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research update

No. 1, 2006

Research and Statistics Branch



With the refinement of the Organization's structure, this past February, UNIDO's research and statistics activities have become much leaner and more focused, with increased emphasis on their quality, relevance and originality. This first number of *Research Update* highlights the latest activities of the Research and Statistics Branch. Two articles, on determinants of productivity and analysis of energy supply and demand, launch a new series of staff working papers designed to inform policy direction as well as support technical cooperation with Member States.

A newly developed methodology for assessing sustainable industrial growth offers a standardized means for the Organization's field offices to carry out systematic analyses of the state of individual countries' industrialization and, thereby, provide more effective policy advisory services. At the same time, they can have a major impact in helping to guide the future direction of UNIDO's programmes and corresponding corporate strategy.

A thought-provoking presentation on globalization and development strategies, organized by the Branch with Heiner Flassbeck, Director, Globalization and Development Strategies, UNCTAD, charts a potential course for developing economies to navigate successfully between the hazards of floating and fixed exchange rates. His analysis implies the importance for development agencies such as UNIDO of taking a holistic approach by looking, first, at macroeconomic conditions before going into detailed analysis of conditions in specific countries.

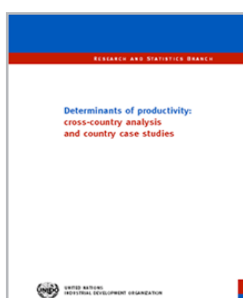
Research Update offers a glimpse of two series of studies completed in 2005 and released in 2006.

This maiden number of the newsletter rounds up by previewing the 2007 edition of UNIDO's flagship statistical publication as well as giving an insight into world trends in manufactured value added.

During the coming year, *Research Update* will be bringing highlights of the Branch's latest activities to its readership. But rather than being a one-way channel for communication, we, in the Branch, welcome and, indeed, encourage your suggestions and comments.

Sérgio Miranda-da-Cruz
Director
Research and Statistics Branch

Determinants of Productivity: Cross-Country Analysis and Country Case Studies, by Anders Isaksson and Thiam Hee Ng



Two modes of analysing the determinants of total factor productivity are the focus of one of the latest staff working papers from the Research and Statistics Branch. By comparing cross-country analysis of a large set of countries with 15 country case studies, the paper reveals widespread agreement on the importance of such determinants as human and physical capital, infrastructure, competition, the quality of economic institutions, financial development, technology transfer through trade, absorptive capacity regarding technology adoption, privatization and trade liberalization. Divergent conclusions, however, are evident in the case of structural change, health and geography, where structural change comes out strongly in the country case studies while cross-country analysis seems to support the latter two.

Some of the paper's key conclusions may be of particular relevance to the formulation of industrial policy. These include:

- ◆ Increased competition and the quality of institutions are vital to determining total factor productivity growth.
- ◆ As regards technology transfer through trade and foreign direct investment, domestic conditions (absorptive capacity) play a central role for it to be beneficial.
- ◆ In the case of structural change, a shift from agriculture to manufacturing goes hand in hand with growth in total factor productivity.
- ◆ Regarding education, the type offered by educational systems is crucial, as, for example, in the case of Egypt, which has suffered from a lack of scientists and engineers.
- ◆ Investment in physical capital is likewise important for productivity growth with the productivity performance of capital accumulation directly related to the functioning of the financial system.

◆ Imports - more than trade in general or exports - increase total factor productivity because they often bring with them relatively advanced technology.

◆ Benefits of trade liberalization depend on the economic conditions in which policy is implemented.

Both modes of analysis are valuable and complementary. Regression analysis provides an average picture of the world, while country studies provide a more detailed picture of countries. However, the combination of both appears the best tool for policy makers and economists to understand productivity performance.

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Model Approach for Analysing Trends in Energy Supply and Demand at Country Level: Case Study of Industrial Development in China,

by Sérgio Miranda-da-Cruz

Against the background of increasing energy consumption by developing countries' industries, a new staff working paper explores an alternative approach to analysing trends in energy supply and demand at national level. Drawing on the case of China, the paper addresses the requirements for an energy strategy as part of the need for a comprehensive assessment of industrial development trends during a 30-40 year transition phase to achieving decreased energy intensity and increased use of local renewable energy.

