Why do some countries have comparative advantages in value added manufacturing exports?

Selim Raihan

Though, conventionally, gross exports have received the major emphasis in the trade policy, it is important to understand the pattern of comparative advantage in value-added exports as trade in value-added data shows what part in the production chain is internationally competitive in a particular country. The question is, why do some countries have comparative advantages over others in value-added manufacturing exports? Revealed Comparative Advantage (RCA) is widely used to identify a country’s comparative advantage in export sectors. Here we explore the factors affecting the RCAs in value added exports of manufacturing for 56 countries (34 developed and 22 developing countries) over the period between 1995 and 2009. The data on RCAs, based on domestic value added embodied in gross exports of 9 categories of manufacturing for 56 countries are derived from the OECD database on trade in value added (http://stats.oecd.org). A close look at the data suggests that in 2009, among the 56 countries, for food & tobacco, 31 countries had RCAs greater than 1. The leading developed countries with very high RCAs (greater than 2) were New Zealand, Australia and Denmark, and such leading developing countries were Chile, Argentina and Vietnam. In the case of textile & leather, 19 countries had RCAs greater than 1. The leading developed countries with very high RCAs were Portugal and Romania, and such leading developing countries were Turkey, China and Vietnam. For wood & paper, 28 countries had RCAs greater than 1. The leading developed countries with very high RCAs were Latvia, Finland and Estonia, and among the developing countries Chile had such a very high RCA. In the case of chemical & minerals, 26 countries had RCAs greater than 1. Among the developed countries, only Ireland had a very high RCA, and among the developing countries Saudi Arabia had such a very high RCA. For metal & metal products, 25 countries had RCAs greater than 1. The leading developed countries with very high RCAs were Australia, Luxembourg and Bulgaria, and among the developing countries, South Africa and Russian Federation had such very high RCAs. In the case of machinery & equipment, only 14 countries had RCAs greater than 1, and no countries had RCAs greater than 2. For electrical & optical equipment, 17 countries had RCAs greater than 1. The only developed country with very high RCA was Malta, and among the developing countries, Philippine and Taiwan had such very high RCAs. For transport equipment, 16 countries had RCAs greater than 1, with only three developing countries (Mexico, Korea and Turkey) had RCAs greater than 1, and no countries had RCAs greater than 2. Finally, in the case of other manufacturing, 19 countries had RCAs greater than 1. Among the developed countries only Lithuania had a very high RCA, and among the developing countries India had such a very high RCA.

Among the BRICS countries, in 2009, Brazil had RCAs greater than one in food & tobacco, wood & paper, and metal & metal products; for Russia such sectors were wood & paper, chemical & minerals, and metal & metal products; for India, such sectors were textile & leather, and other manufacturing; for China such sectors were textile & leather, electrical & optical equipment, and other manufacturing; finally for South Africa, such sectors were food & tobacco, wood & paper, chemical & minerals, metal & metal products, and other manufacturing.

We have run a number of multinominal logit panel regression models with RCAs as the dependent variable in three categories: RCA 0, if the RCA is less than or equal to one; RCA 1, if RCA is greater than one but less than or equal to two; and finally RCA 2, if RCA is greater than 2. The explanatory variables in the regressions are human capital per capita, capital stock per capita and total factor productivity, and their data are taken from Penn World Table Version 8. The regression results show that while switching from RCA 0 to RCA 1, human capital plays very important role. Though, for the food & tobacco, and textile & leather the countries with a relatively lower level of human capital per capita could have higher RCAs, in all other cases, except chemical & minerals, such switches are associated with higher human capital per capita. The strongest positive effect is observed for transport equipment. In the case of switching from RCA 0 to RCA 2, however positive effects of human capital are observed only for wood & paper, and metal & metal products. In the case of switching from RCA 1 to 2, the positive effects of human capital are observed only for food & tobacco and wood & paper. These results suggest that higher level of human capital is associated with comparative advantage in value-added exports of complex types of manufacturing. Physical capital stock tends to have effects on six of the nine categories of value-added manufacturing exports. The countries with lower per capita stock capital (i.e., countries with higher labor-capital ratio) tend to have RCAs in food & tobacco, textile & leather, wood & paper and other manufacturing; while higher per capita stock capital is associated with RCAs in chemical & minerals, and machinery & equipment. Finally, the positive impact of total factor productivity seems to be observed only in the cases of electrical & optical equipment and transport equipment.

