

POLICY BRIEF

Investment in livestock market sheds improves market participation and income from small ruminants: *Evidence from Ethiopia*

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Introduction

Ethiopia aspires to transform its agricultural sector to achieve its vision of joining the middle-income African economies in the next decade. The country's economy is predominantly agrarian, where livestock are a crucial component. Although endowed with immense livestock resources, the performance of the sub-sector, in terms of productivity per unit of limiting resources, is low compared to neighboring countries (Bechew and Tadesse, 2019).

The transformation of the agricultural sector that the country envisages cannot be achieved without timely and careful attention to the challenges faced along the livestock production to consumption continuum. A glaring gap in the livestock development efforts in Ethiopia is negligence of the livestock marketing component (Kassie et al., 2019; Zeleke et al., 2021). Livestock markets in Ethiopia are very poorly equipped and inconvenient both for the animals and for the marketers. The markets in the central highlands of Ethiopia, in particular, are characterized by limited accessibility and poor physical infrastructure (Teferra et al., 2013). Lack of market infrastructure significantly undermines the market margins farmers generate from their agricultural products and increase the prices they pay when involved as buyers (Barrett et al., 2017; Kassie et al., 2019). Lack of transport facilities that force marketers to trek their animals, lack of feed and watering services in the markets, lack of veterinary services around markets, lack of storage facilities, and lack of market information increase the transaction costs of livestock marketing undermining the market participation and performance of smallholder farmers.

Key policy findings

- Inadequate market infrastructure is a major impediment to marketing activities, resulting in higher transaction costs for farmers and limiting their benefits from market participation.
- Livestock market sheds in Central highlands of Ethiopia have improved farmers' income from small ruminants by 40%.
- The sheds have also increased farmers' market participation by 14%.
- Investment in market infrastructure could in general have a significant impact on rural livelihoods.

Studies have already indicated that there is a great scope for increasing the contribution of livestock farming to rural livelihoods by improving the marketing system (Kassie et al., 2019). This requires, among others, improvement of the infrastructure for livestock marketing. However, so far there is little or no investment that aimed at improving accessibility and efficiency of livestock markets. The lack of investment in livestock markets (or generally in the livestock sector in Sub-Saharan Africa) is mainly because there is insufficient information on the contribution of the sector for sustainable development and there is no evidence on the potential impact of these market services or facilities on rural livelihoods.

Generating empirical evidence on the potential effects of investment in livestock market facilities is necessary to

design effective policies that would help improve livestock-based livelihoods in rural Ethiopia. The International Center for Agricultural Research in The Dry Areas (ICARDA), in collaboration with its national and international partners has been implementing research projects that intended to generate empirical evidence for informed policy making. This policy brief summarizes the key policy findings and implications based on one of the novel studies conducted in Menz-Gishe area of central highlands in Ethiopia. The study aimed at quantifying the impact of small ruminant market sheds on market participation and on income from small ruminants (Zelege et al., 2021).

The experimental study

This policy brief is based on a unique study entitled “Would Market Sheds Improve Market Participation and Earnings of Small Ruminant Keepers? Evidence from Ethiopia.” The study was published in the *Journal of Agricultural Economics* in 2021 (Zelege et al., 2021). The study randomly identified nine small ruminant markets and constructed carefully designed sheds tailored to the volume of transaction per day in each of the markets. The market sheds were constructed in 2015/16 at the same time in all intervention markets. The sampled markets were clustered based on the volume of transactions as large, medium and small markets. Large markets are those whose average supply is larger than 600 animals/market day, while medium size markets are those with an average supply between 300 - 600 animals/market-day. Small markets are those with an average supply of less than 300 animals/market-day. However, three of the market sheds could not be used between 2016 and 2018, as the district level administrations failed to relocate the markets as per their initial plans. Therefore, the study examined the potential economic effects of the market sheds on the level of market participation and income from small ruminants using ten other markets without sheds as controls. The study employed different formulations of a difference in differences (DiD) impact model, including a combination with propensity score matching (PSM) to quantify the effect.

Key findings

The econometric models estimated revealed that market sheds have improved farmers' income from small ruminants by 40% (Table 1). Similarly, the market sheds have significantly increased (14.2%) farmers' market participation (Zelege et al., 2021). Livestock markets [in fact agricultural markets in general] in rural Ethiopia are a plot of marginal land in or close the towns or administrative capitals.

Farmers have to walk for hours and trek their animals to these markets on market days. In the rainy season, if they manage to cross the rivers along the way, they will not be able to protect themselves or the animals from the rain. In the dry season, without any market sheds, farmers' animals struggle with thirst and rapidly lose condition, so rural livestock markets are set for only an hour or so. Provision of sheds changed this dynamic substantially. Because farmers and the animals were not subject to the rain or sun, they were able to achieve better sales, without being obliged to sell at the first offer. They were able to come more often despite harsh weather conditions. These are the main reasons for the improved market performance and participation by the farm households.

Key lessons learned and way forward

Despite the magnitude of the livestock resources the country is endowed with and the importance of marketing, it is evident that the livestock sub-sector in general, and livestock marketing in particular, has not received enough attention by policymakers. The key performance indicators, show that Ethiopia has the lowest productivity per animal and consumption animal source food per capita (Abegaz et al., 2018). Investment in public infrastructures, including livestock market facilities, is dictated by political rationalization as much as by economic and social justification.

