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Smallholder Farmers Participation in Livestock Market in Zambia

Mary Lubungu, Antony Chapoto, and Gelson Tembo

Key Points/Summary

1. This study uses longitudinal household data collected in 2001, 2004, and 2008 to identify factors that influence Zambian smallholder farmers' participation in livestock markets.
2. Although livestock ownership increased during the study period, not all provinces experienced the upward trend. While livestock populations increased in Southern and Central Provinces, they remained stagnant in Eastern, North western and Lusaka Provinces and reduced in Western Province.
3. Not only has herd size remained stagnant over the years, but the level of participation of smallholder farmers in the livestock markets has also remained largely the same.
4. Crop commercialization and participation in off-farm activities reduces the likelihood of participation in cattle markets but not in the markets for small livestock.
5. Livestock mortality increased the likelihood of households selling cattle, goats and pigs.
6. Household head's level of education increased the likelihood of households selling cattle.
7. Key public investments that may serve to increase participation in livestock markets include investments in rural education, and building institutional and infrastructural capacities.
8. Government may also consider including livestock vaccines into the farmer input support program to allow livestock farmers to access subsidized medicines.

INTRODUCTION: Livestock production and associated products offer substantial opportunities for economic growth and poverty reduction for rural households in Zambia. However, smallholder livestock producers are often characterized by low livestock market participation. Among the many reasons cited in the literature are producer remoteness from the main urban market centers and poor road infrastructure, both of which raise transport costs. Zambia's Sixth National Development Plan (SNDP) recognizes the importance of addressing livestock marketing challenges as a way of ensuring food security, employment creation, and increased incomes. However, the lack of knowledge about smallholder livestock

marketing constraints, often leads to misguided interventions that have little impact on improving household welfare. This study uses three-year panel data to identify factors that influence smallholder farmer participation in livestock markets.

DATA AND METHODS: We use panel data from nationally representative surveys of small and medium scale rural farmers in Zambia, conducted in 2001, 2004, and 2008 by the Central Statistical Office (CSO) in collaboration with Michigan State University's Food Security Research Project (FSRP), now IAPRI. Of the 6,922 households interviewed in the first wave (2001), 5,419 were successfully re-interviewed in May/June

2004, of which 5,454 and 4,419 raised livestock, respectively. In the 2008 survey, a total of 8,094 households were interviewed. Of these, 4,300 were panel households, and the rest were new households randomly selected from the same population of small- and medium-scale farm holdings. A total of 5,907 households raised cattle in the expanded 2008 sample. For more details about survey design and sampling procedures see Megill (2004; 2009).

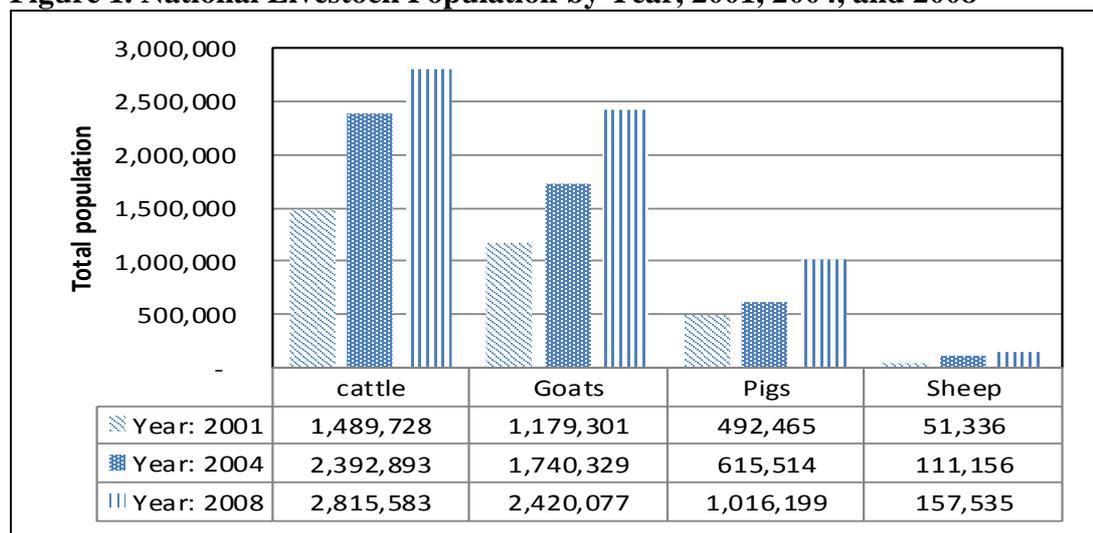
Combined with insights from focus group discussions with livestock farmers in Chongwe District in 2012, we use both descriptive and econometric analysis to examine the factors that influence farmers' participation in livestock markets.

