Research on globalisation at Statistics Netherlands

Martin Luppes
Program Manager Spearhead International Economic Relations
Statistics Netherlands, Netherlands

Abstract. This progress report outlines the research Statistics Netherlands is carrying out in describing the economic and social effect of globalisation. Effects of economic and social globalisation should not be treated separately in the statistical systems (at either national or international level). Integration of microdata from business surveys, social surveys and government administrations is inevitable for the compilation of microdatasets for research on causal effects of globalisation on welfare and employment. Also substantial information can already be found in existing publications.

1. Introduction

Research on globalisation issues has a prominent place in the Long Term Working Programme (LTWP) 2009 – 2013 of Statistics Netherlands. It is a consequence of the basic question on effects of globalisation as put forward by Dutch policy makers and society: what are the effects of the open Dutch economy on employment and welfare (and what can we do to profit at most of having an open economy). The research starts with the basic assumption that social and economic globalisation should not be treated as separate entities in our statistical research, and that positive as well as negative effects should be taken into account (Van der Veen, 2007). Information on effects presupposes that causal inferences can be made about the relationships between different variables. To put it in other words, information is needed on the outcome of (macro) economic behaviour of enterprises at the individual level of the citizens. What does globalisation mean in terms of having a job, or losing it; what does it mean in terms of income growth, or pension security, etc. In order to find answers on these kinds of questions we need microdata linked at the level of persons, jobs and enterprises. This means in fact matching microdata from business surveys, social surveys and administrative registers, formulating new models using the multilevel data and make causal inferences on the outcomes of the analyses.

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The approach outlined above differs slightly from the approach we carry out in our daily work as statisticians. Practically all of the descriptive statistics as requested by national and international institutions are available in our surveys and registers, and is generally compiled based upon microdata from single sources, such as surveys and sometimes registers. It is very hard to link this type of information from different sources at an aggregated level (different units), let alone to make any causal inferences between those types of information (atomistic and epidemiological fallacy). Aggregates of this type are compiled for national and international overviews and benchmarks, such as defined by National Accounts, the Labour Accounts, the Structural Business Statistics (SBS), Short Term Statistics (STS), and Foreign Affiliate Trade Statistics (FATS) and so on. Initiatives to broaden and to enhance international comparability like the OECD Handbook of Globalisation Indicators, the indicators from the Lisbon agenda (PEEI’s), the FDI statistics, and so on stimulate publication of basic aggregates from single sources.

These two approaches, the linked microdata approach and the aggregated data approach, are central in the research on globalisation issues at Statistics Netherlands (Luppes & De Winden, 2007). In chapter 2 we will give an outline of two projects which represent these two approaches, i.e. the linked employer-employee dataset and the Internationalisation Monitor. In chapter 3 the research projects planned for 2008 are described. The last chapter deals with the unavoidable, but crucial issues with respect to organisation and methodology, necessary to create those results policy makers, scientists and citizens are asking for.

2. Two approaches

The employer-employee dataset

Matching micro data from business surveys with data on characteristics of persons employed by these businesses is used in several studies in the past 20 years. See for overviews for example Bayard et al (2002), Spittal (2002) ONS (2005), Lane & Stephens (2006), Bender et al (2007), and Hamermesh (2007). Most of the studies micro data from persons are imputed in a sampled business survey and do not start with an integrated backbone of businesses and persons.
Statistics Netherlands matches microdata from administrative registers, business surveys and social surveys into a basic backbone of enterprises, jobs and persons. With respect to business surveys and registers many information is stored in the so-called MICRONOME database, a database compiled for analytical purposes amongst others to form a basis for research on globalisation, especially the role of MNE’s (Goedegebuure & Luppes, 2003). Both data from enterprises as well as enterprise groups are combined within this framework. Issues regarding research on globalisation require microdata on various variables such as financial structure, employment, international trade, value added, innovation expenditure and so on. MICRONOME is a harmonized micro database which is intended to be a co-ordination framework for business economical variables and an integration framework for different statistical units. Table 1 gives an overview of the present information within MICRONOME.

