

Welfare effects of the spread of modern food supply chains

Investments in food supply chains of developing countries are changing the way food is produced and traded, and are causing a rapid spread of so-called modern food supply chains. This has important welfare implications for rural households. The effects can come in various ways, through product and labour markets, and through direct and indirect mechanisms. The author documents these different effects for a case-study of fresh vegetable exports in Senegal.

Over the past decades, the integration of developing countries in global markets has accelerated with increased participation in international trade and growing inflows of foreign direct investment, resulting in swift changes in agri-food systems of developing countries and a rapid expansion of so-called modern food supply chains. These modern food supply chains comprise the production and trade of high-value produce, usually destined for export to high-income markets or for supermarket retail in high-income urban market segments. Modern supply chains are expanding rapidly across developing regions as global trade in high-value agricultural products – such as fresh fruits and vegetables, fish and seafood products – increases sharply and supermarkets mushroom across developing countries. These modern food supply chains are characterised by the use of high standards to govern quality and food safety throughout the chains, high levels of vertical coordination – including contract-farming – in the chains, a high degree of consolidation of the supply base and agro-industrial processing. This is in contrast to more traditional food supply chains that are

governed through spot market transactions involving a large number of small traders.

■ Effects on product markets and labour markets

The growth in modern food supply chains has induced a sharp debate among academics, policy-makers and the development aid community on the overall welfare implications. Some authors see this process as an engine for rural income mobility and poverty reduction, while others argue that it exacerbates existing inequalities and fails to create direct gains for the rural

poor. In order to understand the overall welfare implications of the growth in modern food supply chains for rural households, it is necessary to take into account and distinguish between several different effects. First, rural households are affected by the emergence of modern food supply chains through product markets; more specifically through the participation (or not) in the production and marketing of high-value produce for export or supermarket retail. Second, rural households can be affected through labour markets if the emergence and growth of modern sup-

Female employment in the export agro-industry can significantly increase primary school enrolment.

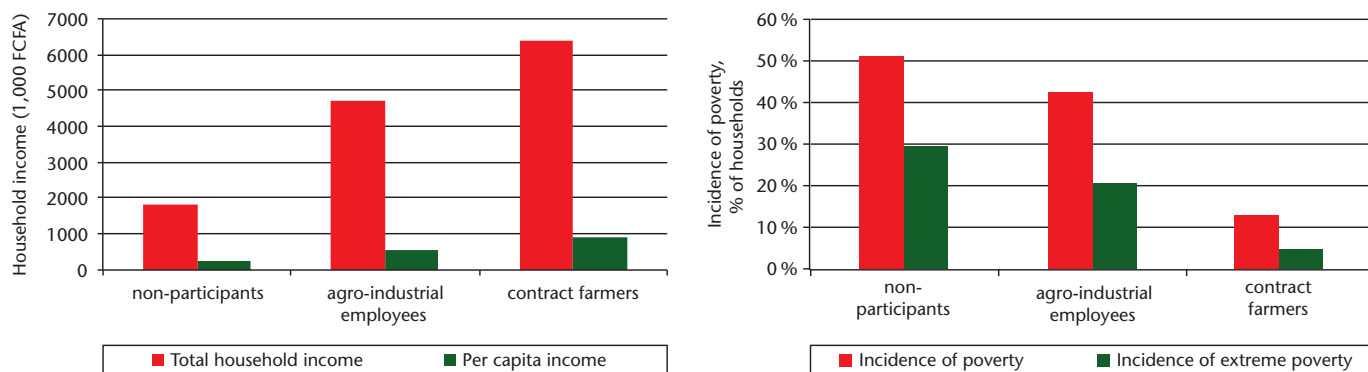
Miet Maertens

*Division of Bioeconomics, Department of Earth and Environmental Sciences
KU Leuven, Belgium
Miet.Maertens@ees.kuleuven.be*

Photo: M. Maertens



Growth of the bean and tomato export supply chains: Household level income and incidence of poverty



ply chains is associated with increased rural employment in emerging modern agro-industries. This can include employment on the fields of large-scale industrial farms or employment in post-harvest handling and processing, including labour-intensive activities such as sorting, grading, washing and labelling.

■ What is influencing household welfare?

Participation of rural households and smallholder farmers in modern supply chains – either through product markets or through labour markets – does not necessarily say much about the impact of such participation on household welfare. The welfare implications depend on the direct and indirect gains rural households can derive from this participation, and on spill-over effects in the broader economy. First, direct effects are most straightforward. Participation in modern supply chains through product markets might directly benefit farmers' income if product prices in these chains are higher. Contracted farmers are also affected by the provision of inputs, credit and farm assistance by the contractor company. This enhances access to inputs and working capital for farmers, reduces their production and marketing risk, improves their access to technology and typically results in higher productivity. In addition, the wages earned by workers in agro-industrial companies add

directly to household income. Second, indirect household-level effects are possible through technology and managerial spill-over effects from export crops to non-export crops and plots, and through investment of incomes from modern supply chains in other farm and non-farm activities. Also, indirect effects in the broader economy might exist through increased incomes from export production and wage employment leading to increased consumption of locally produced goods and services.

