	30,845
2004	61,695	40,629
2005	71,321	43,963
2006	66,816	55,902

Barriers to International Sourcing

Figure 13 outlines the perceived barriers to international sourcing as reported by Irish enterprises. The outcome relates to the total target population and not just to those enterprises engaged in international sourcing. The most important barriers to Irish IT Services enterprises for moving functions abroad are legal or administrative barriers, taxation and linguistic and cultural reasons.

Figure 13 Perceived Barriers to International Sourcing of Irish IT Services enterprises



6. Challenges facing NSIs

There are a number of major challenges facing NSIs arising from the effects of globalisation. This is particularly true for compilers of business statistics, price statistics, national accounts and balance of payments. The main difficulty encountered relates to accurately measuring the activities of resident Multinational Corporations (MNC). Transfer pricing, ownership structures, ancillary MNC activities, merchanting, commissionaire trading, changes in accounting practice are some examples which pose particular problems for statisticians. The accounting practices of MNCs also raise issues about the relevance of traditional measures of labour productivity (i.e. gross value added per employee). As a result, economic analysts place increased emphasis on the need for multi factor productivity analyses.

The approach in CSO Ireland to dealing with MNC reporting has been to establish a single *Large Cases* unit which deals exclusively with these globalised corporations. This ensures consistency and coherence of the treatment of the various issues raised above. The primary focus of this Large Cases unit is on the key economic variables needed to measure the value added of these enterprises. Measuring other impacts of globalisation on areas on statistics such as Service Producer Price Indices or impacts on high skilled / low skilled job gains or losses will take secondary importance. It is important to maximise the use of existing data holdings to avoid placing additional response burden on enterprises. Linking microdata across a number of surveys can yield some useful results in measuring impacts of activities such as international sourcing. It is necessary however to ensure adequate overlap across the different surveys to ensure appropriate levels of matching records can be used. The ad hoc survey is another useful vehicle to assist us in understanding such phenomena. It does provide with valuable information however it can be expensive, burdensome on respondents and can prove difficult to collect sensitive information such as future job losses arising from outsourcing of core or support functions. A case study approach can provide extensive detail on the practice of MNC's in a particular area. Such an approach suffers from the drawback of not being able to extrapolate for the population and the difficulty in getting respondents to provide commercially sensitive information without a legal requirement to do so.

NSIs also need to communicate effects of globalisation in a clear manner to key users. When we consider the impact of MNCs on the overall economy there is a need to use a different indicator than GDP in order to measure economic progress or development. In Ireland the statistician generally guides users of our data towards the more meaningful measure (for Ireland) of Gross National Product (GNP). This is because GDP contains a substantial element of value added relating to MNCs active in the economy and tends to overstate the level of domestic activity. The resultant profits earned by the MNCs are outflowed through the recording of Net Factor Income from Abroad to provide the measure of GNP.

In the case of Service Producer Price Indices users need to be cautioned that for many sectors which are heavily influenced by a large volume of international trade, price trends in the series may not be reflected in domestic markets. Thus users who may be using published SPPIs in trying to forecast consumer price levels must be alerted to the limitations of the data in this respect.

7. Conclusions

There is a wide range of existing data sources on the effects of globalisation on the IT services sector. The value of this existing data should be maximised as far as possible to help us understand the impacts of globalisation. This involves utilising data from across all aspects of the traditional statistical domains – social, business and economic statistics frameworks. The highly globalised nature of the Irish economy was clearly evident from these data sources. The existing system of statistics does however have limitations in measuring the impacts of globalisation. It can be difficult to accurately measure the principal economic variables (e.g. turnover, cost of sales) let alone more indepth and commercially sensitive issues such as pricing behaviour and impacts on employment of international sourcing. Other measurement approaches such as microdata linking, special ad hoc surveys and case studies do have a role to play however they do suffer from a number of disadvantages as identified in the previous paragraph.

References

MacFeely, S. (2009), "Walking a Tightrope: Balancing Budgets, Burden and Demand – Reshaping Irish Business Statistics in an attempt to try" ISI 2009 Durban, South Africa

Connolly, M. (2009), "Globalisation - Multinationals and their effect on National Accounts"

International Sourcing – The Movement of Irish Business Activity Abroad

Eurostat - International Sourcing in Europe