The traditional analysis based on the MARKAL family of models, developed by the International Energy Agency, provides a flexible framework to evaluate alternate technology and policy options. It is the current method used by most research institutions for energy needs assessment. Because its highly complex mathematical framework depends on the availability of detailed data covering long periods of time, the MARKAL approach has been successful only in such stable

economies as the European Union, Japan and the United States.

In response to an invitation to UNIDO from the publisher Elsevier to contribute to a special edition of *Energy Economics* on modelling of industrial energy consumption, this paper offers a practical method of energy analysis readily applicable to any country but, particularly, developing countries. The model consists of an analysis at aggregate level of current and future national energy matrices, followed by analyses of the two pillars used to reach the future matrix. The latter consist of an analysis through the energy use optimization cycle of prospects for decreasing the energy intensity of the most inefficient systems or industrial sectors, and another through the energy supply optimization cycle of prospects for increasing the supply and cost-effectiveness of sustainable energy sources. Each cycle is considered from four perspectives: diagnosis and assessment; *tech*-knowledge absorption and development; policy formulation; and policy implementation.

While this model is a proposal open to refinement and adjustment, it is immediately applicable to UNIDO's regional and country assessments (see following article). It can also serve as a means for the Organization to assist Member States in designing and implementing policies for long-term energy supply and end-use strategies.

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UNIDO Methodology for Assessment of the Prospects for Sustainable Industrial Growth: An Industry-Focused Country Assessment

A new approach has recently been developed by the Research and Statistics Branch to assess prospects for sustainable industrial growth. The methodology can be used as a standard instrument for country and regional industrial analyses in Member States and, in turn, as an indicator for the future direction of

UNIDO's programmes and corresponding corporate strategy.

Distinct from the methodology used by the Bretton Woods institutions and private organizations, the UNIDO approach is based on complementary analysis of the manufacturing industry through the perspective of two groups of variables and their respective linkages with industrial development: the status of science and technology and environmental parameters including energy.

The work is of particular relevance when applied to those Member States being assisted through UNIDO's programme of technical cooperation. Likewise, the systematic application of the methodology has the potential to enhance the capacity of the Organization's field operations, since field offices will be able to offer, on a systematic basis, policy advisory services that are currently provided only as a result of specific programmes or projects.

UNIDO's methodology is based on the premise that the most effective way to assess prospects for sustainable industrial growth is through the combination of analyses involving information at macro and sectoral levels. At macro level, individual statistical indicators that reflect the performance of selected aspects of an economic process are identified and used. From the industrial perspective, two aspects are combined: (1) the indication of the position of the country in terms of manufacturing in the international scenario, based on UNIDO Industrial Development Scoreboard and (2) country analysis based on statistical and non-statistical information using indicators from UNIDO statistical data together with information of macroeconomic parameters. Various sectoral analyses by UNIDO or related organizations complement the macro perspective.

The Branch will be adjusting the methodology, which is a dynamic analytical instrument, on a continuous basis, taking into account UNIDO's economic research activities and new indicators emanating from the Organization's

statistical data, as well as inputs from field and project personnel.

Following its success as a case study in Rwanda, the methodology is now ready to be used to assess the prospects for sustainable industrial growth in four regions (Africa, Asia, Eastern Europe and Latin America) and 10–15 Member States. This first phase of the exercise is scheduled to be completed by the end of 2007.

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Presentation on development and policy space, by *Heiner Flassbeck*



The success of UNIDO's work in industrial development hinges on the conducive macroeconomic environment of beneficiary countries. However, neither a favourable macroeconomic framework, nor capacity supply building alone are sufficient for long-term economic development. A presentation to UNIDO staff by Heiner Flassbeck, UNCTAD's Director for Globalization and Development Strategies, on 20 October 2006, was a reminder of this obvious but important interdependence, which could be overlooked in the work of specialized development agencies.

