



research update

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Research and Statistics Branch



Research Update begins its fourth year of publication by looking at economic prospects for those living on less than a dollar a day, the Organization's annual compendium of industrial statistics and regional integration in Africa. This

first issue for 2009 continues the regular feature on current economic thinking, "In Short", by offering a researcher's perspective on the intertwining of issues of international trade and welfare benefits.

Hailed by UNIDO's Director-General for its "new and original insights", the 2009 *Industrial Development Report* argues that the success of industrial development depends on an evolving pattern of specialization. His Principal Adviser highlights the Report's perspectives on structural change and policy responses crucial to low- and slow-growing middle-income countries.

Based on trends already envisaged a year ago, the latest *International Yearbook of Industrial Statistics* depicts the decline in industrialized countries' manufacturing, symptomatic of the current financial crisis. UNIDO's chief statistician details a number of major improvements in the 2009 edition that allow the annual publication to offer a more accurate picture of manufacturing value and growth rates than ever before.

The role of regional trade agreements in relation to the impact of the financial crisis on sub-Saharan Africa is the focus of a recent presentation by an economist from the Research and Statistics Branch. Drawing on the UNIDO investors' survey of the region, he offers an approach to attracting investment in manufacturing besides the more traditional area of infrastructure.

The Branch's "In Short" columnist attempts to delineate the precise benefits of international exchange of goods and services from the perspective of old and new trade theories. As neither explains fully the dynamics of trade, he turns to the complementarity between recent theoretical and empirical advances to point the way towards a deeper understanding of this much explored but only partially understood phenomenon.

I am pleased to announce that the first responses to the readers' survey, launched in *Research Update* No. 3/4, 2008, have proved overwhelmingly positive. But I encourage all readers who have not done so to complete the one-question survey card attached to that issue and return it through the internal mail system of UNIDO.

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Industrial Development Report

UNIDO's 2009 *Industrial Development Report*, launched in February, focuses on opportunities and constraints for the

countries left behind by the pre-financial crisis economic boom. Constituting the so-called "bottom billion", they are the countries trying to break into global markets for manufactured goods and countries striving to move up to more sophisticated manufacturing. While concentrating largely on long-term structural change within manufacturing, the *Report* also considers resource extraction, as the other major form of industrialization in developing countries.

Unprecedented changes in the global economy are redefining industrial development opening some avenues and closing off others. Because countries differ in their structural characteristics, appropriate industrialization strategies must also differ and evolve. The *Report* focuses on three aspects of structural change in industry: as industrialization proceeds, what does it produce, where does it locate and where is its output sold. In addressing these, the *Report* offers new perspectives on the processes of structural change as well as economic policy responses to support breaking into and moving up in the global industrial economy.

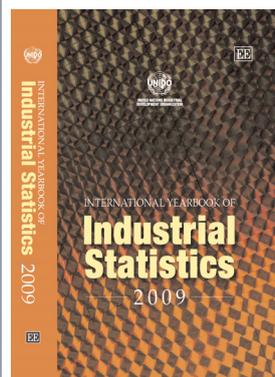
The potential for explosive growth, according to the *Report*, is distinct to manufacturing. As an activity expands, instead of running up against shortages of land or resources, which inevitably constrain the growth of agriculture or the extractive industries, manufacturing benefits from economies of scale with unit costs of production falling. Although such cost reduction helped manufacturing to expand prior to globalization, the size of the domestic market was a constraint. Especially in small, low-income countries, the tiny market for manufactures limited the scope for reaping economies of scale. Now that markets are global, however, this situation no longer exists. If a country can find a niche in the global market, it can scale up almost without limit, as evidenced by case studies of dynamic industrial locations contained in the *Report*.

Yet finding and maintaining a niche is not easy. The countries of the "bottom billion" have yet to break into global industrial markets, while many middle-income countries that had found a niche are increasingly challenged by new lower-income competitors and are in danger of de-industrializing. Although industrialization has been studied for decades, the *Report* makes a convincing case for the need to update analysis. Recent changes in the global economy have substantially altered the opportunities for industrialization, with recent academic research having, in turn, substantially changed the understanding of the process of industrialization.

Following the tradition of previous UNIDO industrial development reports, the 2009 issue reviews industrial activity worldwide, including measures of technological advance and highlights significant structural differences between and within regions. The competitive industrial performance (CIP) index, which depicts the ability of countries to produce and export manufactures competitively, has been expanded from the original ranking of 87 countries to that of 122.

