

Assessing the degree of internationalization. Some conceptual issues

Grazia Ietto-Gillies

South Bank University, London

Workshop paper

**103 Borough Road
London SE1 OAA
Tel. +44 020 7815 7701
Fax +44 020 7817 7706
Email iettogg@sbu.ac.uk
grazia.iettogillies@btopenworld.com**

Assessing the degree of internationalisation. Some conceptual issues¹

Workshop paper

Abstract.

The paper analyses different dimensions of measures of the degree of internationalisation in the context of different perspectives on internationalisation. The following perspectives on internationalisation are considered in particular: (a) the level of aggregation of the economy; (b) the internationalisation mode; and (c) the type of activity being internationalised. As regards measuring the degree of internationalisation the following dimensions are considered relevant: (i) the intensity level of internationalisation in relation to the overall size of the activity or economy; and (ii) the level of geographical extensity of the international activities. The paper argues that the choice of specific indices crucially depends on the type of effects we want to assess and, in particular, on the theoretical approach we have regarding specific effects. The latter point is argued with the aid of examples.

1. Introduction

The assessment of degree of actual and potential internationalisation has been the subject of quite a few pieces of research (Dunning and Pearce, 1981; Ietto-Gillies, 1989, 1998 and 2001; Sullivan, 1994; UNCTAD, 1995). It seems therefore appropriate to ask ourselves questions about the way we assess the degree of internationalisation and what the conceptual problems behind such an assessment are. This is an issue relevant for firms involved or wishing to be involved in the internationalisation of their activities as well as for policy makers operating at the local, regional or national level.

On the latter point in particular, we should note that policies are designed with a view to the effects of the internationalisation process. More specifically they are designed with a view to enhance the positive effects and discourage/eliminate the negative ones. This necessarily presupposes that we know the effects of the internationalisation processes. However, knowledge of the effects presupposes that we understand the theoretical linkages of cause/effect behind the processes and that we are in a position to make comparisons between different strategies, modes, countries regions or times.

¹ I am grateful to Howard Cox and Martha Prevezer for reading an earlier draft of this paper and offering useful comments. A version of the paper was presented at the Workshop MIUR-ITG, Torino, 13th June 2001 and at the Workshop on 'The internationalisation of European SMEs: culture, entrepreneurship and competitiveness' organized by the EC Socio-economic research Key Action in Brussels, 28th June 2001. I have benefited from comments made by the participants at both workshops.

All these issues have a bearing on our views on the specific measures and indicators of the degree of internationalisation. Within this perspective, the main aims of this paper are as follows:

- To highlight some conceptual issues underlying the assessment of the degree of internationalisation
- To analyse how various approaches to the measurement of such a degree are connected with the type of effects we want to assess and with the underlying theories we have about causes and effects

The paper is structured in the following five parts:

1. Analysis of different perspectives on internationalisation
2. Analysis of different dimensions on measures of the degree of internationalization
3. Effects of internationalisation
4. Linkages between theoretical aspects of the effects and measurements of the degree of internationalisation: some examples
5. Conclusions

2. Different perspectives on internationalisation

Internationalization can be viewed from various perspectives. In particular:

- (a) The degree of **aggregation** at which we want to operate. Firm or industry levels: large companies and/or SMEs; the macroeconomy (at the local, regional or national levels).
- (b) The **internationalization mode** we are interested in: trade; FDI; internal and external business networks; portfolio investment.
- (c) The **type of activities** that are internationalised and in particular whether they are backward or forward activities in the vertical chain of production, or whether they are part of horizontal expansion into foreign countries.

The choice regarding the **degree of aggregation** depends on the specific research project and problem one is working on and the type of effects to be analysed. Similarly with the **internationalisation mode** chosen for investigation. In this case, however, there are considerable complications due to the strong interconnections between the various modes. One internationalisation mode is likely to affect others either in a complementary or substitution relationship. Moreover, the effects and relationship can be contemporaneous or evolve in a time sequence. These relationships and effects are particularly strong in the case of trade and FDI (Cantwell, 1994; Ietto-Gillies, 2001: ch. 2).

The **type of activity** being internationalised has relevant connotations for: (a) the way production is organized and the various stages in the chain allocated to subsidiaries and countries; (b) how such allocation relates to the availability of skills and labour in various localities; (c) how SMEs may enter the production chain organized by larger TNCs; (d) how production is organised within the company; (e) the division of labour

within the company, industry, countries; (f) how such organization and division of labour is affected by the new technologies².

These three perspectives are not mutually exclusive. Various combinations of their components are possible according to the specific problem(s) we are interested in.