RESULTS: Livestock Population. Livestock numbers increased during the seven-year study period (2001-2008). In 2001, the population of livestock was estimated at 1.5 million cattle, 1.2 million goats, 492,000 pigs, and 51,000 sheep. By 2008, the population had increased to about 2.8 million cattle, 2.4 million goats, 1 million pigs, and 157,000 sheep (Figure 1). However, these increases have been spatially uneven with livestock populations even decreasing or remaining stagnant in some provinces. More specifically, livestock populations increased in Southern and Central Provinces but remained stagnant in Eastern, North-Western, and Lusaka Provinces.

About half of the cattle, more than a third of the goats, and close to 40% of the sheep are found in Southern Province, while Eastern Province accounts for more than 60% of all pigs. Luapula, Lusaka, North-Western, and Copperbelt Provinces have generally low populations of all livestock species. Such uneven geographic distributions of livestock suggest that interventions to do with livestock infrastructural developments outlined in the SNDP should be area specific, taking into account variations in livestock composition across the different provinces.

Ownership and Marketing: Table 1 shows that out of 1.6 million smallholder households, 18.5% own cattle, 22.2% own goats, 14.3% own pigs, and 1.1% own sheep. Over the seven-year study period, there were very minimal changes in average numbers of livestock owned and sold by the smallholder farmers. On average, a typical Zambian smallholder farm owns 1.7 cattle, 1.5 goats, 0.6 pigs, and 0.1 sheep. When analysis is restricted to livestock owning smallholders only the numbers swell significantly. For example, in the cattle-owning sub-sample, an average household owned nine cattle and sold two in 2001. Goat-owning households owned six goats and sold three in 2001, increasing by one goat in 2008 (Table 1).

Figure 1. National Livestock Population by Year, 2001, 2004, and 2008



Source: CSO/FSRP Supplemental Surveys (2001, 2004, and 2008).

Table 1. Livestock Ownership and Marketing among Livestock Owners over Time

| | -----2001----- | | | | -----2008----- | | | |
|---|----------------|--------------|-------------|--------------|----------------|--------------|-------------|--------------|
| | Cattle (A) | Goats (B) | Pigs (C) | Sheep (D) | Cattle (E) | Goats (F) | Pigs (G) | Sheep (H) |
| HHs owning (number) | 160,649 | 187,102 | 95,217 | 10,145 | 309,473 | 370,279 | 239,372 | 18,512 |
| Percent | 14.3 | 16.6 | 8.4 | 0.9 | 18.5 | 22.2 | 14.3 | 1.1 |
| HHs selling (number) | 33,528 | 63,820 | 29,862 | 2,229 | 76,284 | 165,932 | 86,023 | 6,386 |
| Percent | 3.0 | 5.7 | 2.6 | 0.2 | 4.6 | 9.9 | 5.2 | .4 |
| Average number owned - smallholder farmers | 1.3 | 1.1 | 0.4 | 0.1 | 1.7 | 1.5 | 0.6 | 0.1 |
| Average number owned -Livestock owners | 9 | 6 | 5 | 5 | 9 | 7 | 4 | 9 |
| Average number sold | 2 | 3 | 3 | 2 | 2 | 4 | 3 | 4 |

