

International Food Policy Research Institute:

Report to the GTAP advisory board 2007

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At IFPRI, since structural adjustment in early 2003, research involving CGE modeling in general and GTAP in specific is conducted in the two Divisions, *Market, Trade and Institution Division* and *Development Strategy and Governance Division*.

1 Research topics

The following projects and publications are related to the use of CGE modeling or GTAP data.

A WTO and trade issues

- a. Research on WTO Doha agreement and its effect on developing countries:
 - (1) Research on the degree of ambition attached to the on-going Doha negotiations and potential impact on developing countries
 - (2) Research on key clauses for developing countries in the on-going Doha negotiations;
 - (3) Research on the under-trading performance of African countries and the efficiency of a Duty Free Quota Free access given to them;
Projects funded by Hewlett Foundation

B Evaluation of preferential schemes and regional agreements.

- (1) Research on alternative trade strategies for North-African countries: multilateralism/North-South integration/South-South integration.

c. Trade liberalization, income distribution and poverty

- (1) Poverty Implications of Cotton and Textile Policies in Pakistan
- (2) Poverty Implications of Special Product Treatment of Key Food Items in the Philippines

C Development, growth and poverty reduction issues

- a. Regional dynamics of agricultural market in Sub-Sahara Africa.
- b. Market opportunities for small holder agriculture in Africa.
- d. Policies for pro-poor agricultural growth in low income countries.

2. Training sessions on CGE modeling

1 Training sessions on CGE modeling done by C. Cororaton in Pakistan, funded by ADB

2 Training sessions on CGE modeling and the utilization of the MACMap database done by Antoine Bouet and Simon Mevel in Peru, funded by the Hewlett Foundation to economists from the Ministries of Finance and of Foreign Trade.

3 Training sessions on CGE modeling and the utilization of the MACMap database done by Antoine Bouet and Simon Mevel in Senegal, funded by the Hewlett Foundation to economists from ISRA-BAME, from the Ministries of Finance, of Agriculture and of Foreign Trade.

3. Publications using CGE or other economy-wide models during 2006-07 (from 07/01/06 to 06/30/07)

1 Bouet A., Y. Decreux, L. Fontagné, S. Jean and D. Laborde, 2007, «A consistent measure of applied protection», *Review of International Economics*, forthcoming.

2 Bouet A., S. Mevel, and D. Orden, 2007, « More or Less Ambition in the Doha Round: Winners and Losers from trade liberalization with a development perspective», *The World Economy*, forthcoming.

3 Bouet A., 2006, "Defining a trade strategy for Southern Mediterranean countries ", *MTID Discussion Paper*, IFPRI, November, No. 97.

4 Cororaton C. and J. Cockburn, 2007, "Trade Reform and Poverty – Lessons from the Philippines: A CGE Microsimulation Analysis", *Journal of Policy Modeling*, Vol. 29, Issue 1, pp 141-163.

5 Cororaton C., 2007, "Rice Reforms and Poverty in the Philippines" in *Poverty Strategy in Asia*. H.A.Khan and J.Weiss (editors), 2006. Asian Development Bank Institute, Tokyo: Edward Elgar Publishing. pp. 90-123.

6 Morley S., 2006, Trade Liberalization Under CAFTA: An analysis of the Agreement with Special Reference to Agriculture and Smallholders in Central America MTID Discussion Paper 95, and DSGD Discussion Paper 33.

7 Abdula, A., M. Johnson and X. Diao, 2006, "Leveraging Regional Growth Dynamics in African Agriculture," *African Journal of Agricultural and Resource Economics* 1(1): 49-66.

8. Roe T., A. Somwaru, and X. Diao, 2006, "Globalization: Welfare Distribution and Costs among Developed and Developing Countries," *Review of Agricultural Economics*, 28(3), Fall 2006: 399-407

9. Diao X., Jørn Rattsø and Hildegunn E. Stokke, 2006, "Learning by exporting and structural change: A Ramsey growth model for Thailand," *Journal of Policy Modeling* 28: 293-306.

10 *Agriculture and Achieving the Millennium Development Goals*, Report No. 32729-GLB. The World Bank and International Food Policy Research Institute, 2006 (Xinshen Diao and James Thurlow are two of eight authors from IFPRI)

11 Diao X., A. Somwaru and F. Tuan, 2006, "Regional and National Perspectives of China's Integration into the WTO: A CGE Inquiry with Emphasis on the Agricultural Sector," in Doi, Masayuki (ed.) *Computable General Equilibrium Approaches in Urban and Regional Policy Studies*, Chapter 13: 269-296, New Jersey, U.S.A. and London, England: World Scientific Publishing Co. Pte. Ltd.