Table 1  Overview of integrated surveys and registers and their corresponding statistical units in the MICRONOME database

<table>
<thead>
<tr>
<th>Business survey or register</th>
<th>Survey (S) or Register (R)</th>
<th>Statistical unit*</th>
<th>Contents (variables)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Register (ABR)</td>
<td>R ENT, EG</td>
<td>Economic activity, sizeclass, legal form</td>
<td></td>
</tr>
<tr>
<td>Survey Finances of (non-financial) Enterprise Groups (SFO)</td>
<td>S EG</td>
<td>Balance sheet, profit-and-loss account (e.g. turnover)</td>
<td></td>
</tr>
<tr>
<td>International Trade Surveys (ITS)</td>
<td>S EG</td>
<td>International flows of goods and services</td>
<td></td>
</tr>
<tr>
<td>Annual Production Surveys (APS)</td>
<td>S ENT</td>
<td>Turnover, number of employees, operating expenses, provisions</td>
<td></td>
</tr>
<tr>
<td>Annual Investment Surveys (AIS)</td>
<td>S ENT</td>
<td>Investments</td>
<td></td>
</tr>
<tr>
<td>Survey on Innovation and R&amp;D (CIS)</td>
<td>S ENT</td>
<td>Innovation expenditure, R&amp;D personel</td>
<td></td>
</tr>
<tr>
<td>Survey on Employment and Wages (EWL)</td>
<td>S ENT</td>
<td>Number of employees, average pay</td>
<td></td>
</tr>
</tbody>
</table>

* ENT = Enterprise; EG = Enterprise Group

MICRONOME is a dynamic database from which researchers make an individual selection of variables depending on the goal and hypothesis of his study. Theoretically, almost one thousand variables can be integrated into this framework, coming from the surveys and registers as depicted in the table above. The various surveys contain a
different number of variables and records. For example, the Annual Production Surveys are made up from over 80,000 enterprises containing almost 100 variables. The Survey on Innovation and R&D holds approximately 3,000 enterprises with over 500 variables.

The MICRONOME database is experimental and is based upon cleaned and checked microdata stored in a facility called ESB Base (from which SBS and STS aggregates are compiled). The added value of the MICRONOME dataset is the backbone of enterprises and enterprise groups, which makes it possible to match any microdata from business surveys and registers, as long as there is a matching key variable present. In general this is the business identification number used by the Chamber of Commerce, the Tax Office and the Job Insurance Administration.

To create an employer-employee micro dataset we match the MICRONOME database with micro data on persons occupying jobs. Information on persons is stored in a database called the Social Statistical Database (SSB). The SSB of Statistics Netherlands mainly consists of administrative data on persons, households, jobs, benefits and pensions (Al & Bakker, 2000; Bakker, 2004). It covers the entire Dutch population, including people living abroad but working in the Netherlands or receiving a benefit or pension from a Dutch institution. Various sources with data on jobs are integrated for the SSB database. These sources are among others insurance data, tax data and data gathered from the Dutch Survey on Employment and Wages (EWL). In the SSB, several characteristics on persons are available, such as gender, age, ethnic group, region, position in the household and type of household, (household-)income, position on the labour market and earned wages. At micro level a direct relation between employees and enterprises is established because employees’ social security numbers and administrative enterprise numbers are available together in the administrative sources. Subsequently, the administrative units of enterprises, for example tax numbers, are translated into statistical units of enterprises. For each enterprise, data on characteristics of its employees can be compiled. The SSB is a very useful tool in revealing dynamics on the labour market because this framework contains data on all participants in the labour market (employees, self-employed persons, freelancers) over different periods of time.

In order to assess the analytical possibilities of matched microdata for studies on effects of globalisation, we carried out a pilot study using 2002 and 2004 data from the previously described MICRONOME and SSB databases. We linked enterprises and jobs
using information from the Job Insurance Register and the Business Register. All persons with an official employment contract at a registered enterprise are recorded in the SSB database with a job. For each enterprise, jobs are adjusted for part-time and duration factors, resulting in number of man-years expressed as Full Time Equivalents (FTE). Furthermore, several other variables can be aggregated per enterprise, among others average pay, number of female employees, number of employees older than 50, number of highly paid employees etc. In this way, by linking two major databases, a new framework is established, enabling analyses and output to be generated on the relation between business data and jobs of persons and their social background variables. For more information we refer to the FCSM paper of De Winden, Arts & Luppes (2007).