Rather than a blueprint for action, the 2009 *Report* offers evidence-based policy advocacy, with a view to assisting those responsible for designing or implementing industrial policies.

Jebamalai Vinanchiarachi



International Yearbook of Industrial Statistics

While few industrialized countries account for the bulk of world industrial production, the distribution is largely similar within the group of developing countries. Newly industrialized countries (NICs), together with China, produced nearly 90 per cent of total manufacturing value added (MVA) of all developing countries in 2008. This is just one of the many insights into the manufacturing sector to emerge from the latest edition of UNIDO's annual industrial survey.

The current edition offers a host of novel features. Stemming from three years' development, a new model to predict manufacturing value added (MVA) ensures that the *Yearbook's* statistics are more accurate than ever. UNIDO's Statistics Unit has refined its estimation tool, known as "nowcasting", to become a more robust predictor based on observed MVA values in recent years and estimated gross domestic product (GDP) growth rates for the current year. Besides the number of outliers being significantly reduced, the new model better expresses the most recent trends in MVA growth.

The results are impressive. Although prepared last year, estimates presented in the *Yearbook* already envisaged the declining MVA growth in industrialized countries that, by now, has become an acknowledged symptom of the global financial crisis. The *Yearbook* also reveals a similar decline in developing countries, albeit at a lower rate.

The *Yearbook* comprises two parts: statistics for manufacturing as a whole, with tables aggregated at regional and world levels and detailed business structure statistics of countries, at three- and four-digit ISIC levels.

To provide a comparative overview of structure and trends of the manufacturing sector, data are aggregated for a number of country groups based on level of development and geographical regions. All countries are classified into two main groups: industrialized and developing. The industrialized group includes 12 former Soviet republics, Europe further broken down into EU-15, EU-12 and others, East Asia, North America and others. For the first time, a regional grouping of East Asian industrialized countries is presented combining Japan, Republic of Korea and Singapore.

Developing countries are divided by regional groups—Africa, Latin America, Asia and Europe—as well as stages of development—NICs, least developed countries (LDCs), China and others. In the 2009 *Yearbook*, the group of NICs is significantly changed, incorporating previous groups of NICs and second generation NICs as defined in the 1970s. The alteration is based on the recent development of manufacturing in these countries measured in terms of MVA per capita, contribution of manufacturing to the national economy and country share in world MVA.

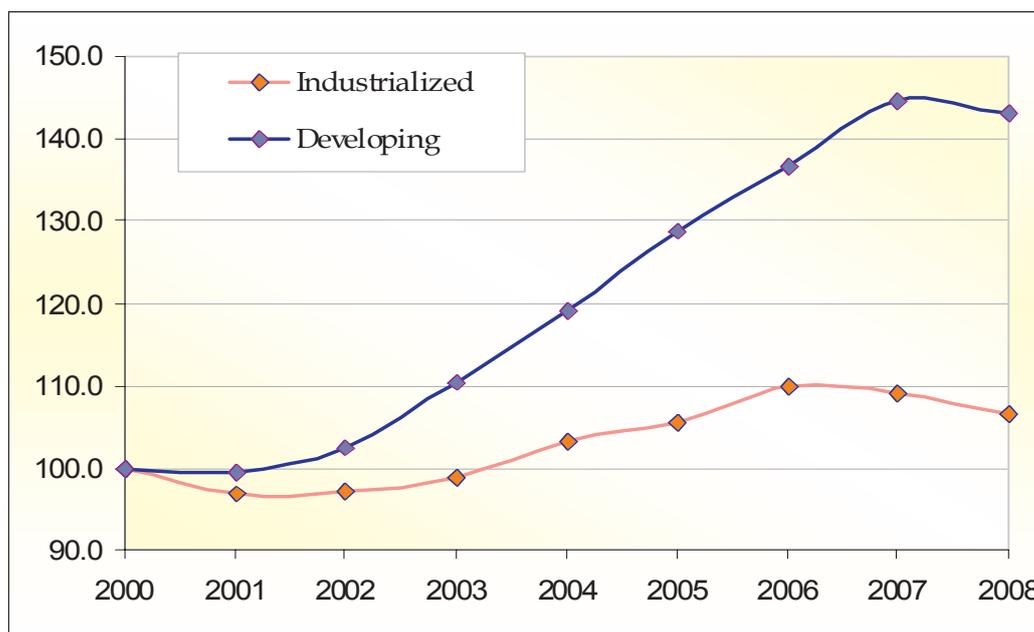
Manufacturing in China is rapidly outstripping that in 16 NICs. Their total share has risen continuously since 1995, although the share of NICs is decreasing due to the faster growth of manufacturing in China.