12 Diaz-Bonilla E., X. Diao, and S. Robinson, 2006, "Thinking inside the Boxes: Protection and Investments in the Development and Food Security Boxes Versus Investments in the Green Box." In E. Diaz-Bonilla, S.E. Fransen and S. Robinson (eds.) *WTO Negotiations and Agricultural Trade Liberalization: The Effect of Developed Countries' Policies on Developing Countries*, p207-234, Wallingford, UK: CABI Publishing.

13 Tuan F., A. Somwaru and X. Diao "Agricultural Policy Developments after China's Accession to the WTO," in Fung, Hung-Gay, Changhong Pei, and Kevin H. Zhang, Armonk (eds.) *China and the Challenge of Economic Globalization*, p253-272, New York and London, England: M.E. Sharpe, An East Gate Book.

14 You L. and X. Diao, 2006, "Assessing Potential Impact of Avian Influenza on Poultry in West Africa – A Spatial Equilibrium Model Analysis," DSGD Discussion Paper No 40, International Food Policy Research Institute, September.

4 Research abstracts

I A consistent measure of applied protection

Bouet A., Y. Decreux, L. Fontagné, S. Jean and D. Laborde

Abstract

This paper presents MAcMap-HS6, a database providing with a consistent, *ad-valorem* equivalent measure of tariff duties and tariff rate quotas for 163 countries and 208 partners, at the six-digit level of the Harmonized System (5,111 products), accounting for all preferential agreements. We describe the methodology used to compute and aggregate an *ad-valorem* equivalent of applied protection. Emphasis is placed on minimizing the endogeneity bias in the aggregation procedure, while acknowledging structural differences in export specialization. The resulting quantitative assessment is illustrated by giving an overview of applied protection across the world in 2001, in terms of average as well as distribution.

II More or Less Ambition in the Doha Round: Winners and Losers from trade liberalization with a development perspective

Bouet A., S. Mevel, and D. Orden

Abstract

The object of this paper is to assess the impact of a multilateral trade agreement based on greater or lesser levels of ambition, on developing countries, whose economies depend heavily on agriculture. In that purpose we use the MIRAGE computable general equilibrium model of the global economy, and compare different scenarios for the Doha negotiations. These scenarios are based on the proposals currently on the table from the United States (US) and the European Union (EU). A cooperative reform outcome by the US and the EU—based on the most ambitious components of their negotiating proposals—delivers noticeably more benefits than an unambitious outcome. We measure the degree of ambition in each scenario by its effects on tariff levels, trade volumes and real incomes. The focus of the analysis is on the impacts on developing countries with disaggregated results presented for 41 countries and regions (of which 33 are developing).

III Defining a trade strategy for Southern Mediterranean countries

Bouët A.

Abstract

The objective of this paper is to analyze the best trade approach for Southern Mediterranean countries (Morocco, Algeria, Tunisia, Libya, Egypt, Jordan, Syria, Lebanon and Turkey) to increase market access and develop trade policies which will facilitate the most efficient economic development of their countries. The study uses, the MacMap-HS6 database on market access and the MIRAGE model of the global economy. While most South Mediterranean (SM) countries are very protectionist, they enjoy a fairly good access to world markets, either due to product specialization or to preferences granted by the European Union in the industrial sector. Today, these countries are simultaneously opting for multilateralism, North-South regionalism, and South-south regionalism. Are these options substitutes of each other? As this study suggests, that is not the case. A South-South integration of these countries is not enough trade – creating, while a North – South Free Trade Agreement with Europe is significantly trade – diverting, particularly in the case of SM countries' agricultural imports. In order to examine the dynamics between multilateralism and regional strategies, the '*structural congruence*' of these different trade regimes is measured and a new indicator is proposed.

IV Missed opportunities? Understanding the effective and potential consequences of a Doha agreement on developing countries

Bouët A., S. Mevel and D. Orden

Abstract

What impact would a Doha agreement based on the possible elements under negotiation in 2006 have on developing countries? Are there missed opportunities for these countries? Using the MIRAGE computable general equilibrium model of the global economy, we evaluate a basic scenario for the Doha trade negotiations, taking real numbers from the proposals on the table from the United States (US), the European Union (EU) and the G20. We provide sensitivity analysis, evaluating the potential impact

of strengthening two clauses of the current negotiations: to have fewer “sensitive” or “special” products exempt from the agricultural tariff reduction formulas otherwise agreed upon and to expand free access given to Least Developed Countries (LDCs) in OECD markets to 100% of all tariff lines. We focus the analysis on the impact on developing countries. Full implementation of free access to OECD markets has a significant positive impact on LDCs.