The aggregated data approach: the Internationalisation Monitor

As well at national as at international level a lot of efforts are being made in order to publish information on globalisation trends and effects in a coherent and consistent way. From an international perspective the OECD Handbook on Globalisation Indicators (OECD, 2005) is an important and major piece of work. The Handbook identifies a wide range of indicators of globalisation, clustered in four different chapters regarding international trade, foreign direct investment (FDI), international flows of knowledge and technology (research and development), and the operational activities of multinational enterprises (MNE’s), thus covering the main dimensions of (economic) globalisation. However, the proposed indicators are aggregated at country level, and some indicators, relevant at national level but not at international level, are not present.

The Internationalisation Monitor as set up by Statistics Netherlands is based on both indicators from the OECD Handbook and indicators proposed by the Dutch Ministry of Economic Affairs. The Internationalisation Monitor is in essence a collection of indicators with clear explanations and annotations, paired with a substantial section of analytical work that describes the main findings and trends, and explores relationships between the various globalisation variables and key economic and social outcomes (e.g. productivity, economic growth, employment and wages).

The aim of the Internationalisation Monitor is to monitor a) the extent of globalisation of the Dutch economy, and b) the consequences of globalisation for employment,
welfare and economic growth. The indicators are compiled from existing datasets within Statistics Netherlands, which are a) mined for existing measures of international activity and b) linked at the micro level in order to construct new and insightful indicators of globalisation. Following the OECD Handbook of Globalisation Indicators, the Internationalisation Monitor consists of four main chapters, on international trade, foreign direct investment, the internationalisation of technology, and operational statistics of multinational enterprises (both Dutch firms investing abroad and foreign firms within the Netherlands).

The indicators are broken down by economic sector and/or type of control (foreign controlled vs. domestically controlled). A gross list of 120 indicators is defined of which about one quarter will be published in 2007, as well on the website of Statistics Netherlands (http://www.cbs.nl) and in the form of a pilot hardcopy publication “Key Figures Globalisation”. The remaining indicators will be published from 2008 on. Both data and number of indicators will be periodically updated (periodical data) and upgraded (number of indicators). For more information we refer to Fortanier (2007).

3. Research projects in 2008

3.1 Background

A substantial part of the research on globalisation is concentrated in a research program called International Economic Relations. In order to carry out research within Statistics Netherlands annual applications have to be made in the form of research proposals. On basis of a review of strategic policy documents, official advises of governmental advisory boards, and consultation of stakeholders like central planning offices we have defined three research projects to be carried out with priority in 2008. These are:

A. Research on the dynamics of enterprises and its effects on labour mobility.

B. Research on internationalisation of R&D

C. Research on (macro) economic trends and effects of globalisation.

The research is additional to the work already started up within the two approaches mentioned in chapter 2.
3.2 Dynamics of enterprises and its effects on labour mobility

Labour mobility and increasing labour participation are regarded of utmost and growing importance to ensure economic growth. Increasing (international) competition and shorter life cycles of both products and services put a pressure on jobs in terms of shifting qualifications and the sheer existence of jobs. The dynamics of job creation and job losses is increasing, and is related to the internationalisation of financial markets, product markets, the technological progress (innovation) and organisational changes (such as changes in the product value chain, mergers and acquisition, and so on).

In statistical sense the basic idea behind the information demand with respect to effects of enterprise behaviour and their outcomes is taking characteristics of enterprises into the models of social dynamics. Until now the (dynamics of the) demand side of the labour market was either not part of the models or was controlled for in a fixed way (to select subpopulations of jobs for example). Pilot research at Statistics Netherlands showed that matching of microdata from social surveys, business surveys and administrative registers will lead to a whole new set of research opportunities (Winden & Luppes, 2006). It also fits in the strategy of Statistics Netherlands to integrate information from business statistics and social statistics (Van der Veen, 2007).

Because of the wide spread range of research opportunities we start in 2008 with a pilot study in which we investigate what the possibilities and restrictions are when using matched (hierarchical) microdata. For example, relevant enterprise characteristics such as financial structure are lagging at least 1 year behind of relevant job data. This implies design and estimation problems. The basic research questions are of both methodological and conceptual nature. The methodological questions address the analysis of multilevel data (rewighting procedures, estimation of flows and transitions), where as the conceptual questions address the issue of offshoring and outsourcing (Hatzichronoglou, 2006). Using the European questionnaire on offshoring and outsourcing we try to identify an direct estimation model of effects of offshoring. These results will be compared with results of an indirect method of estimating offshoring effects (see for examples Aubert, Rathelot & Sillard, 2007; Jannson, 2007). In order to share best practices and to develop a stable and effective methodology Statistics Netherlands has proposed the DGINS assembly to organise an international expert meeting on this topic.
3.3 Internationalisation of R&D