Graphical presentation of the major trends in growth and structure of manufacturing features among other changes in the 2009 *Yearbook*. Designed to increase understanding of the statistics, it shows, for instance, Japan as the most industrialized country of the world, while Malaysia tops the rank with highest MVA per capita among the developing countries.

The *Yearbook* offers the most recent manufacturing data for a greater number of countries. Detailed business structure data at three- and four-digit ISIC levels are presented for 82 countries, compared to 71 in the previous edition.

Shyam Upadhyaya

Figure 1: MVA growth of development groups compared to 2000





Regional integration in Africa

Regional trade agreements could help mitigate the effects of the financial crisis in Africa, according to an RST presentation to the United Nations Conference on Trade and Development (UNCTAD) Trade and Development Board, on 4 and 5 February 2009, in Geneva. Organized by the Investment, Enterprise and Development Commission, the event focused on South-South cooperation and regional integration in the context of the unfolding global financial crisis and its potential impact on developing countries. From the perspective of UNIDO's regular survey of investors in sub-Saharan Africa, the implications for South-South foreign direct investment (FDI) of regional integration in Africa were considered.

The presentation took departure from the hitherto integrating, but now disintegrating, factors in the world economy. It examined the industrial gearing mechanisms of geographically distributed value- and supply-chains, which are transforming the capital and financial crisis into a worldwide economic, manufacturing and trade crisis and, in turn, tipping several advanced and emerging economies into recession. The presentation addressed the regional dimensions of value- and supply-chains, as well as the need for regional trade agreements (RTAs) in Africa to be rationalized and managed coherently. On average, each African country belongs to at least four of the continent's many RTAs, of which there some 17 with overlapping memberships.

Using basic network analysis to identify the nodal countries, the presentation traced the patterns of evolution of the key elements of RTAs—bilateral investment treaties (BITs) and double taxation treaties (DTTs)—in Africa in the time frames up to 1980, between 1980 and 1990 and between 1990 and 2008. North Africa and Eastern and Southern Africa emerge as having the densest network of BITs and DTTs relative to West and Central Africa. This indicates a certain amount of specialization by Africa in industrial manufacturing that, while not on a par with that of South-East Asia,

could become platforms to enable African firms to place themselves within interstitial spaces of global value- and supply-chains.

In terms of industry, FDI findings from UNIDO's survey of investors in sub-Saharan Africa provided insight into the industrial motivations for FDI as well as indications of what RTAs could do to moderate the effects of the financial and economic crisis. What emerges is that in Africa—from similar rates in FDI growth for all African sub-regions from the 1970s—divergence began in early 2000, with Eastern and Southern Africa taking the lion's share of FDI. From 2006, the signals of global crisis had already begun to take a toll on the levels of FDI. In response and within RTAs, multinational enterprises have begun to design new global strategies that entail a certain amount of retrenchment as well as a reconfiguration of the mandates of their spatially distributed subsidiaries. As well as investment in infrastructure, attracting some of the manufacturing activities that have hitherto been undertaken in South East Asia represents a potential response to the global crisis for Eastern and Southern Africa.

In the subsequent plenary discussion, members of the Commission raised such key issues as impact of the crisis on firm ownership structures in Africa, lack of convergence among African RTAs, externalities and spillovers from the regional aspect of FDI and national absorptive capacity.

Frank Bartels



Trading ideas

There is no doubt that international trade has positive welfare consequences. Most economies can be characterized as small-open, implying that most of them benefit greatly from trade with others. Countries with large domestic markets, such as the United States, are less dependent on trade. But, what precisely are the benefits of international exchange of goods and services?

One important outcome is that of a larger market, that is, producers not being confined to the volume of domestic demand. The concept of larger market implies an increase in output possibilities and diversification. Another significant aspect is enhanced resource allocation and specialization. Moreover, producers have access to imports from larger input markets. Some economists have also argued that trade results in higher productivity through competition and learning effects. Conversely, protectionism has dire effects on the well-being of populations by depriving them of such benefits.

