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The puzzle of measuring global value chains – The business statistics perspective☆

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ABSTRACT

Measuring Global Value Chains (GVCs) is recognized as a prioritized but complicated challenge for statistical offices as the concept is complex. GVC's are difficult to measure due to interlinked cross border relations of goods, services, labour and capital at the level of the individual enterprise. A focal point in GVCs is the relationship between enterprises and currently only few statistics measure directly linkages between enterprises (e.g. FATS statistics) and new types of statistical evidence needs to be developed by linking different data sources at enterprise level. Measuring GVCs consists of a number of conceptual and methodological aspects which need to be combined in an analytical framework. Pieces of the puzzle exist or are being developed already today, e.g. the Trade in Value Added (TiVA) concept, Trade by Enterprise Statistics (TEC), or Foreign Affiliates Statistics (FATS) which constitute elements of a measurement framework under elaboration but other elements are still missing, such as information on business functions, governance structures and network relations. This paper presents results of recent initiatives in business statistics within the European Statistical System addressing different aspects of GVCs by different approaches; partly by launching a new survey on international organisation and sourcing of business functions, and partly by linking existing statistical registers at enterprise level. Finally, the paper identifies new activities to be launched by the statistical community in order to improve the measurement of GVCs.

1. Introduction

The division of labour and accompanying specialization have been main drivers of economic growth through history. Where international trade was involved, this allowed reaping the gains from comparative advantage as described by David Ricardo (Ricardo, 1817). Traditionally, this was thought about in terms of vertically organized supply chains within a domestic economy and international exchange of final goods (international trade in services has become important only more recently) (Baldwin, 2011). However, since the Mid-eighties, supply chains have been increasingly split up, with transactions costs falling as a result of, not least, plummeting costs of ICT and allowing market transactions to substitute for internal, hierarchical organisation as discussed by Oliver Williamson (Williamson, 1985). Lower trade and investment barriers, liberalized domestic markets, cheaper transportation and communication, and lower costs of information allowed the unbundling of value-chains to become international in nature, with the concept of "trade in tasks" entering trade theory (Grossman and Rossi-Hansberg, 2006). Indeed, the geographic and organizational unbundling of the value chain is occurring across core goods- and services-producing activities, as well as support services such as ICT, back-office functions, and even R & D. Well-known examples of production dispersion are production of aircrafts or mobile

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phones where the value chains are globally organized.

The increased global organisation and fragmentation of value added chains constitute one of the most important and complex measurement challenges for economic, business and trade statistics. It involves fundamental measurement issues such as the relevance of different statistical units, monitoring of ownership structures and dealing with transfer pricing and double counting in global trade. These new challenges related to global value chains (GVCs) come on top of the "classic" problems of measuring services due to their intangible character and the dynamic content. Furthermore, while the main focus of national statistical institutes is on domestic economic events, GVCs are to a large extent based on cross-border transactions and business linkages.

The good news is that new definitions and tools are being developed to capture these new patterns at both the macro level (e.g. Trade in Value Added (TiVA)[1] and other international input-output datasets) and at the micro level (e.g. business function surveys or Micro Data Linking exercises utilizing existing statistical registers that seek to measure and understand firm heterogeneity and performance in the context of GVCs). Over the long run, new information on business function sourcing and better use of existing data will feed into and improve international input-output datasets such as TiVA, but much is left to be done before current data gaps can be filled and an understanding of the impacts of GVCs on our economies gained (Sturgeon, 2013). Understanding interdependencies within global value chains are key to explaining the competitiveness of enterprises and the potential productivity gains that can be achieved.

This article utilizes the results of two projects within the European Statistical System addressing the issue of measurement of global value chains from two different perspectives and two different methods but both of innovative character. The first project is based on a traditional survey approach but introducing the collection of new variables for the production of statistics in the form of opening up the black box of the enterprise by collecting information about the different business functions carried out by the enterprise. The second project is innovative in its method by establishing tailor-made national databases with harmonized contents to be used for Micro Data Linking (MDL) in nine European statistical offices. This method allows for analysis based on firm level data of the internationally trading enterprises and their possible heterogeneity related to type of trading or ownership.

2. The concept of business functions

Business functions can be conceived as an aggregation of certain tasks/products carried out by the enterprise. They are equally applicable to goods-producing and services-producing enterprises. The concept is similar to the concept of occupations, but is focused on business activities rather than the activities of individual employee (a specific business function will typically involve a range of job categories and tasks) (Lanz et al., 2011). For the purpose of statistical surveys, business functions can be defined in terms of international product classifications such as Central Product Classification (CPC) or Classification of Products by Activity (CPA), Extended Balance of Payments Services classification (EBOPS) or Harmonized commodity description and coding System (HS). However, since any business function can be the main output of an enterprise (for example for enterprises that provide manufacturing services, R & D and engineering services, customer contact services, etc., for other firms), business functions can also be linked to activity (industry) codes such as NACE, ISIC, and NAICS.

The concept of business functions is a new tool in the statistical toolbox. Business functions offer statisticians a set of generic, easy-to-understand categories that describe the various activities carried out by enterprises, irrespective of their main economic activity. Business function statistics are needed because enterprises, in addition to producing the goods or services from which they earn their revenues, typically require a variety of service functions to support their core line of business. The motivation for recent business function surveys stems from the relatively new business practice of outsourcing either domestically or internationally support functions such as customer contact services, software coding, and "back-office" functions such as payroll and document management (Sturgeon et al., 2012). In some instances, even the R & D process has been fragmented and relocated, with various related activities interlinked via cross-border ICT systems. The growing potential for trade in such ICT-enabled services necessitates new approaches to collecting business and trade statistics due to the intangible character of these services. Outsourcing of services, as well as the rise of manufacturing services, has generated a need for approaches that can "look inside" the enterprise to measure activities beyond the core business function in order to better understand firm heterogeneity.

As discussed further below, the first official survey to introduce the concept of business functions in a statistical context was the European survey on International Sourcing, initially carried out in 2007 and repeated in 2012. Statistics Canada used a similar approach in 2009 and 2012 in its Survey of Innovation and Business Strategy (Industry Canada, 2011).

Because of this work, the business function concept has now been proven effective in several contexts. The results are unambiguous. Questions about business functions are well understood by enterprise managers and the results from surveys have begun to provide useful insights into important policy questions. For the first time, the extent and character of outsourcing can be known for entire enterprise populations, and the relationships between international sourcing and employment and wages have begun to be explored using direct firm-level evidence (Brown et al., 2013; Nielsen and Luppes, 2012).

Business function statistics can be used to inform a wide variety of research and policy questions. So far, business function surveys have mainly been used to examine firm-level patterns of domestic and international sourcing. International sourcing surveys using a business function framework have been able to answer basic, yet important policy-relevant questions such as: What are the main business functions that are internationally sourced, and where are they sourced? (Eurostat, 2013). Are enterprises mainly

[1] The OECD-WTO Trade in Value Added database is based on Inter-Country Input Output tables, cf. http://www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm