

Export vegetable supply chains, household labour allocation and poverty effects among small producers – Evidence from Northern Tanzania

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Summary

Throughout the past years, global agri-food systems have been deeply evolving with the rise and consolidation of modern supply chains. The emergence and increasing role played by these modern supply chains have been prompted by, among others, the growth and increasing domination of supermarkets and retailers as well as an increase of the demand in the developed countries for fresh and healthy products such as fruits and vegetables. This has in turn favoured the expansion of global trade of these high-value agricultural products and in particular their exports from developing countries to developed countries. These modern export supply chains are different than the traditional supply chains in the sense that they are more concentrated, follow a strong vertical coordination pattern with a domination of the aforementioned retailers and are regulated by more stringent quality standards and requirements. A comparable process has also taken place with the emergence of domestic modern supply chains and the rise of supermarkets in developing countries.

These changes have important consequences in terms of agricultural and rural development for developing countries. Indeed, some of the small producers who are not able to comply with these supply chains requirements may no longer be able to participate in the latter and thus be excluded, which could affect their livelihoods. However, in many cases small producers have eventually not systematically been excluded from these modern supply chains and have managed to participate in the latter as suppliers, including through contract farming schemes and other types of supplying arrangements. The implications and development effects for these small producers supplying their produce to modern supply chains have been of interest and analysed by the literature, in particular in terms of labour and employment generation as well as poverty reduction. Yet, some related research areas remain unaddressed.

First, with regard to the labour market effects, evidence from the literature shows that small producer participation in modern supply chains, in particular when it comes to horticultural products, can generate employment opportunities, *via* an increased on-farm casual labour demand, benefitting in particular women. Building on the literature on rural household labour allocation decision process and the concept of non-separability, one could expect that participation in modern export supply chains may potentially affect the labour allocation of participating households, *i.e.* both their on-farm hired labour demand and off-farm labour supply decisions. This specific aspect has not yet been entirely covered by research in this area since little is known about whether and how this labour allocation process in its entirety can be affected by entering modern supply chains as product suppliers. Furthermore, it would

also be interesting to find out more about how these supply chains' labour effects can also affect rural youth (aged 15-34). This is particularly important considering the challenges youth face in rural areas in developing countries, especially *vis-à-vis* their access to farming and rural non-farm activities and employment.

Second, there is a large body of evidence that participation in modern supply chains can have a positive effect on income and contribute to poverty reduction. Yet, much of this evidence builds on the comparison of the effects of participation in modern supply chains with respect to non-participation at all in these supply chains, thus not taking into account the potential heterogeneity of modern supply chains and participation modalities. Indeed, there is evidence that these modern supply chains can differ from each other in terms of their structure, supply arrangements and conditions. Some non-negligible exit rates from producers have also been noted. One could thus assume that participation in these supply chains may convey different effects for participating producers, depending on the characteristics of the supply chains as well as these producers' individual circumstances.

Thus, this dissertation contributes to fill these research gaps and consists of two main chapters. The first chapter aims to analyse the effects of small producer participation in modern export supply chains on household labour allocation, *via* the effects on household on-farm hired labour demand and off-farm labour supply. We also adopt an age-disaggregated approach to analyse whether and how these effects benefit particularly rural youth. The second chapter focuses on the effects of small producer participation in two types of modern export supply chains on poverty. Both chapters are implemented within the context of export vegetable supply chains in Tanzania and rely on data collected in 2015 from 349 vegetable producers.

For the first chapter, the application of a Generalized Separability Test fails to reject the separability hypothesis in our research context. We thus consider on-farm and off-farm labour supply decisions as separable and assess them separately through log-normal double-hurdle models. Using a control function approach, we fail to reject the exogeneity of participation in modern export supply chains. Our main results show that participation in modern export supply chains increases a households' likelihood to hire on-farm labour by about 10 percentage points and their unconditional hired labour demand by 83 percent. The age-disaggregated results show that participation in modern export supply chains increases a households' likelihood to hire young labourers and older labourers (aged 35 and over) by 12 and 13 percentage points, respectively. We also find that it has an effect on the unconditional

hired labour demand for the youth cohort only, which it increases by about 62 percent. The effect on the unconditional hired labour demand for the older age cohort is not statistically significant. On the other hand, we find no evidence of an effect on neither household's decision to enter off-farm labour markets, nor on their total off-farm labour supply.

In the second chapter, we estimate endogenous switching regressions models to assess the effect of participation in modern export supply chains on household per capita income. We differentiate between two types of modern export supply chains: high-value export supply chains and regular export supply chains. We find that overall participation in modern export supply chains has a positive effect on household income per capita, which is increased by 77 percent. However, we find that this effect is mostly driven by the high-value export supply chains, in which participation increases household income per capita by 45 or 99 percent, depending on the comparison group used. On the other hand, we find that participation in regular export supply chains has overall a negative effect on participating producers' household income per capita. Through a disaggregation of the average treatment effects, we also find that larger and richer producers benefit the most from participating in the high-value export supply chains while some of the poorer producers can actually benefit from supplying the regular export supply chains as it would increase their household income per capita by 14 percent.

A few lessons and conclusions can be drawn from these two chapters. In general, they confirm that small producer participation in modern export supply chains has positive effects on rural development, either through labour market effects or directly through product market effects. By generating casual agricultural wage labour employment opportunities, in particular for youth, it creates livelihoods options for the poor. Furthermore, our results confirm that small producers can benefit from participating in the export modern supply chains, although in our research context, this effect seems to be limited to what we have defined as high-value export supply chains. Participation in modern export supply chains *per se* may thus not translate directly into poverty reduction effects. Participation dynamics and modalities of different types of modern export supply chains can affect participating producers' livelihoods differently. These conclusions, as well as policy recommendations and the limitations of the study, are discussed in the last section of this dissertation.