V Which tariff aggregator for trade modelers?

Bchir H., and A. Bouet

Abstract

For many years the aggregation of tariffs is a hotly debated issue. From relatively simple aggregation schemes (national imports, world imports, imports of a reference group) to complex schemes (aggregation systems based on Trade Restrictiveness Index, on Mercantilist Trade Restrictiveness Index – MTRI-) the economic literature has been prolific and innovative, but has not yet provided satisfactory and operational conclusions. The objective of this paper is to examine the virtues and drawbacks of different weighing schemes and draw some clear-cut conclusions for trade modelers. After the exposition of theoretical foundations and a review of the literature, an implementation of different weighing schemes (national imports, world imports, imports of a reference group, MTRI-based scheme) is carried out in the MAcMAP_HS6 database which describes world protection in 2004. The differentiated measurement of protection at various levels is examined (by reporter, by partner, by product, by reporter and partner...). Then we utilize a standard geographic and product decomposition and model full trade liberalization with the MIRAGE model, with measurement of protection based on alternative weighing scheme. Comparisons are done in terms of welfare and trade impact. The theoretical debate does not allow us for clear-cut conclusions. This is the reason why we adopt in this paper an empirical point of view. In particular we calculate numerous tariff averages according to different schemes and evaluate empirically their (lack of) robustness without taking any a priori position. This evaluation is done both in terms of average level of protection and of welfare impact.

VI Trade Preferences and Market Access: Evaluating the Impact of Granting More to African Countries

Berisha-Krasniqi V., A. Bouet, S. Mevel, and Devesh Roy

Abstract

In this paper we revisit the issue of under-trading by Africa. Using the MAcMap database, we first evaluate the levels of existing market access for Africa. Our results show an important result that within Africa market access varies widely across countries. Through the utilization of the MIRAGE model of the global economy we test the impact of Duty Free Quota Free (DFQF) access given by either the US, or all OECD countries, or all OECD countries + Brazil, India and China to African countries. Results broadly confirm the previous evaluation of market access in Africa as impact of DFQF is various across African countries. Drawing on the evaluation of bilateral market access we capture the country specific market access in our empirical analysis while testing for under-

trading by Africa. We find evidence that globally Africa is an under-trader. It exports less than its predicted level. In contrast with previous studies that do not explain the causes for under-trading, we explore the reasons for the observed under-trading. Trade facilitating infrastructure like transport and communication at least partially explain the under-trading by Africa. We quantify the impact of infrastructure on trade using a framework that allows infrastructure variables to interact with each other. Our results indicate that in affecting trade flows infrastructure complement each other thereby creating a basis for their joint development.

VII Poverty Implications of Cotton and Textile Policies in Pakistan: A CGE Analysis

Caesar B. Cororaton & David Orden

Abstract

Cotton is a major agricultural commodity of Pakistan while cotton-based items such as yarn and textiles are its major exports (70 percent of total exports). In the international market, the price of cotton has been unstable around a generally declining long-term trend. In the textile sector, multilateral trade rules have changed and there is increased competition among exporters. The paper looks at how these types of developments could impact the economy and rural poverty in Pakistan through numerical simulation analysis using a computable general equilibrium (CGE) model which is linked to data in a primary household survey. The five experiments are conducted using the model: (a) an increase in foreign savings of 100 percent¹; (b) an increase in world cotton prices of 20 percent; (c) an increase in world textile prices of 5 percent; (d) an improvement in total factor productivity (TFP) of 5 percent in one or more of the cotton-related sectors (raw cotton, cotton lint and yarn, and textiles); and (e) a production subsidy of 5 percent in these sectors. The analysis of each of the experiments will trace the effects across the three cotton-related sectors and across the rest of the sectors, factor prices, consumer prices, income across household groups, and poverty. Macroeconomic effects of the experiments will be analyzed as well. Finally, we conduct microsimulation to determine the effects on poverty based on the CGE model results, which are applied to disaggregated data from the 2001-02 Pakistan Household Integrated Economic Survey (HIES) of the Federal Bureau of Statistics (2003).