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What determines trade in value-added?
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Until the recent past, the international trade literature focused on trade in gross value of imports and exports, since trade flows involved mostly of finished goods. However, with the growing significance of global value-chains in international trade, such ‘gross’ measures are unable to capture the magnitude of a country’s effective integration in international trade. Also, the available data on trade in value-added shows that the gross export data and value-added export data do not provide the same information. Table 1 presents the top 10 developed and developing countries in terms of domestic value-added embodied in exports as % of GDP. Table 2 presents the top 10 developed and developing countries in terms of the least difference between their gross exports and value-added exports as % of their GDPs. Data on physical capital stock and human capital index are taken from the Penn World Table, version 8. In order to handle the problem of zero values for trade in value-added we run Poisson Pseudo Maximum Likelihood (PPML) estimator. The basic gravity modeling results show the positive impacts of per capita GDPs and negative impact of distance on the trade in value-added. Also, the common border has a positive impact, landlocked dummy has a negative impact and island dummy has a positive impact on the trade in value-added.

countries (i.e. source country being more physical capital abundant) would increase value added exports from the source country by US$ 0.34 million. To see whether the effects of tariff rate, non-tariff trade cost, physical capital stock and human capital on value added exports by the source country vary across industries we run models with interaction terms between each of these variables and the sector dummy. From the regression with interaction terms between the tariff rate and sector dummy it is found that lower tariff rates in the destination country would increase the value added exports from the source country in larger magnitudes in the cases of ‘Electrical & Optical Equipment’, ‘Machinery and Equipment’, ‘Transport Equipment’, ‘Basic Metals & Fabricated Metals’ and ‘Food Products, Beverage & Tobacco’ compared to those of other remaining sectors. For non-tariff trade cost it can be stated that for ‘Construction’, ‘Business Service’, ‘Wholesale & Retail Trade’ and ‘Transport and Storage’, the effects of reduction in non-tariff trade costs in the destination country on the value added exports by the source country are significantly higher compared to those of other industries. In the case of the relative human capital per capita, it is apparent that for industries like ‘Electrical & Optical Equipment’, ‘Machinery & Equipment’, ‘Mining & Quarrying’, and ‘Wholesale & Retail Trade’ the effects of human capital on the value-added exports are larger compared to those of the other industries. Finally, the regression with interaction terms between the relative physical capital stock per capita and sector dummies show that the effects of the difference in physical capital stock per capita are stronger for ‘Electrical & Optical Equipment’, ‘Machinery & Equipment’, ‘Financial Service’ and ‘Transport & Storage’ relative to those of the remaining ones.

In conclusion, both physical capital stock and human capital have significant positive impacts on the value-added exports of a country. Also the reduction of tariff rates as well as other non-tariff trade costs faced by the source country in the destination countries could increase the value-added exports of the source countries. The policy implications emerging from the aforementioned analysis suggest that in order to promote trade in value-added countries should invest more on human capital, raise physical capital stock through both domestic and foreign investments, liberalize tariff, and lower non-tariff trade costs through trade facilitation and reduction in non-tariff barriers.

