



Book of Abstracts

**WIOD Conference: Industry-Level
Analyses of Globalization and its
Consequences
Vienna, May 26-28, 2010**

Day 1

Session: Session 1 (Plenary)
Date: Wednesday, May 26
Time: 9:30-11:00
Location: Main Hall

Global Manufacturing and International Value Chains: Policy Implications and Informational Gaps

Alejandro Jara

Abstract:

In recent years, the raise of global manufacturing meant that the production of final goods has been fragmented into several stages, some of them outsourced to countries far away from the home country. The geographical fragmentation of the value chain determined a structural change in international trade, from the old concept of "trade in goods" to a new "trade in tasks" paradigm. Old concepts like "country of origin" or resident vs. non-resident lost its their analytical relevance. Defining and conducting trade policy in today's world call for a new measurement of trade flows based on Value Added, which indicates the domestic content of exports, after subtracting direct and indirect imported inputs.

In order to produces the new statistics required by the measure of the value added content, trade statisticians need to related trade flows with the international supply-use tables produced by WIOD in order to obtain the international input-output matrices that better describe global manufacturing. The presentation will show the implications of the alternative measure in value added for better understanding some recent international economic issues.

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WIOD. Why WIOD?

Erik Dietzenbacher

Abstract:

After a very brief overview of the WIOD project, I will go into the question why intercountry input-output tables at a global level have become a necessity. In so doing, I will discuss two exemplifying cases, the calculation of CO₂ emissions necessary to satisfy all "final consumption" in a certain country and the measurement of vertical specialization. For the case of the CO₂ emissions, I will analyze the errors that occur when a full intercountry input-output table is not available and only part of the information can be used. The analysis is closely related to the question how the rest of the world should be treated (or estimated), because a full intercountry input-output table covering all countries in the world is beyond the reach of WIOD and similar projects, and there will always be a rest of the world. For the case of vertical specialization, I will investigate how it might be appropriately measured in an intercountry input-output framework. The issue is closely related to the question whether "ordinary" input-output tables allow for an adequate measurement of vertical specialization. Answering this question is beyond the current WIOD project, but poses a challenge for a future WIOD.

Session: Session 2A (Parallel)
Date: Wednesday, May 26
Time: 11:30-13:00
Location: Hall 1

WIOD Data on Trade in Services: Data Issues and General Patterns

Joseph Francois

Abstract:

Services trade is an important component of total cross-border trade. It also presents unique challenges related to data coverage and data quality. This paper discusses available data on bilateral services trade. This includes issues of aggregation and mapping across different concordances. It also examines the extent to which mirror flows can be used to construct a more complete picture of bilateral services trade.

Finally, the shape of available data, when mapped to WIOD regions and sectors, is also discussed.

Session: Session 2A (Parallel)
Date: Wednesday, May 26
Time: 11:30-13:00
Location: Hall 1

A Time Series Database for Global Trade, Production and Consumption Linkages

Zhi Wang, Marinos Tsigas, Jesse Moras, Li Xin & Daniel Xu

Abstract:

This paper develops a mathematical programming model integrating individual country input-output (I-O) tables with detailed bilateral trade statistics through a three-stage optimization procedure to produce a consistent annual world I-O database. The global balanced trade and I-O statistics are obtained as a solution to a system of simultaneous equations that minimize a quadratic penalty function. At the first stage, we fill the missing I-O data between benchmark years for countries that do not have annual I-O statistics, using industry level annual production and trade data as controls. At the second stage, the model is used to reconcile IMF reported country total merchandise and service trade statistics with each country's total exports to and imports from the world at sector level reported in its I-O tables. At the third and final stage, the model distributes each country's total exports in every industry into its trading partners based on bilateral trade share computed from UN COMTRADE database (as initial value), taking each country's total exports to and imports from the world derived from the second stage as controls and adjusting their distribution among the partner countries to produce a consistent annual global inter-country input-output table. The initial allocation of bilateral trade flows in each industry to intermediate and final uses is based on UN BEC method. The model can be used annually to update the world I-O table when industry level production and trade statistics become available.

The paper documents all the data sources used to initialize the model in constructing the database. It includes all OECD countries and important non-OECD economies such as Brazil, China and India from 1996 to 2005.

This time-series database integrates global trade, production and consumption statistics in a consistent accounting framework. It provides a benchmark for dynamic AGE model calibration and baseline validation. In addition, it is particularly useful for the analysis of vertical specialization in global production and the interactions between different industries at different geographic locations that contribute to the same industrial value chain.