The Advisory Council for Science and Technology, one of the strategic advisory councils for the Dutch government, advised the Dutch government to formulate explicit policy measures to strengthen innovative power of the Dutch economy. One of the results of a broad literature review carried out by the Advisory Council revealed a lack of information on characteristics of knowledge based enterprises and their local embedding (or regional impact on labor market and education level). So one of the advices of the Advisory Council for the Dutch government was to give more attention to the compilation of relevant statistics on this subject. It is seen as crucial for the Ministry of Economic Affairs in order to maintain direct relations with the (international) enterprises with respect to government investments at different levels.

Structural and coherent information on trends, causes and effects of internationalization of R&D is important in political and societal debates about the innovative power of a country, both in terms of innovation policy itself and establishment policy. The Advisory Council summarizes the basis questions on this issue as follows: “Why do countries want to have company R&D within their borders? What is the significance of company R&D for the national economy? Why is it important that the company R&D is carried out in the Netherlands? Its relevance for employment is relatively small. It concerns mostly highly educated jobs with some radiation affects (for every highly educated job on average two lower educated jobs are created), but it nevertheless represents small numbers. […] Establishing company R&D does not necessarily mean that the local economy will benefit. The best place for R&D is not necessarily the best place for production. Results of R&D in one place might well be more productive on another place. So, what will the country benefit from having knowledge production within their borders?” (translated citation from the report of the Advisory Council for Science and Technology).

In 2008 we will elaborate on these questions with a project that focuses on three major issues. The first issue is the identification and compilation of relevant indicators to monitor trends in internationalization of R&D. These indicators will be part of the Internationalization Monitor (see chapter 2). The second issue is the analysis of the most important causal factors of internationalization of R&D, both inward and outward (respectively foreign companies investing in the Netherlands and Dutch companies investing in foreign countries). The third issue is the analysis of the effects of internationalization of R&D on employment and welfare.
3.3 **Trends and effects of economic globalisation**

The growing international entanglement of both capital and trade flows generate several and different effects on the capital markets and economical sectors of a national economy. Confronted with this wide range of effects and, above that, growing uncertainties how to handle positive and negative effects, the Dutch government asked the Social Economic Council to give insight in the effects of globalisation on the Dutch economy and society. Statistics Netherlands is asked to participate in this project. Given the multidimensional aspects of globalisation and its effects on economical, social, political and technological terrains we narrowed the scope of the 2008 project to the effects of economic globalisation.

The project ‘Effects of Economic Globalisation’ focuses on the relationship of specific dimensions of economic globalisation: international trade, foreign direct investments and operational activities of MNE’s are the most important indicators of globalisation which are analyzed in a multivariate models. Given the fact that effects of globalisation are dependent on the context in which they take place (the balance of costs and benefits differs among sectors, groups of employees, types of investments, and local circumstances) a lot of attention will be given to the circumstances under which globalisation generates benefits.

The models use productivity and economic growth as dependent variables. For the analysis of the models matched microdata will be used from the survey on Finances of Non-financial Enterprises, the Business Register and the Annual Production Statistics. In specific cases microdata from the Community Innovation Survey and employment data will also be used.

4. **Issues in organisation and methodology**

It has frequently been indicated that globalisation poses a range of challenges for national statistical offices. Two of the most prominent ones include first of all, the implications of globalisation for the construction of macro-economic indicators, including the national accounts and balance of payments. At this moment Statistics Netherlands is chairing the Working Group Globalisation effects on National Accounts (WGNNA). This working group, initiated by the UNECE, will advise on the problems
of the compilation of National Accounts due to globalisation effects (or its effects in the measurement of the underlying economic surveys). So we will leave this challenge to the working group.

The second main challenge relates to the measurement of globalisation itself, including its effects on national economies, employment, local firms, economic growth and overall welfare. These processes are fundamentally micro-level phenomena, and hence require datasets and indicators at that level of analysis.