■ Case studies from Senegal

The author has analysed the product and labour market effects of the spread of fresh vegetable export supply chains in Senegal and has looked at direct as well as indirect effects. The case-studies include bean exports, originating from the Niayes region, and tomato exports, coming from the Senegal River Delta area. The export of beans from Senegal quadrupled over the past decade, from slightly more than 1,000 tons in 1998 to almost 5,500 tons in 2008; the export of tomatoes increased from slightly more than 500 tons in 1998 to almost 10,000 tons in 2008. The main destination countries for this produce are France, the Netherlands, Belgium and the UK. There are some differences in the structure of the export supply chains of beans and tomatoes. In the bean export sector there are some 25 exporting companies, a mixture of smaller and larger exporters. As a

result of increasing standards and as part of a corporate strategy to become GlobalGAP certified, the largest exporters have changed their sourcing strategies from relying on contract-farming with smallholders to vertically integrated estate production of their own. This has substantially changed the structure of the bean export supply chain. It is estimated that the share of export produce that is sourced from smallholder contract schemes decreased from 95 per cent in 1999 to 52 per cent in 2005. The tomato export sector is dominated by one multinational company that was established and started exporting tomatoes from Senegal to the EU in 2003. The tomato export supply chain is completely vertically integrated. There is no procurement from smallholders, and production, processing, trade and distribution are completely integrated within the subsidiaries of the multinational company. The multinational holding aims at high-standards production through certification by different schemes, including GlobalGAP, BRC (British Retail Consortium) and Tesco's Nature Choice.

■ Focus on five welfare effects

The welfare effects of the growth of the bean and tomato export supply chains for local households are diverse, and include product and labour market effects, and direct and indirect effects. Through the collection of survey data and statistical analyses, the author has

disentangled some of these effects. The intention is not to give a complete list of all possible effects but to point to some important mechanisms through which a welfare impact is created. Overall the results indicate that labour market effects and indirect effects, coming about through different mechanisms, are quite important in generating positive welfare effects for rural households and for creating spill-over effects in the rural economy (see Figures on page 21).

First, in the bean export supply chain, rural households benefit through both product market and labour market effects. Around 750 smallholder farmers and 12,000 workers participate in the bean export chain; the former as suppliers of produce in contract-farming schemes and the latter as workers on the estate farms and in the processing centres of the exporters. Both participation in contract-farming and participation in agro-industrial employment have resulted in significantly higher incomes. It is estimated that contracting with the export sector leads to incomes that are 110 per cent higher than the average income in the region, while for employment in the export industry this is 60 per cent. The observed shift in supply chain structure from smallholder contract-farming to large-scale vertically integrated estate production has resulted in a stronger poverty-alleviating effect. This is the case because the poorest households mainly participate and benefit through labour markets while participation in contract-farming is biased towards relatively better-off households.

Second, in the tomato export sector in Senegal, rural households only benefit through labour-market effects, as there is no contract-farming and procurement from smallholder farms. The export company employs slightly more than 3,000 workers on its fields and in the processing unit. These are mainly seasonal workers and day-to-day labourers who are recruited from nearby villages. It is estimated that employment

in the tomato export industry leads to incomes that are about 50 per cent higher than the average income. As participation in employment includes poorer households as well, these effects on income ultimately result in reduced rates of poverty and extreme poverty.

Third, employment in the bean and tomato export agro-industry benefits rural households directly through increased income from wages, but also indirectly through investment linkages at the household level. In the case studies, it was observed that wages earned in the export chains were partially invested in the households' own farm businesses, leading to higher outputs and farm incomes. An analysis shows that households with access to wages from the export agro-industry cultivate their land more intensively and use 75 per cent more agricultural inputs, leading to higher agricultural output. This is an important indirect effect, indicating that there are important linkages between the export supply chains and the local food supply chains. Export production on large-scale estate farms does not jeopardise food production for local consumption but in fact even stimulates local food production through investment linkages.

Fourth, employment in the bean and tomato export industries in Senegal has important indirect gender consequences. A large share of the employees in these sectors is female, 90 per cent in the bean sectors and 60 per cent in the tomato sector. The development of the export supply chains has led to a feminisation of the rural labour market in the case study areas and to a reduction (albeit not an elimination) of direct and indirect gender discrimination in these labour markets. Survey data reveal that the gender wage gap in export industries is three to six times lower compared to other employment sectors. Moreover, it was observed that wages earned by women in the export industries importantly contributed to female empowerment within rural households,

resulting in changes in the consumption pattern of households.

Fifth, female employment in the export agro-industry increases female bargaining power in the household, and this has important consequences for children. The school enrolment of primary school-aged children was found to be importantly affected by this increased female bargaining power. It has been estimated that female employment in the export agro-industry increases primary school enrolment by 26 per cent points. This effect was found to be equally large for boys and girls. These are major, important effects. They indicate that through the creation of female employment, the growth of modern export supply chains in Senegal has indirectly contributed to the second and third Millennium Development Goals of universal primary education and elimination of gender disparities in primary education.

One main conclusion that the author draws from the research is that the growth in modern export supply chains in developing countries can bring about important positive welfare effects for rural development and poverty reduction, and that these effects can come in various ways through product or labour market effects and through direct and indirect effects. Indirect effects and labour markets effects can be quite important and should be considered in evaluating the contribution of modern food supply chains to welfare and development. This implies a need for supporting the development of modern food supply chains in poor countries. This requires a recognition of the importance of private investments in agri-food supply chains, and of the importance of labour market effects in policy thinking and programme strategies.

More information on school enrolment rates and a list of references is available at: www.rural21.com