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Table 1: Top 10 countries in terms of domestic value-added embodied in exports as % of GDP in 2009

Table 2: Top 10 countries in terms of least difference between gross exports and value-added exports as % of GDP in 2009

Retail Trade' the effects of human capital on the value-added exports are larger compared to those of the other industries. Finally, the regression with interaction terms between the relative physical capital stock per capita and sector dummies show that the effects of the difference in physical capital stock per capita are stronger for 'Electrical & Optical Equipment', 'Machinery & Equipment', 'Financial Service' and 'Transport & Storage' relative to those of the remaining ones.

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“..participating in the lower end of GVCs can be counterproductive..”

Dr. Mohammad A. Razzaque is Head of International Trade Policy at the Commonwealth Secretariat and currently he is also serving as the Acting Director of Trade Division. As a trained Economist, his primary area of work includes applied trade policy analysis. He has led the Commonwealth’s policy and advocacy work in such areas as Aid for Trade, South-South cooperation, regional integration and supply chains, trade challenges of small states and Sub-Saharan Africa, rise of mega regions etc. He has written and published numerous policy papers, books and edited several volumes on trade and development issues. He is the editor of Commonwealth Trade Hot Topics, a publication of the Commonwealth Secretariat, which aims to communicate technical trade policy issues to a wider readership. Dr. Razzaque has previously taught at the University of Dhaka.

SANEM: What are the current trends of Global Value Chain?
MAR: The world-export GDP ratio has increased from 19% to 31% over the past two decades. This is an indication of intensifying GVC activities. However, there is strong evidence of highly concentrated GVC participation. It is estimated that more than 90% of the total value added created by GVCs is due to OECD, BRICS and a few Asian nations. Richard Baldwin, an influential economist in the area, has dubbed GVCs as activities taking within networked firms that he called Factory Europe, Factory North America and Factory Asia.

There is limited evidence of some LDCs and African countries’ participating in GVCs. Of course, Bangladesh has strong presence in textiles and apparel GVCs. In the case of African countries, because of their overwhelming dependence on primary commodity exports, the nature of their GVC participation is considered not desirable. Currently, very little is known about small island states’ participation in GVCs. On the whole, the data on GVCs remain inadequate.

SANEM: How does GVC work and what are the recent concerns about GVC?
MAR: Countries specializing in pre-manufacturing (e.g. R&D, standardization, design) and post-manufacturing (logistics, marketing and brand development) activities are able to capture more value in GVCs compared to countries that specialize in post-manufacturing (logistics, marketing and brand development) activities.

How countries participate and where they are located within the GVC matter. Participating in the lower end of GVCs can be counterproductive. Some commodity exporters have become trapped in captive value chains, exporting low value-added items with lower gains accruing over time. This disadvantageous process has been known for a long time but has largely been ignored by the current GVC discourse.

SANEM: Recently, the Commonwealth has highlighted the issue of structural barriers in GVC participation. What are these structural factors?
MAR: Yes, we have argued that inherent structural characteristics can result in the systemic exclusion of some countries. Think about Pacific island states or landlocked countries, including Nepal and many in Sub-Saharan Africa. For them trade costs are excessive: 50-100 percentage points higher than that of developing country average. On the other hand, export margins from GVCs for developing countries are typically so low that these cost disadvantages cannot be overcome. For apparel exports, countries like Bangladesh obtain price margins which are just about 30% of final retail prices. Within this narrow margin, manufacturers have to bear two-way shipping costs (for importing raw materials and then exporting final products). Many island and landlocked countries will not find it viable to enter into these GVCs. In other cases where there is the presence of poor countries, for example in primary commodities, the margins are also low. Only 10-15% of final retail prices for coffee and horticulture products go to the African producers. This has implication for social development.

SANEM: If LDC exporters are not receiving “fair prices” for their products what is the solution?
MAR: A difficult question - as I said before, this issue has been overlooked in the current discourse where GVCs are considered generally as opportunities for accessing export markets. The typical policy prescriptions have been to undertake further liberalization and improve trade facilitation measures. In other cases, countries have been advised to upgrade their products and services, and moving up the value chain ladder. These suggestions have serious merits, but the distribution of value in GVCs is an important issue for many poor countries. In order to promote trade-led development, there is perhaps a need for thinking about the global governance of global value chains.