Session: Session 2B (Parallel)
Date: Wednesday, May 26
Time: 11:30-13:00
Location: Hall 2

Linking Environmental Indicators with Economic Data

Andreas Löschel, Michael Schymura & Sascha Rexhäuscher

Abstract:

The present paper explores criteria to select adequate environmental indicators to employ in work package seven (WP7) of the WIOD project. The selection of these indicators crucial depends on whether they allow a decomposition of their determinants by using structural decomposition analysis (SDA). The SDA of environmental indicators allows shedding some light on the environmental implications of structural change and globalization, which is the main goal of WP7. In environmental economics, the relation between environmental issues and globalization of structural change is often considered by addressing environmental pressure to specific economic agents. For instance, in the case of the ecological or carbon footprint indicator, different nation's consumers' contribution to environmental pressure is considered. Such indicators are very prominent in input-output frameworks but they suffer from needing strong value judgments with respect to the responsibility of environmental pressure. It will be discussed, whether such indicators can be used to meet the target of WP7 of the WIOD project. Therefore, the present paper will present arguments why only very simple indicators, like total environmental pressure by country, should be used and how they can be broken down into their influencing effects. A special focus will be on the "technique effect" where we will employ indicators for analyzing its dynamics.

Session: Session 2B (Parallel)
Date: Wednesday, May 26
Time: 11:30-13:00
Location: Hall 2

The Role of Interbranch Competitiveness in the Economic and Ecological Development of Russia

Vadim Gilmundinov & T. Tagaeva

Abstract:

In this paper scientific research is devoted to analysing and forecasting the economic and ecological development of Russia by using an Input-Output (I-O) approach¹. One of the purposes for this investigation is to explore the conditions of competitiveness in the industries taking into consideration not only production characteristics, but also estimates of industry pollution loading. For this purpose we use an I-O dynamical model of the Russian economy with ecological parameters. This model apparatus allows the forecast of the level of emissions and the volumes of waste water disposals depending on the economical development of Russia.

The forecast of ecological-economic development of the Russian Federation till 2012 have been constructed. Two scenarios of the forecast (basic and optimistic) were based on the following basic assumptions: According to our hypotheses, under the basic scenario, the year 2011 would be a period of transition from the state of crisis to economic growth. The growth rate of GDP would account for 5.4%. According to the optimistic scenario, the recovery of the economy would be more intensive than under the basic scenario: turning-point from crisis to economic growth will be in 2010, GDP would grow by 8.2% in 2011. Under both variants of the forecast, the Russian economy would enter the path of economic growth similar to the one of 2000-2007 only in 2012. The results of forecast calculations with using ecological block of the model show us some changes in the industry structure of water pollution and emission according to both scenarios.

Also based on full-costs I-O approach we have estimated full pollutant emissions coefficients of main branches of Russian Economy. The analysis of coefficients shows that full pollutant emissions level is very various between Russian branches. The key pressure on Russian environment comes from the heavy industry, energy and transport.

¹ The Input-Output Dynamical model of Russian economy with ecological parameters is creating in the Intersectoral Research Department of Institute of Economics IE SB RAS since end of 70.

Session: Session 2B (Parallel)
Date: Wednesday, May 26
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Global Effects of a European Environmental Tax Reform

Christine Polzin, Christian Lutz & Stefan Filjum

Abstract:

Environmental tax reform (ETR) can be used to achieve a more sustainable development by increasing the prices of materials, energy and greenhouse gas emissions, while lowering the tax burden on labour. It may thus reduce resource consumption as well as CO₂ emissions. So far, experiences with ETR have been limited and national in scale. This paper analyses the potential economic and environmental implications of an ambitious and far-reaching ETR implemented at the level of the EU and its main trading partners (US, China, etc.). Three different policy scenarios are analysed with the global multicountry/multisector econometric model GINFORS (Global INterindustry FOrecasting System). GINFORS links macroeconomic models for 50 countries and 2 world regions (OPEC, Rest of the World) through bilateral trade. The model system also includes input-output (IO) tables for the most important economies covering 80% of global GDP and physical modules on energy use, material input and greenhouse gas emissions. Main data sources are the OECD (IO tables, trade data), the IEA (energy and emission data) and the Global Material Flow Database of SERI (www.materialflows.net). The results show that unilateral action by the EU only makes a small contribution to EU resource security and is insignificant in terms of global environmental sustainability. A larger ETR in the EU and in other major economies in the context of global cooperation produces more substantial results, reducing global material extraction by around 5% and global CO₂ emissions by more than 15%, while reducing world GDP by only 1.4%. The results show that in a cooperative global context, the economic impacts of a major ETR are small but that the environmental benefits can be much more significant than in a scenario of unilateral action in the EU.

Session: Session 3A (Parallel)
Date: Wednesday, May 26
Time: 14:30-16:00
Location: Hall 1

Regional Integration or Disintegration in the World Production Process? Alternative Measures of International Production Networks

Bo Meng & Norihiko Yamano

Abstract:

Using a global multi-country I-O database (1995-2005, preliminary version at the OECD), this paper explores the evolution of international production networks and regional integration. Firstly, bilateral trade in goods and services data are separated by intermediate and final demand components to identify the hubs of international trade clusters. Secondly, we propose various measures of vertical specialization, not only according to demand-driven I-O models but also based on supply-driven models, and then use them to show how international fragmentation has evolved and the role of each country's or country group's products in the global supply chain. Thirdly, we propose a network complexity indicator to show the extent to which regions or countries have experienced hollowing out or mutually beneficial specialization (increased imports of specific products or distributed over industries). Our results indicate that the scope and degree of the ongoing process of regional integration are very different across regional blocks (EU, NAFTA, and Asia).