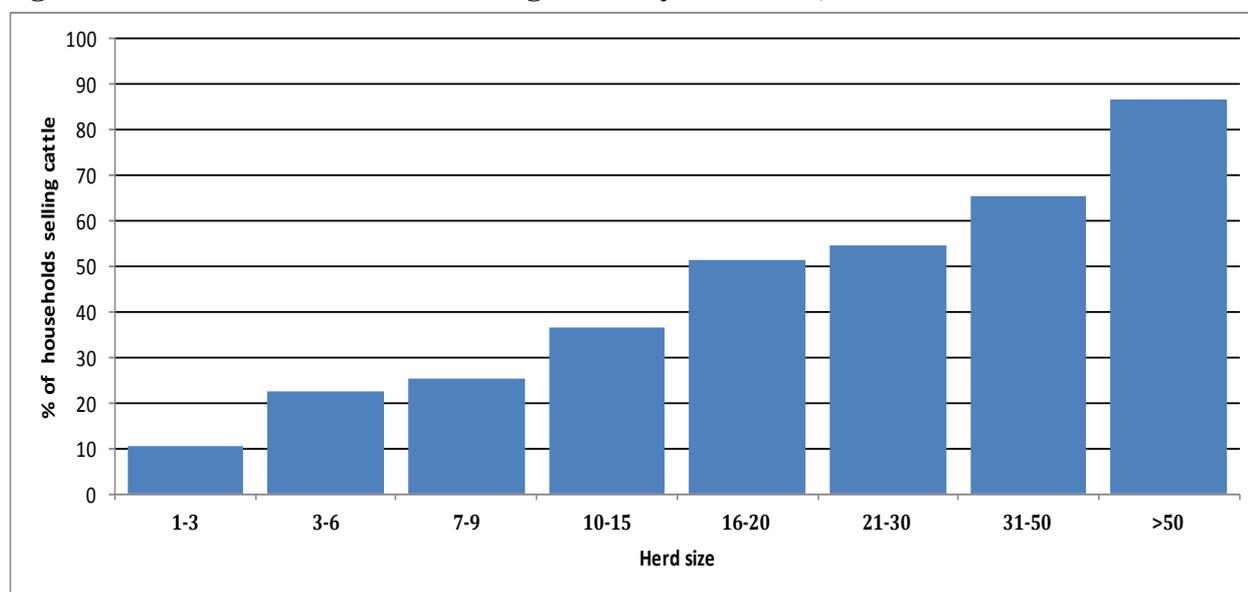
Source: CSO/FSRP Supplemental Surveys (2001 and 2008). Note: HH=household.

Livestock Sales by Level of Livestock Owned: The results show a strong positive correlation between herd size and the propensity to sell livestock. Figure 2 shows that as the herd size increases, the proportion of households selling cattle also increases. For example, in 2008 we find that only 10% of the households owning between one and three cattle sold cattle compared to more than 85% among those with over 50 cattle. Thus, investments aimed at supporting herd size development, including through improved herd genetics and disease prevention, is likely to improve smallholder participation in

livestock markets. Moreover, given the geographic concentration of livestock rearing, these interventions should be prioritized in the major producing areas.

Livestock Sales and Level of Education: Higher household head education levels are associated with a greater likelihood of participation in cattle and pig markets but not in goats. This seems to suggest the importance of education in farmers' ability to utilize market information and livestock market opportunities.

Figure 2. Percent of Households Selling Cattle by Herd Size, 2008



Source: CSO/FSRP Supplemental Survey 2008.

Household Crop Commercialization and Non-Farm Activities: The household's crop commercialization position and participation in non-farm activities are both found to be inversely correlated with the likelihood of participating in livestock markets. This is especially the case for the cattle subsector. Thus, households owning cattle but selling most of their crop and/or having income from salaried/wage employment and/or business are less likely to sell their cattle.

Effects of Livestock Disease Outbreaks on Livestock Sales: The results show that livestock morbidity and mortality tends to increase the likelihood of households participating in markets for cattle, goats, and pigs. Focus group discussions with livestock farmers in Chongwe District revealed that households sell diseased animals as one of the coping strategies in a situation where the animal fails to respond to treatment or when the risk of spreading the disease is high. Due to the restriction of livestock movements, farmers opt to sell to local butcheries and to fellow farmers in their communities at reduced prices.

CONCLUSION: Evidence presented in this paper raises several critical issues that need to be considered in addressing the challenges of livestock marketing in Zambia. Key public interventions required to increase participation in livestock markets include investments in rural education, and building institutional and infrastructural capacities that allow smallholder farmers to successfully compete and integrate within the developing livestock industry. Provision of an enabling environment through public sector investment to allow livestock producers to increase production through improved efficiency and productivity is another area that needs attention. However, given the limited government resources as well as uneven distribution of livestock numbers, development interventions, such as improved disease control or reproductive management, infrastructural development, such as livestock service centers or gene banks, could be prioritized in the major producing areas. There have been discussions among agricultural stakeholders for government to consider

including livestock vaccinations into the farmer input support program to allow livestock farmers to access subsidized medicines. However, a subsidy that makes farmers not to think of livestock production as a *business* is likely to be disastrous.

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Lubungu is a research associate with Indaba Agricultural Policy Research Institute; Chapoto is a research fellow at the International Food Policy Research Institute's Ghana Strategy Support Program and is currently based in Accra, Ghana; and Tembo is a senior lecturer in the Department of Agricultural Economics and Extension, University of Zambia.