3. Two dimensions on the degree of internationalization

In the development of specific indices, the perspectives mentioned in the previous section are, of course, relevant because they define the boundaries of our specific research. However, whatever these boundaries, and therefore, whatever the level of aggregation, internationalisation mode and type of activity we want to concentrate on, there are two specific dimensions on the degree of internationalisation which are both relevant in the construction of indices. They are:

- The degree of **intensity** of foreign activities with respect to the size of domestic activities (local, regional or national)
- The degree of geographical **extensity** that is the degree to which the activity extends to many countries or regions.

By the **degree of intensity** I mean the degree to which activities are internationalised in relation to the overall size of those activities within a specific industry or country or region. For example, the extent of foreign sales as a proportion of all the companies' sales or the extent of the country's foreign investment in relation to the size of the domestic economy (whether measured by GDP or GDPCF).

It should be noted that most intensity indices effectively measure the degree of foreign projection ('degree of foreignness') of the specific activity considered. This is because the foreign activities are usually considered independently of the number of countries in which they take place. This approach essentially focuses on the dichotomy between activity abroad and activity at home (or total activity).

There are, in the literature, many indices based on this concept of intensity. Some are constructed by using a single variable as a measure of foreign activities such as sales or employment or profits (Dunning and Pearce, 1981). Dunning (1996) uses three single variables indices based on assets, employment and R&D. Other indices use a multi-variables approach and arrive at composite indices which combine various variables together. Sullivan (1994) constructs a composite five-variables index based on firms' 'sales', 'profits', 'assets', 'Top Managers' International Experience' and 'Psychic Dispersion of International operations'.

When indices refer to the degree of intensity of TNCs' *direct* foreign activities, they are considered to be measures of the degree of transnationalization of the firm, industry or country. UNCTAD (2001b) presents a number of such measures for

² Ietto-Gillies (2002) analyses how the information and communication technologies affect the international division of labour and how we may need to develop – particularly with regards to services – the concept of New International Division of Labour for the electronic age.

several countries, using several variables such as foreign employment, investment, production or assets in relation to several countries.

UNCTAD-DTCI (1995) develops a composite tri-variables index; however, it also provides the data and indices for each component (assets, sales and employment) for the world top 100 TNCs. Updated indices and their analyses have been published annually in the UNCTAD *World Investment Report* since 1995. Single variables intensity indices at the macro level are also published annually in the *World Investment Reports* (Appendices) in the form of ratios of FDI to GDP or to GDFCF for countries and regions. Moreover, UNCTAD (2001a) develops a new multi-variables FDI index aimed at comparing the countries' ability to attract FDI.

The variable chosen for the foreign activity, of course, varies according to the level of aggregation chosen (such as firm or country variables) or the internationalization mode the researchers wish to concentrate on: trade or foreign investment or number of alliances etc. In some cases both inward and outward variables are considered together (Ietto-Gillies, 1989) in the attempt to capture the impact of multinationality as a whole (by both foreign and domestic MNCs) on the domestic economy.

The degree of **extensity** aims to assess the geographical scope of the internationalisation process. It usually results in indicators of: (i) the number of countries into which the company operates or the country as a whole invests or trades with; or (ii) the degree of spatial concentration of activities; or (iii) the degree of 'gravitation' of foreign activities towards specific regions or areas. Various normalization methods can be used in any of these approaches.

Specific indicators of the degree of international geographical/spatial extensity related to (i), (ii) and (iii) are constructed in the following ways. (i) Ratio of number of countries in relation to a potential number in which investment could take place (Ietto-Gillies, 1998 and 2001: ch. 4 and 5). (ii) Concentration measures such as the Herfindhal index (Davies and Lyons, 1996: chs 7 and 11; Ietto-Gillies, 2001: ch.4). (iii) Gravitation indices which assess the extent to which the foreign activity gravitates towards a specific region rather than being equally spread among all (Petri, 1994; Ietto-Gillies *et.al.*, 2000)

Similarly to the intensity indices, any index related to the extensity dimension can be considered at various levels of aggregation (such as firms or countries) and for a variety of internationalisation modes (such as trade or FDI).

It is possible to combine intensity and extensity dimensions in the assessment of internationalisation and therefore to combine the geographical/spatial dimension of the activities with the degree of intensity of the same activity. The gravitation indices attempt to capture both dimensions.

In terms of specific empirics, indices can be constructed using cross section data or panel data. They therefore allow comparisons at a specific point in time, for example between different firms (UNCTAD, 1995 or Ietto-Gillies, 2001: ch. 4); or for the same units (firms or countries) thorough time (UNCTAD, various *World Investment Reports*, Ietto-Gillies, 1989 and 2001: ch. 5).

