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research update

No. 1, 2007

Research and Statistics Branch



Following the successful launch last December of *Research Update*, the first number for 2007 features one of the most recent new-series staff working papers, a presentation on information and communication technologies (ICT) and innovation statistics, and another on narrowing the development gap, as well as a peer-reviewed article linking WTO trade disputes and aid flows. The current issue introduces a column that offers perspectives on recent thinking of relevance to industrial development.

The staff working paper analyses linkages between foreign direct investment (FDI) and productivity in eight East Asian economies. Based on original research by UNIDO's Research and Statistics Branch (RST), it reveals a surprising lack of evidence to link FDI *per se* with either total factor productivity growth or technical and efficiency changes.

The most recent RST presentation to UNIDO staff highlights the importance of techniques to measure the impact of ICT on the economy, industry and society. Two eminent researchers from Moscow State University, Leonid Gokhberg and Alexander Sokolov, put the case for development of statistical methodologies for annual surveys applicable to innovation, as well as to ICT, of enterprises and households.

An interactive UNIDO staff seminar with Oxford Professor Paul Collier presents an alternative approach to conventional poverty reduction strategies, based on the world's poorest countries better using commodity booms to generate long-term economic benefits. He goes on to elaborate the importance of trade preferences in helping Africa to achieve industrial competitiveness. In the article "Be Nice and Get Your Money", the dilemma facing developing countries is

candidly presented as they attempt to balance aid and trade in the arena of WTO. Empirical analysis of North-South trade relations, co-authored by RST researcher Frank Bartels and presented in a leading trade journal, suggests directions that developing nations can take to navigate successfully between the twin perils of trade confrontation and reduced development assistance.

Beginning with the newsletter's first number for 2007, RST researchers and statisticians share their personal views on development economics relevant to the activities and policies of UNIDO. Veteran UNIDO economist Helmut Forstner inaugurates the new "Perspective" column by taking a fresh look at the impact of industry on growth of productivity and income to achieve the UN Millennium Development Goals.

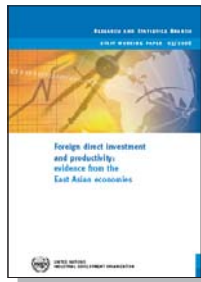
Research Update concludes with a glimpse of UNIDO's latest approach to providing industrial statistics attuned to the increasing demands of its clientele in formats that make them accessible to a wider range than ever of potential users.

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Foreign Direct Investment and Productivity: Evidence from the East Asian Economies, by *Thiam Hee Ng*



With the markedly increasing flow of private capital to developing countries in recent years, one of the latest RST staff working papers examines the extent to which foreign direct investment (FDI) has an impact on productivity, based on a sample of East Asian economies. Between 1990 and 2004, total private capital flows rose from \$42 billion to nearly \$250 billion, mainly in the form of foreign direct investment (FDI). During this period, the net flow of FDI to developing countries increased from \$22 billion to \$165 billion.

FDI has been playing an important role in the development process of many countries, by providing capital and technology that they lack. There are two main channels through which the benefits of FDI can flow. One is that of providing capital to build up the productive capacity of the economy. The other is that of providing advanced technology and organizational know-how to increase the efficiency or productivity of an investment. These represent important issues for policy makers in developing countries. Because of the hypothesized spill-over effects, many governments have taken steps to encourage FDI flows by setting up foreign investment promotion agencies or offering tax and fiscal incentives to foreign firms that invest in their countries. Since the benefits can be costly in terms of foregone tax revenues, it is important that they are clearly identified in order to justify the costs of attracting FDI.

The productivity estimates used in this paper derive from the UNIDO World Productivity database, which disaggregates change in productivity into technical change and efficiency change components. As well as examining the contribution of FDI to overall productivity, it is, therefore, possible to see how FDI influences these two components. Does FDI contribute to higher productivity by bringing in newer technology, or does FDI contribute to higher productivity by introducing more efficient management processes? These are questions relevant for both academics and policy-makers.

The paper's findings reveal that only two of the eight East Asian economies in the sample show evidence of FDI resulting in productivity growth. The correlation between FDI, on the one hand and technical change and efficiency change, on the other, was even more disparate. In none of the sample countries was there evidence that higher FDI brings about technical and efficiency changes.

Rather than implying that FDI is non-beneficial, the paper concludes that greater emphasis should be placed on the type and quality of FDI being sought in order for countries to benefit fully from its spill-over effects. Higher FDI flows in themselves do not necessarily lead to increased productivity. The paper notes that, to benefit fully from FDI, recipient countries also require the necessary skilled labour force able to assimilate and spread the benefits of investment. Therefore, the paper's conclusion is less than surprising that the two countries in which there is causality between FDI and productivity are the two relatively advanced economies in East Asia: Singapore and Taiwan Province of China.

[click here to download paper](#)

Presentation on ICT statistics and national innovation indicators, by *Leonid Gokhberg and Alexander Sokolov*



With the rapid expansion of information and communication technologies (ICT), UNIDO is in the forefront of development of statistical

methodologies to measure their contribution to the economy, as well as their impact on industry and society. With ICT currently accounting for ten per cent to total world added value, six per cent of employment and 25 per cent of the R&D expenditure of businesses, the implications are formidable.

To begin to capture the statistical dimensions of this increasingly important trend, UNIDO launched a project, with European Commission funding, at the beginning of 2006 based on ICT statistics from Russia. The results were presented to UNIDO staff, on 30 January 2007, by the Vice-Rector of the State University - Higher School of Economics, Moscow, Leonid Gokhberg and the Deputy

Director of its Institute of Statistical Studies, Alexander Sokolov.

More than 90 per cent of Russian enterprises use computer facilities, with more than half of them having LAN and Internet facilities. In 2005, the country's imports of computers amounted to \$1.4 billion and telecommunication equipment to \$1.2 billion. On the production side, 17.4 per cent of enterprises surveyed manufactured ICT goods, which comprised 20 per cent of total sales. However, the contribution of the ICT production sector to total value added was only 5.1 per cent compared to the OECD average of 9.6 per cent. Similarly, imports of ICT goods into Russia in 2005 were 29 times greater than their exports. At the same time, Russia has witnessed remarkable growth in the use of ICT by households.

Based on the project's pilot surveys, the Higher School of Economics has recommended introduction of the ICT survey of enterprises and households on an annual basis. It has also developed a system of indicators for measuring ICT that produces internationally comparable statistics. Among the main recommendations is creation of an ICT domain in the business register.

Complementary to the ICT project's results, Mr. Gokhberg briefed UNIDO staff on his findings on innovation statistics. He pointed out that an earlier study by OECD had found that an increase of expenditure on R&D and innovation by one per cent could contribute from 0.05 to 0.15 per cent to the growth of GDP. The response has been the emergence of a new domain of statistics to measure development, introduction and marketing of new or enhanced products, services and production processes. The logic of statistical studies of innovations in Russia and the underlying concepts reflect specific features of the domestic economy and organizational peculiarities of the national statistical system. At the same time, they ensure maximum compliance with internationally harmonized recommendations, in the form of the Guidelines for Collecting and Interpreting Innovation Data (Oslo Manual), produced by OECD and Eurostat.

Mr. Gokhberg outlined Russian experiences of conducting innovation surveys beginning with the first one in 1994. With the survey revealing that only 9.3 per cent of the enterprises were involved in innovation activity, Mr. Gokhberg noted that enterprise-based R&D has fallen in Russia in recent years. However, the share of acquisition of machinery and equipment had risen to 60.3 per cent of total expenditure on innovation, one of the highest figures among European countries.

In common with ICT statistics, those for innovation face a number of shortcomings, especially lack of a standard international classification of technologies. To fill the gap, Mr. Gokhberg urged UNIDO, given its unique mandate in global industrial statistics, to play a leading role in creating a new system of innovation statistics closely linked to industrial statistics.

Presentation on narrowing the development gap, by *Paul Collier*



While the income levels of four billion out of the five billion persons in developing countries are converging with those in the developed world, one billion are moving in the opposite direction, according to Oxford Professor of Economics Paul Collier. "The billion that are now at the bottom are made up of between 50 and 60 little countries. It is that group of 50 or 60 little countries that are diverging from the other four billion. It is that process of divergence that seems to me the looming development problem", said Mr. Collier, speaking to UNIDO staff at an interactive seminar, on 14 March 2007.

Mr. Collier drew on two main sources for his presentation: his book *The Bottom Billion*, to be published this spring and his paper "Trade Preferences and Manufacturing Export Response, Lessons from Theory and Policy", co-authored with London School of Economics Professor Tony Venables.

Why are the billion at the bottom diverging? In *The Bottom Billion*, Mr. Collier says it is because of not one, but four poverty traps. "You can be in any one of these traps", he said, "you

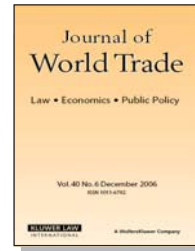
can be in all four of them if you are unlucky. And any one of them, basically, traps you in stagnation.”

The one that he focused on at the UNIDO seminar was the natural resource trap. Pointing out that some one third of Africa was resource rich, Mr. Collier said, “at the moment they are doing well”, in terms of enjoying the biggest commodity boom in 30 years. He, then, referred to a recent simulation he had done of the global effect of commodity booms in resource-rich countries on their growth in the short and long run. To avoid the natural resource trap and convert these commodity booms into sustained growth, these countries would have to invest their windfall gains more wisely than during previous booms. History did not necessarily have to repeat itself, observed Mr. Collier, “if institutions are different, if incentives are different”. For example, in commodity boom countries, “skill formation in the construction sector ... is a priority”. But he warned “it is a priority that is below the radar screen of policy at the moment”.

Making the most of those windfalls and, in particular, of manufacturing exports are the two main strategic opportunities for Africa to move out of the bottom billion.

According to Mr. Collier, the secret of success for Africa in manufacturing is to work vigorously to capitalize on the new five-year time horizon of the Africa Growth and Opportunity Act (AGOA). His research shows that AGOA has increased African exports by between seven- and ten-fold merely within the Act’s initial three-year framework. Mr. Collier also advocated a policy of temporary trade preferences for Africa that would privilege African over Asian goods in OECD markets. While time is an important factor for trade- preference schemes to be effective, a country’s level of development and changes in rules of origin constitute other crucial factors. He cautioned that success was very specialized, in very particular tasks and in a few countries. In concluding, Mr. Collier’s hope was that the Group of 8 proposes an AGOA-like trade plan for the Organisation for Economic Cooperation and Development, as a strategy for Africa, at its summit this summer. “I think”, he added, “it would be a very nice thing if the African governments demand it.”

Be Nice and Get Your Money: An Empirical Analysis of World Trade Organization Trade Disputes and Aid, *by Pilar Zejan and Frank L. Bartels*



The *realpolitik* of balancing aid and trade is the focus of a recently published article in the *Journal of World Trade* (volume 40, issue number 6, 2006). It captures succinctly the dilemma many developing countries face in their international relationships, in general and trade interests and development assistance or aid, in particular.

The article analyses trade relations between 106 developing countries and the European Union and United States, over the period 1995 to 2001, highlighting the relationships between national economies in the arena of World Trade Organization (WTO) disputes. The introduction provides a perspective on development of the dispute settlement protocols of WTO and their key function within the Dispute Settlement Body (DSB). DSB is the arbiter of trade disputes brought to the legal attention of WTO. The power relations between countries, as well as different capacities and capabilities of developing countries’ representation at WTO, are seen to discourage initiating trade disputes against industrialized nations.

“Be Nice and Get Your Money” goes on to trace the recent history of WTO and DSB offering a technical appreciation of the intricacies of the legal dimensions of the international trading system. Especially valuable to researchers are the insights on the DSB reforms and cost of participation in WTO for developing countries, in general and, specifically, for least developed countries.

A concise literature review is presented on interrelationships involving enforceability of WTO decisions, pursuit of trade interests and developing countries’ dependence on aid flows. Emerging from the review are the *realpolitik* and geo-strategic considerations that determine aid from industrialized countries to developing countries. These constitute, in effect, pressure points that can be applied to the latter should they initiate international trade disputes against the former. According to the article, “donor interests have a very significant explanatory power in aid allocation”. To the casual observer of international relations, in

general and trade-aid relationships, in particular, the intuitive view that rich countries are in a better position is not surprising, which is supported by the article's empirical evidence. Two key questions are posed: does a trade dispute initiated by an aid recipient affect the donors' decision to provide official development assistance (ODA); and if so, is it a negative or positive effect?

The third part of the article answers empirically the first in the affirmative and the second negatively.

Providing empirical evidence in support of intuitions, the authors indicate the significant but subtle relationships between countries with asymmetrical economic power. The relationship between trade disputation and aid flows has serious implications for the operability of WTO. First, the capacity of countries to contest their interests internationally is limited. Secondly, the linkages between ODA and trade disputation suggest that aid is eroding the competitiveness of developing countries by reducing their ability to pursue their trade interests. Thirdly, given the trade dependence of developing countries, there is a significant level of sensitivity in their international relations.

The article points to the need for development agencies to assist developing countries in formulating viable trade policies as well as the need for developing countries to increase their legal capacities at WTO. To avoid trade dependence, ultimately, developing countries need to diversify their economies and range of produce, as well as trade a variety of manufactured goods and increase their trade profiles. To this end, trade capacity building is crucial.

