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PhD at FARM

Comparative analysis of the impacts of different policy scenarios of trade openness and investment in agriculture on economic development in Sub-Saharan Africa

After 30 years of disinterest, agriculture is now considered a crucial sector for the development of the poorest countries. Faced with the threats of food and economic crises, governments in many states are urged to act and define their agricultural policies, in a context where there are major debates both on measures to be implemented and on tools which could guide them.

As part of its activities, the Foundation for World Agriculture and Rurality (FARM) wished to support reflections on agricultural policies in Sub-Saharan Africa (SSA). Since February 2009, Mathilde Douillet, research analyst on agricultural policies at FARM, is undertaking a doctoral thesis on the comparative analysis of the impacts of different economic policies on agriculture and development in sub-Saharan Africa. Trained as an agronomist, Mathilde Douillet is enrolled in the doctoral program in economics at Sciences Po under the scientific supervision of Antoine Bouët, researcher at the International Food Policy Research Institute (IFPRI). Her PhD is funded through a specific convention (CIFRE in French) with FARM as a private partner, hence she is also benefitting from the professional guidance of the Director of FARM (initially Bernard Bachelier, who was succeeded by Jean-Christophe Debar).

The purpose of this note is to briefly present the research conducted as part of the PhD. The subject is part of a controversial field, both in regards to the role of agriculture in development and to the use of public intervention to promote development strategies. Thus, this paper begins with a state of the discussion in order to clarify the issue and justify the choice of the methodological tool of the thesis. Then preliminary results are outlined and, finally, the contribution of research and its implications for the foundation FARM are presented.

Agriculture for development?

The debates on the role of agriculture for development in Sub-Saharan Africa are explored through a historical review of the policies implemented in the region and the history of economic thought. Sub-Saharan African economic policies have failed to develop an agricultural sector successful in fighting poverty and hunger. Political economics has attributed this failure in turn to the "urban bias" of the post-independence policies (Lipton 1977), that were taxing food crops in favor of urban consumers in order to develop industry and export crops (Anderson et Masters 2009); then to the failure of the deregulation policies from the structural adjustment period to compensate for this urban bias and to allow the emergence of a private sector providing goods and services for agriculture (Devèze 2008); and finally over the last 30 years, in the context of lower global agricultural prices, to the reduction of public investment in agriculture which have been precisely documented by IFPRI (Fan 2008).

The end of the structural adjustment policies and the rise of world agricultural prices reversed that trend. Many African governments, supported by international donors, are redefining interventionist policies for agriculture and investing in this sector. This shift is linked to the significant changes experienced by these countries that have to the recognition that agriculture is central to employment, government revenue and food security. On average, in sub-Saharan Africa, 70% of the population depends on agriculture for its livelihood. It accounts for 30% of gross domestic product (GDP) and 60% of export earnings (Devèze 2008). The expectation of a population boom in the sub-continent by 2050 exacerbates the issues of employment and food security. The fact that the population has not been and will probably not be absorbed by the industries and services sectors brings the development of rural activities to the center of the political struggle against unemployment (IFAD 2011). In terms of food security, since the 1980s, this region has been increasingly dependent on imports. In a context where world agricultural prices are expected to be significantly higher and more erratic than in the past, many states fear that the rise in the cost of basic foodstuffs, observed since 2008, might continue. Finally, agriculture is at the heart of many other issues, such as energy (biofuels) and climate (the climate change impacts on the potential of agricultural production, and the contribution of agriculture to the reduction of greenhouse gases emissions).

Historically, the idea that agriculture is a provider of exploitable surplus, particularly of labor, has long been dominant in economic theory, and has legitimized policies unfavorable to agriculture. This conception stemmed from the stylized fact of structural transformation of economies (namely, the combination of economic growth and declining share of agriculture in GDP and employment) that was turned into an objective in itself. Even though econometric studies (Timmer and Akkus 2008) have confirmed the regularity of this phenomenon in many developed and emerging countries, in the last 50 years most sub-Saharan African have followed a distinct pass, characterized by a drastic reduction in the share of labor in agriculture rarely accompanied by growth. These countries are considered to have “missed” their structural transformation (de Janvry and Sadoulet 2008). The transformation of this stylized fact into a paradigm has started to be put into question in development economics. The fact that economic growth in several Asian countries has coincided with rural industrialization and a constant share of workers in agriculture (Losch 2008) calls into question the normative status of the structural transformation.

The recent development of modeling and econometrics has been a turning point in the analysis of the impacts of agricultural growth. It has helped identify and quantify the mechanical effect of agricultural growth - due to the importance of this sector in the economies of most sub-Saharan Africa – but mainly its multiplier effect, operating through the price and positive externalities (Delgado et al. 1994, Haggblade 2007, Self et Grabowski 2007, Cervantes-Godoy et Dewbre 2010). Despite the diversity of situations in the sub-continent, and the specificity of each country, the interest of agriculture as an engine of economic growth in this region seems consensual (World Bank 2008). However, the exact quantification of the effects of agricultural growth in the context of globalized agricultural markets remains a debate (Christiaensen, Demery and Kuhl 2011).