The relationship between the three perspectives considered in section two and the two dimensions of the degree of internationalisation considered in this section are illustrated in figure 1. The arrows indicate how any of the three perspectives on internationalisation (and specific elements within each of them) can affect each of the two dimensions of the degree of internationalisation. The arrow between the two lower grids indicate the possibility of developing indices that combine the intensity and extensity dimension.

4. Effects of international activities

At the surface level, the indices are designed to make comparisons across units – firms, industries or countries – at a point in time or through time. At a deeper level, the indices are always, directly or indirectly used to draw comparative inference about some effects of international activities.

The assessment of the effects has strong theoretical connotations. There are implicit or explicit theories behind the effects as well as theories behind the reasons for foreign activities (Buckley, 1981; Ietto-Gillies, 1992; Cantwell, 2000). This means that any indicator of internationalisation that aims to shed light on the effects, must take account of the theories underpinning those effects.

Each of the three perspectives considered in section 2 has several components each of which can be combined with any of those from other perspectives to arrive at specific indicators of internationalisation.

Given that it is possible to construct many indices according to the three perspectives illustrated above and that there are a variety of components within each perspective, the question arises as to how we decide on the best indicators. Much depends on the following: (a) what effects we are interested in; (b) what theoretical explanations we have regarding those effects; and (c) how we link those theoretical aspects to the indicators. At the more practical level, once we focus on a specific approach to the development and construction of indices, we then have to confront the problem of availability of data.

There is a large literature on the effects of international activities and indeed there are many types of effects. Specifically the effects could refer to one or more of the following:

- Firms
- Industries
- Macroeconomic elements: trade; balance of payments; employment; growth
- Other actors in the economic system: workers; consumers; SMEs
- Innovation and technology
- Culture; environment; international relations etc.
- Effectiveness of economic policies

An understanding of the effects is essential for the development of business strategies or governments' policies. The level of aggregation, the internationalisation mode and the type of activity to consider in the development of specific indices, crucially depend on the assessment of the effects and their implications for policies.

5. Linkages between theory and dimensions of the degree of internationalisation: three examples

In this section I shall give some examples of the linkages between the development of indices and the theoretical underpinning behind the assessment of the effects. I shall draw on following three specific examples though many others could be considered.

- Innovation
- Effects on bargaining power of labour and or governments towards TNCs
- Trade structure

Innovation

There is a good amount of literature on the relevance of TNCs' activities for innovation (Cantwell, 1989 and 1995; Zanfei, 2000). Transnational corporations learn from the various environments in which they operate and diffuse their knowledge to other environments internally to the firm (though often across countries) and externally to it.

The various activities of the firm may contribute to the innovative process often in a direct way as in the case of R&D activities. This is a case in which the strategies of location of a specific activity (R&D) have considerable impact on the environments in which the TNCs operate.

The contribution to innovation is also related to the different internationalisation modes (trade, FDI joint ventures). Whether we concentrate on a specific mode, depends on the specific theory we have about the impact of TNCs on development and diffusion of innovation. We may work on the theoretical assumption that direct production has the strongest impact on the diffusion of innovation, or, for example, on the assumption that such effects can be achieved via alliances.

Moreover, various levels of aggregation are possible. Specifically, the inference of international activities on innovation can be considered at the firm, industry or macro levels. It is also possible to attempt to draw inference about the comparative impact on innovation and knowledge diffusion of horizontal or vertical activities.

Most important are the intensity and extensity dimensions. Some *intensity* indicators may be considered relevant in the assessment of the impact of innovation. For example the ratio of R&D expenditure in relation to total firm's expenditure or industry, or country's product; or the ratios of imports to GDP or FDI to GDP.

However, if we operate with the theory that TNCs indeed learn from various environments and contribute to the development and diffusion of knowledge and innovations in such environments, then the *extensity* dimension becomes very relevant. The relevance of spillovers in basic research and its policy implications have been highlighted by various empirical studies such as Park (1995) and Funk (2002). Therefore, the type of theory on explanation and effects of innovation determines what type of indicators we develop.

Trade structure

It is well known that international production and trade are closely related. Over three quarters of world trade is initiated by TNC and over a third of it takes place on an intra-firm basis. Transnational companies contribute to trade directly and also indirectly via the impact of their direct production abroad through FDI (Cantwell, 1994; Letto-Gillies, 2001: ch 2).