Industry Matters for the Millennium Development Goals: A Synopsis, by *Helmut Forstner*



The goal of eradicating extreme poverty and hunger dominates the general perception of the United Nations Millennium Project and influences international cooperation in a decisive manner. Nevertheless, although this first of the eight Millennium Development Goals (MDGs) often overshadows the others, it is

all of them together that have given broad programmatic direction to development cooperation since the adoption of the Millennium Declaration, in 2000. They reflect a conceptual basis with three core components:

- ◆ The notion of human development provides the background to the majority of goals. Based on *individual welfare*, its main dimensions are contained in six of the goals and their targets: income (Goal One), education (Goal Two) and health (Goals Four to Six). These, in turn, are viewed in the perspective of gender equality (Goal Three).
- ◆ Rooted in *aggregate welfare* considerations, the second component is that of environmental sustainability (Goal Seven).
- ◆ The broad subject of *international cooperation* for development is embodied in Goal Eight.

Industrial development is germane to all three components.

In recent years, perspectives on development have both broadened and deepened. For example, the concept of sustainable development has been expanded to embrace economic, social and environmental dimensions, while that of human development goes beyond income to include health- and education-related components. Nevertheless, the core elements of the concept of development have remained virtually the same with economic processes still perceived as fundamental. Similarly, the time horizon of most interest in this context is medium- to long-term, in which such relatively short-term targets as those substantiating the Goals need to be embedded. The focus on economic processes and emphasis on the long term, again, underline the significance of the role of industry in development.

An interpretation of the Millennium Development Goals needs to be complemented by notions that are usually not made explicit. One of them is the primacy of economic development as the core process ultimately leading to the achievement of goals and targets. In particular, the level of per capita income continues to be at the heart of the MDG framework. Another complementary notion is that progress towards the eight goals and beyond has to be sustained. Finally, from an outline of the goals and targets within the framework, their dual nature emerges. As well as being major components in achieving global

development, each of the goals has important feedback effects for the others, based on synergies and mutual reinforcement.

Mainly due to the fact that a sustained increase in aggregate income plays a central role in the achievement of all Millennium Development Goals, each one is related to industrial development to some degree. This is particularly conspicuous in development of the industrial sector, on the one hand and Goals One, Seven and Eight, on the other. Regardless of other developments, eradication of extreme poverty and hunger is impossible without the sustained rise of aggregate income that industrialization helps to generate. To ensure environmental sustainability means, among other measures, making every effort towards rendering industrialization as ecologically friendly as growth expectations permit. To develop a global partnership for development that includes the pivotal component of technology for development is unimaginable without the element of industry as the prime factor in the diffusion of new technology.

While recent research has focused on a multidimensional version of Goal One--eradicating extreme poverty and hunger--the income component, particularly household income, continues to retain its central position. Based on this approach, any solution to the poverty problem must be construed as comprising at least one of two essential, but different, elements:

- ◆ an increase of average income leading to a reduction of absolute poverty
- ◆ a specific change to the income distribution that favours the most disadvantaged group in society

In view of the distinctly different policy domains surrounding each of these, the growth of income appears far more promising for international development cooperation than its distribution. Moreover, only the secular rise of average income can provide a stable basis for sustained progress towards eradication of extreme poverty. Industry as the engine of modern sustained growth constitutes a cornerstone in this endeavour.

Economic growth--in the form of rising per capita income over time--is based on two main sources: an increase of the supply of production factors relative to labour and a rise in productivity. Productivity increase is central to economic growth for two reasons. In its simplest form--labour productivity--economic

growth is tantamount to productivity increase. From the more sophisticated viewpoint of multi-factor productivity in which growth is viewed over the long run, productivity turns out to be the chief component in output expansion. In addition, there are important positive implications for an increase in aggregate welfare from productivity-driven growth. Some of the major characteristics of the industrial sector provide the basis for assigning it a central role in productivity-based growth and, hence, in sustained reduction of poverty as well as for related goals envisaged in the Millennium Declaration.

Demand for UNIDO statistics

Reflecting growing demand for detailed structural industrial statistics, sales of UNIDO's three core databases reached a record high in 2006 of EURO 81,000, a more than 20 per cent increase from EURO 66,100 in 2005. In addition, another unique database containing the Organization's estimates and short-term forecasts for sectoral and sub-sectoral MVA at constant prices has been updated. Building on its strength as a prime source for charting industrial performance, the Organization has initiated construction of a new industrial statistics database at the two-digit level of ISIC-Revision 3 (INDSTAT2), which contains a historical time series on the INDSTAT variables. Systemization and methodological upgrading of the input data file for the Industrial Development Scoreboard has been initiated, with the aim of increasing data consistency and comparability of the Scoreboard indicators.

In January, the 2007 update of UNIDO's web-based data-dissemination service, *Statistical Country Briefs*, went online. As a result of being produced for the first time on a client/server platform and related redesigning of the database system, their presentation has improved significantly, in addition to the upgrading of data quality based on continued data estimation and projection.