Inadequate market infrastructure is a major impediment to marketing, resulting in higher transaction costs for farmers and limiting the benefits from market participation. Investment in market infrastructure could have a significant impact on returns for rural households (Manggat et al., 2018). It could attract more participants in the markets, reduce transaction costs and increase returns from agricultural production. Improving market infrastructure could therefore increase the efficiency of live animal marketing (Ismail, 2014).

Interventions aiming at improving the marketing system, including through improved market facilities, could facilitate farmers' access to the market and improve their livelihood. Empowering the private sector can be an important strategy to follow to enhance investment in livestock markets and marketing. With the current monopoly of land ownership of the government, there is little room for the private sector to invest in livestock markets in a rewarding way. Availing market sheds and/or other facilities in rural Ethiopia might not even be capital intensive. However,

Table 1. Effect of market sheds on market participation and income from small ruminants.

	Log of sales revenue from small ruminant/year	Log of participation in the small ruminant market/year
Treatment by year interaction	0.398*** (0.075)	0.142*** (0.051)
Gender (male = 1)	0.156 (0.146)	0.092 (0.093)
Age (year)	-0.004 (0.006)	0.002 (0.004)
Literacy (year)	-0.007 (0.016)	0.002 (0.014)
Family size (AE)	-0.053 (0.037)	-0.005 (0.027)
Land size (ha)	0.024 (0.050)	0.046 (0.040)
Extension service (1=accessed)	-0.109 (0.091)	0.074 (0.053)
Constant	8.217*** (0.350)	0.797*** (0.221)
N	1090	1475
LL	-589.346	-811.186
AIC	1192.692	1636.373
BIC	1227.650	1673.448

Note: Notes: ***, **, and * denote significance at 1%, 5%, and 10% statistical error, respectively. Numbers in bracket are standard errors. The treatment effects model is estimated with difference-in-difference (DiD) combined with propensity score matching (PSM.) AE denotes adult equivalent; N denotes number of observations; LL denotes log likelihood of the model; AIC denotes Akaike Information Criterion; and BIC denotes Bayesian Information Criterion.

the bureaucracy is very costly and would certainly be prohibitive to private entrepreneurs who have to make a profit to have a viable business. Incentive mechanisms related to access to land and taxes need to be put in place to encourage the private sector. If empowering the private sector is not going to be an alternative to consider, the government needs to revise its understanding and management of livestock markets. They cannot continue to be neglected plots of land at the outskirts of rural.

Efforts to address marketing constraints are a meaningful way of transforming the sector from its current subsistence orientation into a market-oriented production system to

contribute towards poverty reduction. Hence, the Ethiopian government shall refocus its efforts to make the livestock marketing system more efficient through development of market facilities. This is especially critical in rural Ethiopia, where livelihoods are heavily dependent on earnings from livestock production

References

Abegaz, Getachew Ahmed; Hassen, Ibrahim Worku; and Minten, Bart. (2018). Consumption of animal-source foods in Ethiopia: Patterns, changes, and determinants. ESSP Working Paper 113. Washington, D.C. and Addis

- Ababa, Ethiopia: International Food Policy Research Institute (IFPRI) and Ethiopian Development Research Institute (EDRI). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/132252>
- Barrett, C.B., P. Christian, & B.A. Shiferaw (2017). The structural transformation of African agriculture and rural spaces: Introduction to a special section. *Agricultural Economics*, 48, 5-10.
- Bechewe, F. and F. Tadesse (2019). Livestock Production in Ethiopia. In: Cheru F., C. Cramer, and A. Oqubay (eds.): *The Oxford Handbook of the Ethiopian Economy*. DOI:10.1093/oxfordhb/9780198814986.013.29.
- Ismail, J.I. (2014). Influence of market facilities on market participation of maize smallholder farmer in farmer organization's market services in Tanzania: Evidence from Kibaigwa International Grain market. *Global Journal of Biology Agriculture and Health Sciences*, 3(3), 181-189.
- Kassie, G.T., R. Wubie, S. Tokgoz, F., Majeed, M. Yitayih, & B. Rischkowsky (2019), policy-induced price distortions along the small ruminant value chains in Ethiopia. *Journal of Agribusiness in Developing and Emerging Economies*, 9 (3), 220-236. doi.org/10.1108/JADEE-02-2018-0024
- Manggat, I., R. Zain, & Z. Jamaluddin (2018). The impact of infrastructure development on rural communities: A literature review. *International Journal of Academic Research in Business and Social Sciences*, 8 (1), 647-658.
- Teferra, B., G. Shenkute, J. Wamatu, & G. Solomon (2013). Analysis of sheep value chains in Menz Gera District, North Shewa Zone, Ethiopia. Addis Ababa: ICARDA.
- Zelege, F., G.T. Kassie, J. Haji and B. Legesse (2020). Would Market Sheds Improve Market Participation and Earnings of Small Ruminant Keepers? Evidence from Ethiopia. *Journal of Agricultural Economics*. doi: 10.1111/1477-9552.12411

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