The volume of trade as well as the trade structure is affected. By trade structure I mean a variety of structural elements ranging from intra-industry trade to intra-firm trade, to the commodity composition of trade. I also refer to the geographical composition of trade. The location strategies of TNCs are bound to affect the geographical structure of trade for any specific country and for the world as a whole. For example, the volume and the structure of FDI in China – particularly with regard to the type of activity and products in which inward FDI takes place – is having a major impact on the volume and structure of Chinese trade with the rest of the world.

This means that an analysis of the impact of international production and FDI on trade may have to take account of both intensity and extensity indicators. On the intensity side, it has been argued that both domestic TNCs and foreign TNCs operating in a particular host country affect the trade volume and structure (Letto-Gillies, 1989). This has led to the claim that a useful indicator of the intensity of transnational activity for a specific country is one that takes account of both inward and outward FDI as a ratio of the size of the domestic economy. This is a further example of how a specific theoretical approach to the impact of TNCs on trade – as well as other elements – leads to the development of specific indicators.

Effects on labour and governments

The spread of production over many countries fragments the labour force working for a specific TNC. It has been argued that this puts labour in a weaker position in relation to TNCs. Such fragmentation gives the TNCs added bargaining power in dealing with labour as well as in extracting stronger incentives from local or national governments competing for inward investment (Letto-Gillies, 2001: ch. 6). Organizational fragmentation which comes about via the outsourcing strategies of large companies, also contributes to put labour in a weaker position *vis-à-vis* large companies. Some of the outsourcing takes place at the international level, for example via international sub-contracting (Germidis, 1980).

This specific theoretical approach means that any comparisons of degrees of internationalisation must take account of both the extensity and intensity dimensions.

6. Conclusions

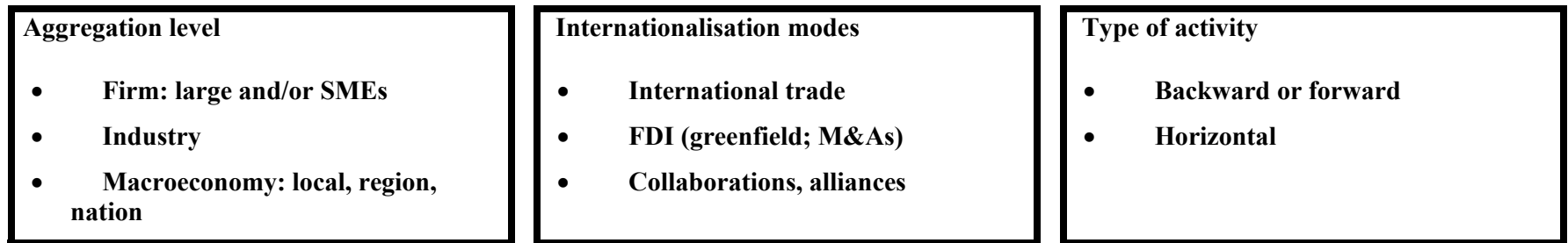
The degree of internationalisation is not a unique concept. It is possible to develop many indices depending on the specific perspective used, on the type of effect we want to assess and on the theory behind effects and causes.

Simple synthetic indicators can be useful and effective for comparisons whether these are cross sections or across time. However, they cannot capture the rich dynamics of connections between **modes** (including their temporal sequences), **aggregation levels** (firm, industry or macroeconomy) and **types of activities** being internationalised. Moreover, the dynamics of many cause/effects and our theoretical approach on them, may require that we take account of both the **extensity** and **intensity** dimensions in assessing the degree of internationalisation.

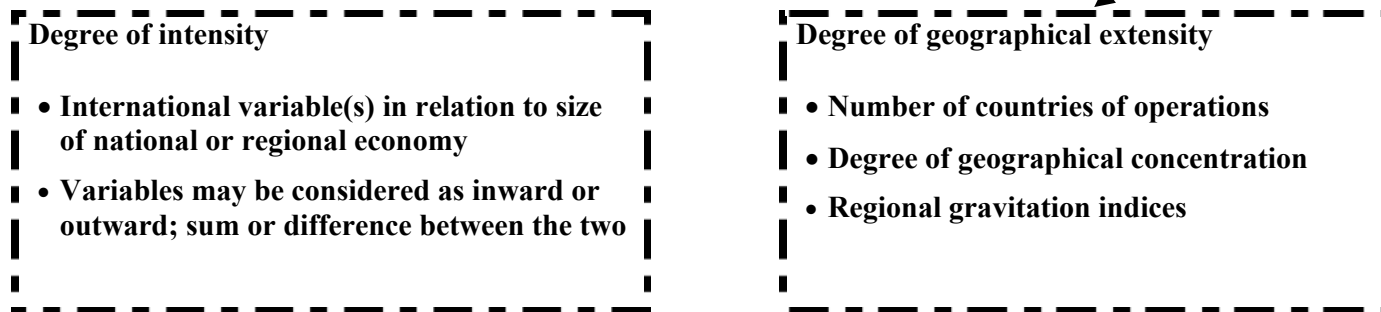
A full assessment of the situation may lead to a variety of indices as well as less synthetic arguments. What is being emphasized here is the fact that: (a) the choice of indices crucially depends on the theoretical approach we have in the assessment of the effects.; and (b) both intensity and extensity dimensions in the degree of internationalisation may be necessary in drawing comparisons and assessing the effects of internationalisation.