SANEM: What role do you think the emerging developing countries have in GVCs?
MAR: I believe the rising significance of developing countries in global trade is likely to exert a strong future influence on GVC development. Almost half of global merchandise exports and about 40% of world GDP are now attributable to developing countries. Trade between developing countries is also rising rapidly. The average annual growth of South-South trade since 2000 has been 17% as against the world trade growth rate of 10%. Trade with fast growing developing countries offers new opportunities for specialization, efficiency gains, investment and export market diversification. These countries offer new opportunities for forming regional supply chains. Studies have identified the potential for developing regional supply chains in sub-Saharan Africa (SSA) and South Asia in such sectors as textiles and clothing, leather and leather products and agro-processing. As much as 40% of intra-SSA trade takes place in manufacturing, indicating significant scope for developing regional production networks. Another important aspect of the rise of developing countries is that new markets and growth centers are likely to be in the region, helping many poorer developing and landlocked countries to connect through regional trade and integration processes.

However, there are challenges as well. The nature of current trade patterns with emerging economies such that SSA and small states predominantly export primary commodities and import largely manufactured items. There is an apprehension about this nature of specialization within South-South trade. SANEM: How would you see the role of upcoming trading arrangements such as Trans-Atlantic and Trans-Pacific in future GVC participation?
MAR: There are serious concerns about these upcoming mega trading blocs as they are associated with the three main GVC hubs: the USA, Europe and Asia. These super trading blocs have the potential for trade and foreign investment diversion effects which could harm excluded countries. Furthermore, the rules and provisions negotiated under these new regional frameworks are likely to be more elaborate and encompassing, which capacity-constrained excluded countries will find it extremely difficult to comply with. This can compromise the scope of their participation in GVCs further. That is to say, unless appropriately designed, future GVC development may become more exclusive as opposed to inclusive.

SANEM: What kind of external support can LDCs and other low-income countries demand from development partners to facilitate GVC participation?
MAR: First of all, the Aid for Trade support initiative needs to be strengthened so that adequate and effective assistance is available to support trade-related productive capacity. The AIT support can be instrumental in enhanced regional integration and developing regional supply chains. The existing support mechanism needs to duly recognize the special and unique development challenges faced by small states and land-locked countries. While there is evidence of AIT being effective in promoting trade facilitation, its impact on productive capacity is not clear. I would also think that any new agreements reached by the major drivers of mega-regions should be accompanied by a commensurate development package to mitigate any adverse consequences for capacity-constrained countries. In light of the on-going developments there is a real need to enhance and strengthen the trade policy review process and trade surveillance mechanisms of the WTO so as to ensure that potential damaging trade effects are identified, quantified and appropriate measures are undertaken to support excluded countries.

The current pattern of highly unequal distribution of value-added along GVCs is not conducive to the design of more inclusive approaches. The governance of GVCs including the relationships between lead firms and local suppliers is an area that needs to be better understood in order to support more inclusive GVC development.