Globalization and liberalization of the international economy, Mr. Flassbeck pointed out, have narrowed the space for monetary and fiscal policies of many developing countries. Capital account liberalization backed by international financial institutions, especially, often had detrimental effects on real economies. On the one hand, countries with a floating exchange rate regime faced waves of over- and under-valuation, producing unstable external pricing and negative consequences on real economies. Those with a fixed exchange regime, on the other, often had to relinquish their monetary independence for

the sake of obtaining exchange rate and price stability.

In this adverse macroeconomic policy environment for developing countries, Mr. Flassbeck argued, there was still room for manoeuvre. He proposed a development strategy approach for dynamic industrial growth. This would shift attention from the capital to the current account balance of payments and put emphasis on supportive monetary policies for export growth, in order to reduce current account deficits - rather than stressing the compensation of that deficit by inviting foreign savings to the capital account.

Avoiding the two extremes of floating and fixed exchange rates, he argued for an intermediate approach having selective capital controls and a managed-intervention exchange rate regime. This would be targeted at a slightly undervalued rate for export promotion while advocating, as necessary, devaluations of national currencies to reclaim export competitiveness. This prescription for creating conducive macroeconomic policy, however, had to be accompanied by real industrial capacities in technology and productivity to bring about industrial growth, since it is not likely that a "right" exchange rate alone would spontaneously develop the necessary capacities at the micro level.

Drawing on UNCTAD's *Trade and Development Report 2006*, Mr. Flassbeck's presentation served as a reminder that UNIDO's work in industrial development - even at the micro level - needs to take due consideration of the macroeconomic environment of client countries, as it has an overarching influence on the success of industrial policy advice and capacity building projects.

As reflected in its new methodology for assessment of prospects for sustainable industrial growth, UNIDO's country assessment takes such a holistic approach by looking, first, at macroeconomic conditions before going into detailed analysis of the industrial development of specific countries. The wider implication is that policy

coordination requires greater cooperation among not only specialized agencies but also development organizations concerned with different policy levels, in order to create synergetic, rather than nullifying, effects in a country's economic policies.

COMPID and UNIDO Working Papers



Five major studies commissioned by UNIDO, as part of its contribution to the achievement of the United Nations Millennium Development Goals, were completed in 2005. Emanating

from the Danish-funded research programme entitled Combating Marginalization and Poverty through Industrial Development (COMPID), the conceptual and empirical reports present recommendations that could be used as a basis for policy-making and formulation of industrial development strategies in low-income countries. In addition the UNIDO-specific recommendations contained therein could be used effectively for impact-oriented technical cooperation activities in low-income countries.

The series consists of the following titles:

- ◆ *Industrialization and Poverty Alleviation: Pro-Poor Industrialization Strategies Revisited*
- ◆ *Productivity Enhancement and Equitable Development: Challenges for Small and Medium Enterprise Development*
- ◆ *Social Capital for Industrial Development: Operationalizing the Concept*
- ◆ *Supporting Industrial Development: Overcoming Market Failures and Providing Public Goods*
- ◆ *Technological Development in Low-income Countries: Policy Options for Sustainable Growth*

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As part of UNIDO's medium-term research programme (2004-07), five working papers were produced in 2005 on aspects of the programme's component 3, policy choices in the new

economic order. Two highlight the theme of assessing how global value chains best contribute to enhancing domestic capabilities, while the other three focus on public goods for economic development in terms of market integration, knowledge, financial stability and environment.

Based on these two themes, the titles respectively in this series are the following:

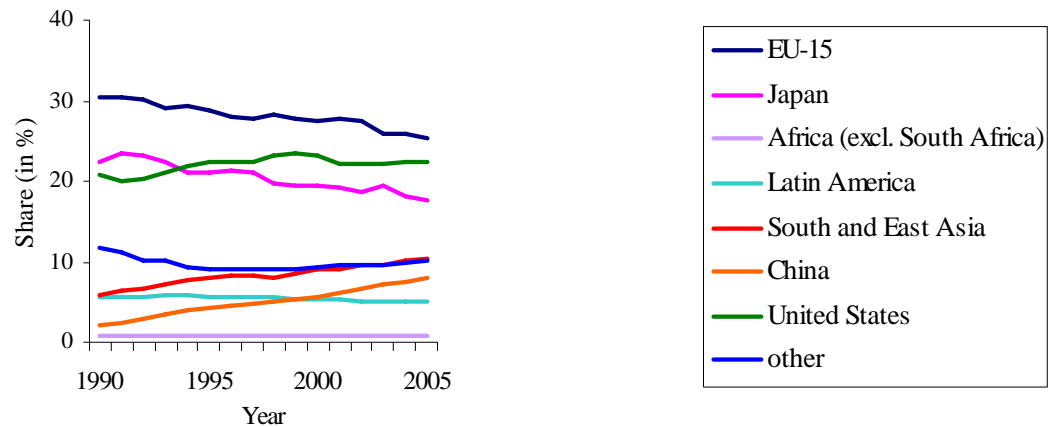
- ◆ *Decoding Organic Standard-setting and Regulation in Europe (1991-2005)*
- ◆ *Global Value Chains in the Agrifood Sector*
- ◆ *Capacity-building to Meet International Standards as Public Goods*
- ◆ *Regional Innovation Systems as Public Goods*
- ◆ *The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence*

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Industrial Statistics

The *International Yearbook of Industrial Statistics* - UNIDO's flagship statistical publication - is in its final stage of preparation of the 2007 edition. Its databases are primary source for analysis of patterns of growth and related long-term trends, structural change and industrial performance in individual industries. At this stage, preparation of country data has almost been completed while estimation of time series for more recent years is underway. Publication is expected in February. Following the *Yearbook's* publication, CD products will be released with updated worldwide industrial data. Statistical country briefs, regularly updated from the UNIDO database, are available at www.unido.org/doc/3474.

Fig. 1. Distribution of world MVA, 1990-2005
(constant 1995 prices)



source: UNIDO database

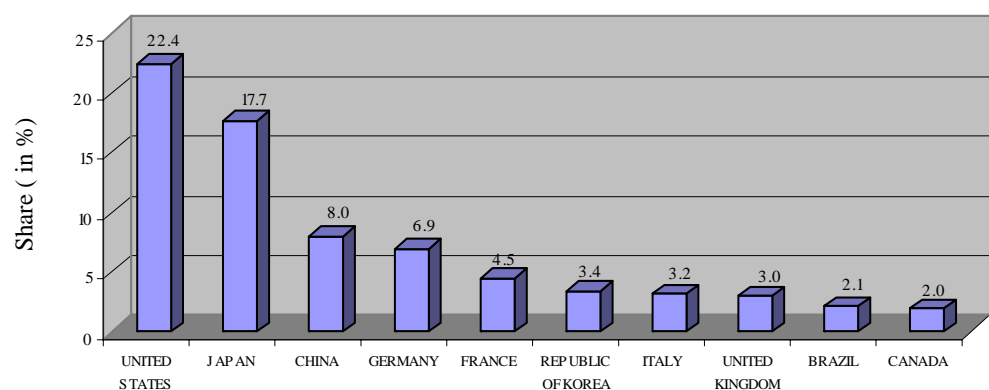
note: data for 2005 are UNIDO estimates

As mandated by the United Nations Statistical Commission, the Organization has the sole responsibility for compilation, storage and dissemination of worldwide key industrial statistics. For publication of international industrial statistics, UNIDO annually collects country data directly from national sources. For OECD countries, data are collected through an OECD/UNIDO joint questionnaire and forwarded to UNIDO to complete the global coverage of the UNIDO industrial statistics database. Industrial data collected from national sources are supplemented with

despite a decline between 1990 and 2005 mainly due to decreases in the respective shares of the European Union countries and Japan (Fig. 1). South and East Asia have increased significantly their share of MVA whereas those of other developing countries have, in general, deteriorated or remained stagnant during the same period. Meanwhile, China managed to more than triple its share.

The 2006 *Yearbook* also shows that world MVA is still concentrated in a few countries (Fig. 2).

Fig. 2. Top ten contributors to the world MVA in 2005
(constant 1995 prices)



source: UNIDO database

note: data for 2005 are UNIDO estimates

data from international sources as well as UNIDO's own estimates of key indicators of industrial structure and growth.

The 2006 *Yearbook* reveals that industrialized countries still account for the larger portion of world manufacturing value added (MVA)

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