Session: Session 3A (Parallel)
Date: Wednesday, May 26
Time: 14:30-16:00
Location: Hall 1

Trade in Value Added and Global Production Networks: Contribution to a Structural Interpretation of the Great Trade Collapse

Hubert Escaith

Abstract:

Since the end-1980s, trade and production have been increasingly interlinked, thanks to the vertical integration of industrial production processes through outsourcing and off-shoring. The organization of firms in global supply chains has changed the way international economics is traditionally understood. Despite important advances, the analysis is still lacking appropriate models and data to understand and measure appropriately this new dimension of globalization. The presentation will propose a structural approach to measuring trade in value added. Building on Asian Input-Output tables and trade statistics, it will also shed some light on the contribution of international supply chains in increasing trade volatility and macroeconomic vulnerability since the late 1980s, with a special emphasis on the 2008-2009 trade collapse. After reviewing the available evidences, the presentation will analyse the future role of globalized production networks in a post-crisis scenario, with particular references to rebalancing and development.

Session: Session 3A (Parallel)
Date: Wednesday, May 26
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China's New Growth Strategy and its Impact on International Trade

Francois Lemoine, Guillaume Gaulier & Deniz Unai

Abstract:

The paper starts from the assumption that China's economy has to shift from an export-led to a domestic-led growth in order to ensure its long term development, and explores the consequences of this strategic shift. First, the changes in international demand is likely to slow-down China's processing trade activities (assembly) which have been a major engine for the growth of several industries and provinces. Second, domestic demand will become China's major import driver and the needs of local consumers and firms will take the lead over the Western consumers in determining the composition of China's imports and the suppliers. Moreover, exports to emerging economies will presumably take the lead over exports to advanced economies.

The research uses a detailed data base derived from China's customs statistics, covering the past ten years (1997-2007) and providing a breakdown of exports and imports according to several criteria: custom regimes (assembly trade and ordinary trade), the types of firms involved in exports and imports (Chinese state-owned and private firms, foreign firms and joint-ventures), provincial location of exporters and importers, the classification of the traded goods by industry and their position in the production processes (stage of production).

The paper investigates how the different actors in the foreign trade sector (industries, regions, foreign and domestic firms, partners,) are to be affected by the new international context and the change in the Chinese growth strategy. Preliminary findings indicate that what is at stake is the spatial integration of China's economy (relations between outward-oriented and inland provinces), the technological catch-up of the domestic-based industry, and the strategy of foreign firms in strengthening their involvement with local production and trade networks. Whether China's demand can become an engine for Asian regional growth is an issue that will be addressed.

Session: Session 3B (Parallel)
Date: Wednesday, May 26
Time: 14:30-16:00
Location: Hall 2

Does Offshoring of Materials and Business Services Affect Employment?

Bernhard Michel & Francois Rycx

Abstract:

The fear of massive job losses has prompted a fast-growing literature on offshoring and its impact on employment in advanced economies. This paper examines the situation for Belgium. It improves the offshoring intensity measure by computing a volume measure of the share of imported intermediates in output. This is done using a time series of constant price supply-and-use tables for the years 1995 to 2003 that include use tables of imports. Moreover, it is among the first to address both materials and business services offshoring to high-wage and low-wage countries combining the supply-and-use data with data on imports by country and product. Estimations of static and dynamic industry-level labour demand equations augmented by offshoring intensities do not reveal a significant impact of either materials or business services offshoring on total employment for Belgium between 1995 and 2003. This result holds for both the manufacturing sector and the service sector and it proves robust to splitting the manufacturing sector into high technology and low-technology industries.

Session: Session 3B (Parallel)
Date: Wednesday, May 26
Time: 14:30-16:00
Location: Hall 2

A note on input-output linkage measures

Umed Temurshoev

Abstract:

In this note we consider six widely used input-output (IO) linkage measures in both the traditional and (less used) generalized IO settings. We show that all the linkage measures are closely interrelated, and derive the closed-form expressions for the so-called hypothetical extraction linkages. Finally, we propose a net forward linkage indicator as a “counterpart” of Oosterhaven and Stelder’s (2002) net backward linkage, and consider how it is related to other linkage measures.

Session: Session 4 (Plenary)
Date: Wednesday, May 26
Time: 16:30-18:00
Location: Hall 2

WIOD: Current State and Challenges Ahead

Marcel Timmer

Abstract:

In the past year the WIOD-consortium has feverishly worked on compiling a preliminary version of a World Input-Output Table with additional socio-economic and environmental accounts. In this presentation I will briefly indicate the differences between the WIOD and similar existing databases. Then I give an overview of what has been accomplished so far in terms of data gathering and compiling, and development of new methodologies. Finally, an overview of the main issues to be addressed in the upcoming years is presented, setting out the agenda for the next phase in construction of the WIOD.