Although the two challenges are fundamentally related – the macro-economic indicators essentially constitute the sum of all micro-economic processes – they require different approaches with respect to the collection, adjustments, and use of data. The Dutch experience so far shows that several important principles help in compiling high quality data, for the appropriate indicators, in a resource-efficient manner:

A. The re-use of existing datasets.

Our experience until now shows that a careful examination of what is available in the various datasets, will lead to new tables of information. For example longitudinal data was already available on a (limited) number of variables that measured in one way or the other, one of the international dimensions of corporate activity such as the nature of ownership of an entity (foreign versus domestic), the extent of trade, including intra-firm trade, or the ownership of foreign assets. Using these indicators as relevant stratification variables in the datasets within which they were collected already provided a substantial number of very interesting measures of globalisation.

But linking these internationalisation variables with data from other micro-level datasets will exponentially increase their use. In the Dutch case, particularly relevant results are expected from the links between financial, production, and innovation statistics. Existing (preliminary) findings suggest that it is also feasible to link individuals (jobs) to firms (see also De Winden, Arts and Luppes, 2007), hereby allowing for an analysis of the employment effects of globalisation, including e.g. off-shoring.

Therefore, a substantial amount of statistical and analytical work can hence be done without increasing the administrative burden on firms by including
additional items in the questionnaires, with the added advantage of readily available longitudinal data.

**B. Cooperation with other data gatherers.**

The collection of globalisation indicators crosses all traditional organizational borders within statistical offices, as well as between institutions. A full grasp of globalisation is only possible by identifying, using, and pooling the heterogeneous strengths of the variety of organizations active in gathering data on related issues. These organizations include not only the central banks and international organizations, but also specialised public or private research institutes (in the Netherlands, for example the Economic Institute for SME’s). Also data sources that are compiled for commercial use (e.g. Dun and Bradstreet, Thomson Financial) may provide interesting additional information, for example in the pilot studies on inward and outward FATS (see FATS Recommendation Manual).

**C. Changing roles: from data collectors to data analysts.**

Globalisation calls for a greater emphasis on analysis and interpretation of the data in the work of NSI’s, because both the phenomenon itself and the data used to describe it are extremely intricate.

First of all, the debate among policy makers and academics on globalisation and its effects is both multifaceted and complex. Globalisation therefore requires NSI’s to invest strongly in conceptualization of the main concepts and relationships in order to identify what indicators are most relevant in the policy debate, and to clarify the findings. Outstanding work already has been done by the OECD with the publication of the OECD Handbook on Globalisation Indicators (OECD, 2005). Any NSI can take these indicators and publish these with a more detailed and for the national economy relevant stratification (see chapter 2). In complex debates like the ones on globalisation, statistical offices should prevent as much as possible that partial or incomplete (and hence sometimes wrong) conclusions are drawn on the basis of the data provided by them.

In addition, the data that is required to correctly describe and analyze all facets of globalisation is often more difficult to collect and aggregate. This implies that
data may be less inclusive (small samples instead of nearly entire populations); applicable only to a relevant but special subset of firms; require a different treatment of extreme observations; and represent approximations of key (theoretical) concepts rather than exact measurement of easily identifiable indicators.

These two trends combine to imply that while the (traditional) publication of data tables is still necessary, it is not sufficient to adequately inform users about the nature and consequences of globalisation. In order to correctly interpret the data it is necessary to firstly, explain very carefully the data that were used to compile the statistics, and secondly, to explain explicitly the key conclusions that can be drawn from the data (also in light of their limitations).

The above mentioned principles mark an important change in the way we make our statistics. It is not merely a matter of large datasets and fast software; it also challenges us to change our way of thinking. Several issues have to be addressed and to be solved:

1. **Conceptual and methodological issues**; the availability of integrated microdata on enterprises and persons *facilitates the research* on effects of globalisation based on comprehensive models on economic and social dynamics. The selection of units and variables *requires recalculation* of weighting factors, depending on the unit of analysis and the corresponding population frames. Another methodological aspect is the application of hierarchical data models. Traditionally, this methodology is not part of the day-to-day statistical work, which is mostly concerned with non-hierarchical datasets and models. So efforts will have to be undertaken to train staff in this type of analysis.

2. **Organisational issues**; in order to access and maintain the vast amount of microdata, dispersed over a wide variety of files and metafiles, a systematic method of processing and compiling microdata-sets for specific analysis is required. Statistics Netherlands is carrying out important redesigns of its statistical processes (the Masterplan and the Redesign of Economic Statistical Processes) in order to cope with the new demand for consistent and timely microdata.
Generally, the role of the NSI as an ‘intermediate’ in public information services will intensify, while at the same time it will retain a more or less constant position as the provider of ready-made tables and standardised statistics for the general public.

5. References