Fig. 1 Perspectives on: (A) International Activities; (B) Dimensions of the degree of internationalization

(A)



(B)



References

- Buckley, P.J. (1981), 'A Critical Review of Theories of the Multinational Enterprise', *Aussenwirtschaft*, Jahrgang 36: 70-87.
- Cantwell (1989), *Technological Innovation and Multinational Corporations*, Oxford: Blackwell.
- Cantwell, J. (1994), 'The relationship between international trade and international production', in Greenway, D. and Winters, L.A., (eds.), *Surveys in International Trade*, Oxford: Blackwell, ch. 11: 303-328.
- Cantwell, J. (1995), 'The Globalization of Technology: What Remains of the Product Cycle Model?' *Cambridge Journal of Economics*, 19: 155-174.
- Cantwell, J. (2000), 'A survey of theories of international production', in Pitelis, C.N. and Sugden, R. (eds.), *The Nature of the Transnational Firm*, 2nd edition, London: Routledge, ch. 2: 10-56.
- Davies, G. and Lyons, B. (1996), *Industrial organisation in the European Union*, Oxford: Clarendon Press.
- Dunning, J.H. (1996), 'The geographical sources of competitiveness of firms. Some results of a new survey', *Transnational Corporation*, 5, 3: 1-21.
- Dunning, J.H. and Pearce, R. (1981), *The World's Largest Industrial Enterprises*, Farmborough: Gower Press.
- Funk, M., (2002), 'Basic Research and International Spillovers' *International review of Applied Economics*, 16, 2: 217- 226.
- Germidis, D. (ed.) (1980), *International Sub-Contracting: A New Form of Investment*, Paris: OECD.
- Ietto-Gillies, G. (1989), 'Some indicators of multinational domination of national economies: analysis for the UK and other developed countries', *International Review of Applied Economics*. 3, 1: 25-45.
- Ietto-Gillies, G. (1992), *International Production. Trends, Theories, Effects*, Cambridge: Polity Press.
- Ietto-Gillies, G. (1998), 'Different conceptual frameworks for the assessment of the degree of internationalisation: an empirical analysis of various indices for the top 100 transnational corporations', *Transnational corporations*, 7,1: 17-39.
- Ietto-Gillies, G. (2001), *Transnational Corporations. Fragmentation amidst integration*, London: Routledge.
- Ietto-Gillies, G. (2002), 'Internationalization and the demarcation between services and manufactures. Theoretical and empirical analysis.' Ch. 2 in Miozzo, M. and

Miles, I. (eds) *Internationalization, Technology and Services*, London: Edward Elgar, (forthcoming).

Ietto-Gillies, G., Meschi, M. and Simonetti, R. (2000), 'Cross-border mergers and acquisitions', in Chesnais, F., Ietto-Gillies, G. and Simonetti, R. (eds.), *European Integration and Global Corporate Strategies*, London: Routledge, ch. 3.

Park, W. G., (1995), International R&D spillovers and OECD economic growth, *Economic Inquiry*, 33: 571-91.

Petri, P.A. (1994), 'The regional clustering of foreign direct investment and trade', *Transnational Corporations*, 3, 3: 1-24.

United Nations Conference on Trade and Development – Division on Transnational Corporation and Investment (1995), *World Investment Report 1995. Transnational Corporations and Competitiveness*, Geneva: United Nations.

United Nation Conference on Trade and Development, (2001a) *World Investment Report 2001. Promoting Linkages*, Geneva: United Nations

United Nations Conference on Trade and Development, (2001b) *Measures of Transnationalization of Economic Activity*, Geneva: United Nations.

Sullivan, (1994), 'Measuring the degree of internationalisation of a firm', *Journal of International Business Studies*, 25, 2: 325-42.

Zanfei, A., (2000), 'Transnational firms and the changing organization of innovative activities', *Cambridge Journal of Economics*, 24: 515-42.