But why theorize about trade? The theory goes beyond simple understanding of global trading patterns. Perhaps the most important issue is to understand that trading has positive welfare implications. Hence, it speaks directly against protectionism. Strategically, it can also point the way as to who should produce and export what and what should be imported and from whom. Optimization along such lines can help reap the maximum benefits from trade. In other words, to produce and export goods haphazardly—a situation unlikely to occur in a free market—or centralize production decisions departs from optimal resource allocation. State interventions, in this respect, could, therefore, be globally detrimental, although this might not always hold true for individual countries.

The evolution of trade theory has occurred in three major steps, largely inspired by what it has been unable to explain. The first attempt occurred in the nineteenth century, with the model of David Ricardo. Variations on the same principle, in particular the influential Heckscher-Ohlin-Vanek (HOV) model, came a hundred years later. The second evolutionary step was the so-called New Trade Theory, fostered by the likes of Paul Krugman and Elhanan Helpman. The latest advancement has come from economists such as James Tybout, Marc Melitz, Andrew Bernard, Bradford Jensen and Mark Roberts. These theories have increasingly been confronted with real world data, which has allowed policy makers to discriminate with respect to their usefulness. Moreover, real world phenomena more and more guide trade economists in their theory development. This is especially the case for the third evolutionary step.

What determines trade patterns and from where does welfare increase accrue?

David Ricardo's model states that countries will export goods in which they have comparative advantage and import those in which they are comparatively disadvantaged. Comparative advantage is determined by relative productivity differences. Because more goods will be consumed, incomes and welfare will increase. Hence, it is important to note that to have absolute advantage in the production of goods is insufficient for specialization. It is quite common to confuse the two kinds of advantages and, inevitably, this leads to erroneous conclusions and predictions. The HOV model adds a spin to Ricardo's original idea. In addition to productivity differences, endowments matter. Countries will specialize in industries that draw on the abundant production factor more intensively. For example, countries with a large cadre of unskilled labour will have a different specialization than those with many skilled workers. But, as in the case of Ricardo's model, it is all about differing opportunity costs.

While the Ricardo and HOV-models greatly increase understanding of inter-industry trade, they are silent on a different trade dimension. Much trade takes place within industries, such as Sweden exporting Volvos and importing Toyotas. However, this type of trade differs considerably from the simple Ricardian case of wine and cloth traded between Portugal and England. This intra-industry trade is based on a combination of economies of scale and consumer preferences, such as love of variety. The contribution of new trade theory is to integrate these additional features into old models, thereby pointing the way to another channel for welfare increase. Consequently, the second step quite successfully explains both inter- and intra-trade patterns. Although this may sound trivial, it highlights the problem that such features greatly complicate modeling, often leading to multiple equilibria. Abstracting from such complications allows models to shed light on several important characteristics albeit apparently not all.

Current trade research shows that there is still much to learn. One simplifying assumption of the old and new trade theories is that of homogeneous firms. But, firms are actually very heterogeneous. This has consequences for trade patterns and influences aggregate productivity. For example, exporting firms are larger, more capital- and skill-intensive and pay higher wages than non-exporters. Only those that can

afford to export, in other words, the most productive, or profitable, self-select into such activities because they can overcome the considerable sunk costs involved. While old trade theory explains why exporters in rich countries are more capital- and skill-intensive, it is rather silent on why this is the case in developing countries where unskilled labour is abundant. By abandoning the convenient assumption of firm homogeneity, the phenomenon can be understood. Firm heterogeneity also implies that the impact of turnover dynamics on industry and trade can be analyzed.

Recent theoretical and empirical advances in the field of international trade are highly complementary. As described in the three evolutionary steps, this complementarity allows researchers to explore why international trade tends to be so concentrated across firms and

why actual trade flows are smaller than predicted by theory. However, advances lead to new research areas, such as the behaviour of importers and why all manufacturing industries appear to import. But the jury is still out as to the right answers.

International trade is a dynamic and rapidly evolving field. These new insights into international trade models are, in turn, helping policy makers to predict more accurately future trade flows and formulate appropriate policy responses. Developing countries are, then, able to specialize in the right tasks and dynamically, target investments to move into more sophisticated tasks. This central tenet of structural change and development will feature in a future issue of *Research Update*.

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