SANEM: Thank you very much for your time.
MAR: You are most welcome.
A regional workshop on “Post-Bali Issues and Preparation for the 10th WTO Ministerial Conference: A South Asia Perspective” was held on 18-19 May, 2015 at Colombo, Sri Lanka, jointly organized by the Commonwealth Secretariat, CUTS and Institute of Policy Studies of Sri Lanka. Dr. Selim Raihan (Executive Director, SANEM) made a presentation on “Non-Agricultural Market Access Negotiations: Status and Key Issues for Consideration by South Asian Countries”. His presentation covered key issues in the ongoing NAMA negotiations, which are the modalities for tariff reduction, flexibilities for developing countries, the ‘sectoral discourse’, LDC issues and NTBs. He highlighted the point that, in reality, there had been a balance between the commitments and obligations in the NAMA and agriculture. His presentation then provided the recent updates on NAMA issues. He argued that NAMA is important for South Asia since the majority of South Asian countries’ exports and imports fall in the category of industrial goods, South Asian countries have both significant offensive and defensive interests in NAMA, and LDCs in South Asia have keen interest in secured and predictable DFQF market access, with two LDCs, Afghanistan and Bhutan are in the process of acceding to the WTO. Dr. Selim Raihan was also the moderator for the session titled “Trade Facilitation Agreement: Opportunities and Challenges for South Asia”. The workshop came to an end with vigorous discussion on regional integration process in South Asia, challenges and opportunities for countries of this specific region and implications for the multilateral trading process. Dr. Saman Kelegama (Executive Director of Institute of Policy Studies of Sri Lanka) provided concluding remarks at the end of the two-day long intensive workshop.

SANEM is going to release its first video documentary on “Female Labor Force Participation in Bangladesh” in June 2015. The documentary is an embodiment of SANEM’s current research work on the dynamics of female labor force participation. The video discusses about the overall scenario of female LFP in Bangladesh, the transition in female LFP since 1990; and issues and determinants of LFP. In the documentary, Dr. Selim Raihan (Executive Director, SANEM) speaks about the factors determining female’s participation in the labor force, the factors hindering FLFP in our country and some policy implications to improve female LFP in Bangladesh. He also discusses about SANEM’s ongoing research works concentrating on FLFP. Ms. Simeen Mahmud (Coordinator, CGST, BIGD, BRAC University) talks about the changes in FLFP and the policies that should be taken to improve female labor force participation in Bangladesh. Dr. Sayema Haque Bidisha (Associate Professor, Dept. of Economics, University of Dhaka) talks about the current scenario of female in unpaid labor in our country. She emphasizes on the findings from the recent study on female in unpaid work that was conducted as part of SANEM’s intensive research work. The video will soon be uploaded in YouTube and it will be available on SANEM’s website from June 2015.

Call for Applications for 8th South Asian Training Program on CGE Modelling

South Asian Network on Economic Modeling (SANEM), Dhaka and South Asia Watch on Trade, Economics and Environment (SAWTEE), Kathmandu together with the Centre for WTO Studies (CWS), New Delhi are organizing the “Eighth South Asian Training Program on CGE Modelling” from 4-8 August 2015 in Cox’s Bazar, Bangladesh.

Applications are invited from interested and eligible candidates for the training program. Potential participants should have at least a Masters degree in Economics or a related field and a sound knowledge of applied micro and macro economics. Interested candidates are requested to submit the filled up application form along with other required documents at cge@sawtee.org with a subject line “Application for Eighth South Asian Training Program” no later than Friday, June 5, 2015 by 17:30 Kathmandu time and 17:45 Dhaka time. Details and the application form are provided on SANEM website.

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Dialogue on Non-Tariff Barriers in Bangladesh-India Trade

Centre for Policy Dialogue (CPD) organized a dialogue on “Non-Tariff Barriers in Bangladesh-India Trade: Addressing Sanitary and Phytosanitary (SPS) Concerns” on 18 April, 2015 at BRAC Inn auditorium.

Mr. Mahbubur Rahman (President, International Chamber of Commerce, Bangladesh (ICCB)) chaired the discussion that was followed by opening remarks from Professor Mustafizur Rahman (Executive Director, CPD). Dr. Selim Raihan (Executive Director, SANEM) was a distinguished discussant for the dialogue session. He discussed about issues regarding the decline of Bangladesh export to India despite reduced tariffs and DFQF facilities to Bangladesh. Additionally, he mentioned that, increasing the producers’ capacity to meet compliance and standards and mutually beneficial cooperation between the two countries would improve the current condition. Chief Guest for the session was Mr. Amitava Chakraborty (Director General (WTO Cell), Ministry of Commerce).

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