VIII Poverty Implications of Special Product Treatment of Key Food Items in the Philippines

Caesar B. Cororaton and Erwin Corong

Abstract

Through numerical analysis, the paper attempts to examine if it is wise in terms of policy to put higher protection on special products. The paper identifies a number of products that may be considered candidates for special product treatment. These products are food and food-related. They are also agriculture-based. One major commodity in the list is rice, which is currently under quantitative restriction. The paper conducts various policy

¹ Between 2001 and 2005 foreign savings increased by 111 percent.

simulation experiments. One simulation involves gradual reduction in tariffs in all sectors, including the special products. Another involves higher tariff protection on special products. The paper finds that additional protection on special product is welfare-reducing, while gradual reduction in tariff, including special products, is welfare-improving. Furthermore, the results of the micro-simulation process indicate that apart from the welfare-reducing effect of additional protection on special products, it is also poverty-increasing. Gradual reduction in tariff rates is poverty-reducing. This is due to the significant reduction in consumer prices, especially on food and food-related products which have large shares in the consumption basket of lower income groups.

IX Trade Liberalization Under CAFTA: An analysis of the Agreement with Special Reference to Agriculture and Smallholders in Central America

Sam Morley

Abstract

This paper is a description and an analysis of trade liberalization under CAFTA. It shows that in the short run the impact of the agreement is likely to be small. That is partly because the pre-CAFTA tariff levels were already low and also for sensitive products in agriculture, tariff reductions either quite gradual or non-existent. CAFTA also granted tariff-free access for certain amounts of several important products. However these quotas are either less than the current level of imports or small relative to domestic supply which means that they are unlikely to have much impact on domestic prices or producers.

The fact that the tariff reductions and TRQs granted by the Central American countries under CAFTA will not cause significant price reductions does not mean that domestic producers will be unaffected by the agreement. In the long run the level of protection of many important commodities such as rice, pork and poultry will be significantly lower. But the tariff reductions in these sectors are gradual. That gives farmers time to adjust and to become more competitive. What will be critical from a policy perspective is that this time is used wisely to increase productivity, switch to more profitable crops and take advantage of the new opportunities opened up by CAFTA.

X The Impact of CAFTA on employment, production and poverty in Honduras

Sam Morley and Valerie Pineiro

XI The Impact of CAFTA on Poverty, Distribution and Growth in El Salvador

Sam Morley and Valerie Pineiro

Abstract

These two papers insert the sectoral tariff changes derived in the first paper into CGE models for Honduras and El Salvador to estimate the impact of CAFTA. We show that in both countries the impact of the trade liberalization under CAFTA on production, employment and poverty is positive, but small. CAFTA made permanent the temporary rules of origin for the maquila industry. We show that this has a much bigger positive effect on the economy especially in Honduras. But what really will matter for growth

and poverty reduction is whether or not CAFTA sparks a significant increase in capital formation. We simulate an increase in foreign investment in response to the more favorable treatment of foreign investors under CAFTA, and show that in both countries its effect is far larger than either trade liberalization or maquila.

XII Leveraging Regional Growth Dynamics in African Agriculture

Awudu Abdula, Michael Johnson and Xinshen Diao

Abstract

This study focuses on public investments and policy reforms for leveraging growth spillovers at the Africa regional level. It reviews first the theory and evidence of knowledge and growth spillovers generally and second the evidence in the African context. Given the limited and scattered evidence of actual past spillovers, it reviews recent ex ante simulations using partial and general equilibrium models to stress the potential for spillovers from greater cooperation in agricultural research, and from trade liberalization, policy harmonization and investments in infrastructure. The results show that permitting greater crossborder transfers and adopting improved technologies could have large spillover multiplier effects on overall economic welfare in the region. And simply reducing African countries' trade barriers and improving cross-border transport could increase agricultural incomes by as much as 10%. These two examples confirm that regional cooperation in agricultural research and harmonization and liberalization of regional trade systems are two important areas that have yet to be optimally harnessed to generate larger spillovers and enhance regional economic take-off.

XIII Learning by exporting and structural change: A Ramsey growth model for Thailand

Xinshen Diao, Jørn Rattsø and Hildegunn E. Stokke

Abstract

Modern growth analysis emphasizes technology adoption and human capital as sources of growth and identifies high growth as temporary episodes. The long high growth experience of Thailand is a different story since the growth is not directly associated with advanced technology or high skill intensity. Our understanding is that Thailand's growth has been based on learning by exporting and labor-intensive manufacturing with expanding domestic backward linkages. The analysis using a Ramsey model shows how prolonged growth in Thailand can be explained by this learning mechanism and structural shift from agriculture to exportables. The relationship between exports and productivity is studied in a counterfactual experiment where protection serves as a barrier to exports learning and thereby reduces growth. Openness and structural change come out as the key ingredients of the growth strategy.