Considering those debates, the first choice of the thesis is to consider the agricultural sector within the whole economy, and not to focus only on this sector, in order to avoid assuming that any development of the agricultural sector would be positive. The approach chosen thus emphasizes the analysis of the macro, sectoral and, whenever possible, social (on poverty and food insecurity) impacts of agriculture policies.

Which economic policies?

According to the analysis of the economic literature, policy recommendations on agriculture for development in Sub-Saharan Africa can be divided in two ideologically opposed schools of thought. One school of thought calls for interventionist and protectionist agricultural policies similar to those conducted in the postcolonial period justified by the public good of agriculture and the existence of many market failures in this sector. A reverse school of thought pushes instead for liberal policies in the context of multilateral trade integration, such as is negotiated at the World Trade Organization (WTO). The latter approach is justified by the theory of international trade and reinforced by the recent theoretical developments of political economics, stating that the inefficiencies associated with government intervention are greater than market imperfections. The most extreme normative and ideological interpretations lead some economists to believe that trade policies are a sufficient tool for development (Dollar and Kraay 2004).

Within these debates, regional integration policies are subject to less opposition. They are considered either as a way to define interventionist agricultural policies that are consistent at the supranational level, as in the case of the regional agricultural policy the Economic Community of West African States (ECOWAS) is currently developing, or as a means of bringing coherence to trade openness at a regional level, an intermediate step towards multilateral trade liberalization.

The analysis of the current state of trade integration in SSA reveals that there are real prospects for growth of agricultural exports both within the sub-continent and towards the rest the world. States in this region are among the most protectionists in the world, especially in regard to their mutual trade. Despite the existing regional integration process, the African continent is characterized by the weakness of its intra-regional trade, which is less than 10% of total trade against 20-50% for other regions (UNCTAD 2009). Despite the many preferential measures benefitting sub-Saharan Africa, it has been marginalized in world trade, even in its flagship export sector, agriculture. Its exports are particularly concentrated on primary products, including raw agricultural products. However, nowadays demand has largely turned to processed products, which gives producing countries an opportunity to capture a greater share of value added (IAASTD 2008). The economic analysis should take into account the question of the level of processing of agricultural products.

Hence the subject of the thesis is voluntarily set outside normative considerations on the type of desirable economic policy. On the contrary, the choice is rather to base the research on the comparative analysis of the impacts of different orientations: multilateral liberalization, regional integration or reinvestment in agriculture.

Methodological approach: CGE simulations

Based on the recent recognition that economic theory is not sufficient to predict the impact of economic policies in their complexity (Harrison et al. 2010), especially regarding the distributional effects across sectors and households (Winters, McCulloch and McKay 2004), the thesis uses an empirical model for the ex-ante evaluation of various economic policies.

The most appropriate methodological tool is the computable general equilibrium (CGE), an overall analytical framework that quantifies the various ex-ante impacts of sectoral policies on the overall economy, as well as their distributional effects. Particularly suitable to model developing countries'economies, the CGE is commonly used, to the extent that the weight of the models on policy decisions is far from negligible (Devarajan and Robinson 2002). However, their results give rise to intense debate. Indeed, the theoretical framework, the hypotheses on the functioning of the economy, and the extent of regional and sectoral disaggregation greatly influence the results and their applicability domain (Bouët 2008, Francois 2000, and The Piermartini 2005). The reliability of data, especially in developing countries, is a particularly limiting factor. Therefore the thesis seeks to provide the necessary explanations on the many assumptions of the model and the data and their impact on the results and their interpretation.

Since existing simulation results, based on different models, are difficult to compare (Bouët 2008), comparative analysis of the different policies are carried out with each model. The first model used is a global model which puts sub-Saharan Africa in the context of international trade negotiations. Given the limitations inherent to this type of model in obtaining detailed results by sector and households, a second model is used at the national level considering specifically the case of Malawi, a country that has reinvested heavily in agriculture.

Preliminary results

The first simulations (Douillet 2011a), based on the model Modeling International Relationships in Applied General Equilibrium (MIRAGE), were conducted with the support of the modeling team of the Markets, Trade and Institutions division at IFPRI and the Centre d'études prospectives et d'informations internationales (CEPII), between May 2010 and July 2011.

This part of the thesis provides new insight into the consequences of different scenarios of trade integration.

Beyond a simple comparison of their macroeconomic impacts, the analysis assesses whether each type of trade integration promotes the processing of agricultural production and exports within sub-Saharan Africa.

• Even if a multilateral preferential "Duty Free Quota Free" market access (DFQF) offered to poor countries does indeed rebalances the gains from a Doha agreement at the WTO towards sub-Saharan Africa, overall developed countries would benefit the most from multilateral trade integration.

• The most important result is that at the macro level, regional integration within sub-Saharan Africa would bring gains of the same order of magnitude than multilateral integration, even if multilateral integration includes preferential measures towards the poorest countries such as with the DFQF.

• Another advantage of regional integration is that it would promote the processing of agricultural products in sub-Saharan Africa, while multilateral integration would intensify the specialization of sub-Saharan Africa in the production and export of raw agricultural products. These differences are explained by the initial structure of exports (mainly composed of processed agricultural products for exchanges within sub-Saharan Africa and raw agricultural products for exports to the rest of the world) and the relative competitiveness of other exporters who are granted the same market access. It appears that the least developed countries in SSA are not competitive, in particular, with the least developed countries in Asia for the production and export of processed agricultural products.

• The sub-continent is very unevenly affected by the various scenarios of trade integration. More countries suffer a decline in real income with regional integration than with multilateral integration. In particular, the loss of tariff revenue would have a very negative impact on some sub-Saharan countries in case of regional integration. Compensation of these losses could encourage countries to be more favorable to regional integration.

• From a methodological point of view, this study emphasizes the need for users of the GTAP7 database to exercise caution when simulating scenarios of drastic trade liberalization. Indeed some data problems, already well documented but generally not taken into account, cause a bias that overestimates the potential benefits of multilateral integration.

The second modeling project described in Douillet (2011b) has been undertaken since November 2010 in partnership with teams of the Development Strategy and Governance Division at IFPRI in Malawi and a research institute of the United Nations (UNU-WIDER) and is based in particular on the development of a new Social Accounting Matrix of Malawi for 2007 (Douillet, Pauw, Thurlow, Forthcoming). The national CGE model of Malawi includes a more detailed representation of agricultural sectors and households and offers more flexibility than the global model. In particular, it allows one to make recommendations in terms of poverty. Malawi, a landlocked southern African country, highly dependent on agriculture – specifically of an export product, tobacco, and a food crop, maize – has become an emblematic case of the revival of agriculture, through its inputs subsidy program launched in 2005, the Fertilizer Input Subsidy Program (FISP). Evaluations of that program highlight the success in terms of increased production, and the mixed impacts on food security and poverty (Douillet 2011c).

In the current economic context, the view that trade policy reforms could be more cost-effective pro-poor policies than costly subsidization policies promoting local agricultural production is gaining momentum (Anderson, Cockburn and Martin, 2010). The reduction of the existing global distortions to agricultural incentives is sometimes stated as a priority to fight poverty worldwide. However, despite the consensus that “not all growth is equally good for the poor” (Thurlow and Wobst 2006), with different parts of the population being able to grasp the opportunities that are presented to them and the development of a dynamic macro-micro literature, the impacts of global trade policy and domestic development policy reforms are rarely, if ever, compared. Drawing from previous country case-studies in the development economics literature, this study is based on the hypothesis that the pattern of trade integration chosen by each country will affect the structure of growth and thus the reduction of poverty. The methodology chosen is to transmit the shocks of the global trade reforms modeled with the global CGE MIRAGE to the national CGE model of Malawi linked with household data. Based on the analysis of the trade opportunities for Malawi (modeled in the first part of the PhD) described in Douillet and Pauw (Forthcoming), it examines how different trade policy reforms by Malawi and the rest of the world would impact poverty in Malawi. The country’s recent agricultural growth due to the FISP is replicated and the effects of accelerating growth in agriculture are compared with those of further integration to regional and multilateral markets. Despite technical limitations hindering rigorous comparison of the overall growth effect, even the most preferential trade policy reforms are found to be much less favourable for poverty reduction of the poorest than faster intensification and diversification of agriculture. Therefore, while policy reforms generating growth in general may be good for some poor households, it is found that not all policy reforms are equally good. Thus trade policies and agricultural policies should be seen as complementary, not substitute to one another.

Expected contributions and prospects for FARM

The thesis of Mathilde Douillet strengthens the think-tank side of FARM on public policy from different aspects. Through its applied results, it gives strength to FARM’s proposals to public authorities and cooperation agencies. In a context of stagnant multilateral trade negotiations in the Doha Round and renewed regional policy initiatives in Africa, it sheds light on some of the advantages and disadvantages of regional integration. In addition, through a better understanding of economic tools used for policy evaluation and their practical use, the results directly support the actors in their analysis and choices. Indeed, part of the analysis on Malawi was undertaken following a policy seminar at the Ministries of Agriculture and Trade of Malawi in November 2010, and in close discussion with IFPRI and UNU-WIDER.

Finally, the production and dissemination of knowledge enables FARM to generate debates on topical issues and to act as a link with different actors. The publication of a document in French describing the advantages and limitations of agricultural policy in Malawi was hailed by the French partners of the foundation.

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