



Investment Patterns of Wealthy Pastoralists on the Borana Plateau of Southern Ethiopia

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Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change

Abstract

An analysis of the investment portfolios of 12 wealthy pastoralists who live on the Borana Plateau of southern Ethiopia was performed based on their responses provided during face-to-face interviews held during January-February 2015. The survey respondents were found to invest primarily in livestock (about 65% of the average portfolio was livestock) but also had significant non-livestock investments. Risk reducing investments appeared to take the form of buying more camels and fewer cattle or investing in real estate or bank accounts. Cattle offer the highest average return of the assets considered but are also relatively risky due to die off during frequent drought periods. Survey respondents are likely to continue to invest in non-livestock assets as a method to reduce risk. While these new investments in different economic activities such as real estate or bank accounts will spur economic growth especially in the settlements and towns of the Borana Plateau, cattle would offer a higher return and more income to pastoralists in the area than non-livestock investments. However, without implementing efforts to reduce risks associated with cattle, such as bush clearing, it is unlikely that the survey respondents will significantly increase their investment in cattle and, in fact, will likely reduce their cattle investment over time.

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A key component of supply-driven economic growth is investment in infrastructure and capital (e.g., roads, communication, factories, and technology) and in new or expanded commercial enterprises. Investment opportunities in the developed world with its large capital base, access to capital, and relatively high incomes appears to stand in stark contrast to investment opportunities in the poor, rural areas of the developing world where limited infrastructure and poverty are ubiquitous. The linkages between investment, economic growth and economic opportunity are equally important in both the developing world and the developed world because jobs and incomes typically rely on such activity.

Besides helping to generate economic activity and growth (jobs and income), investment also plays an important role in helping poor, rural communities adapt to environmental changes such as those occurring as a result of climate change. According to the U. S. Geological Survey, climate change has been cited as the reason for more severe and frequent droughts in the Horn of Africa than in the past (Funk et al., 2012). More frequent and severe droughts are forcing poor, rural communities (especially pastoralist communities in the Horn of Africa) to search for ways to adapt to the changing climate and the scientific community has been engaged helping them do so. For example, research has suggested that diversifying away from strictly livestock assets could aid pastoralist communities in mitigating some of the adverse effects of climate change (McPeak et al., 2011). Other research suggests that changing the mix of the livestock herd (i.e., more camels and fewer cattle) could also help counter the negative effects of drought in the Borana Plateau of southern Ethiopia (Forrest, 2014). Clearing bush has also been suggested as a method to improve the resiliency of pastoralist communities in this region in response to drought (Forrest et al., 2015). All of these strategies suggested by research as methods poor pastoralist communities could employ against the effects of frequent drought require significant levels of non-traditional investment. Consequently, decisions involving both local and external investments are directly tied to efforts to



Cattle and camels are two important livestock investments on the Borana Plateau. (Photo credit: Brien E. Norton)



adapt to climate change in the Horn of Africa, otherwise the suggested strategies cannot be implemented. Beyond investing in drought mitigation strategies, general investment in small communities and towns in the form of small retail shops, hotels, restaurants, and homes could have significant positive economic impacts on these communities.

Based on this, understanding what drives investment decisions in poor, rural areas of the developing world can assist economic development efforts as well as supporting the resiliency of local pastoralist communities. This research was undertaken to better understand the investment choices of “wealthy” pastoralists on the Borana Plateau of southern Ethiopia. The Borana Plateau is one of the most marginalized regions of one of the world’s poorest and most populous countries (Ibrahim, 2015). McPeak et al. (2011) indicate that significant income disparity exists between so-called wealthy pastoralists and other pastoralists on the Borana Plateau. While such disparity can be a cause for concern, investments by wealthy pastoralists likely represent the best opportunity for organic economic growth in this region. This is true because wealthy pastoralists probably represent the only local group having enough discretionary income to make investments large enough to significantly fuel economic growth in the local area.

Survey

Face-to-face interviews with 12 wealthy pastoralists were undertaken near the town of Yabelo on the Borana Plateau during January-February 2015. The respondents provided information about their livestock and non-livestock holdings as well as perceptions of how discretionary income should be invested. The risk of alternative investments (both livestock and non-livestock assets) was also estimated by simulating average returns for the investment portfolio of each respondent over a ten-year period. This provided a measure of the risk as measured by the standard deviation of average returns (mean-variance approach) for the portfolios held by each of the survey respondents.

Findings

Table 1 illustrates the large livestock holdings of the survey respondents compared to other pastoralists in the area. For example, Forrest et al. (2015) indicated that at full carrying capacity, the community of Harweyu near Yabello had only 5.44 cattle per person; far less than the

Species	Head
Cattle	379
Camels	33
Sheep/Goats	368

Table 1. Average number of livestock owned by each survey respondent.

average of 379 cattle owned by the 12 survey respondents (Table 1). Table 2 reports the average investment portfolio for the survey respondents. Clearly the respondents currently diversify their investments across both livestock and non-livestock assets although approximately two-thirds of their assets are in livestock, on the average (Table 2). The survey respondents also diversify investments across livestock species with only slightly more than one-third of the average portfolio held in cattle. The average estimated returns reported in Table 2 are based on information on costs and returns found in Forrest (2014) that were simulated over a ten-year period. The ten-year period assumed four years of normal rainfall followed by two years of drought followed by four years of rebuilding livestock herds (see Ibrahim (2015) for information on how this simulation was completed).

Table 3 reports the correlation between the estimated mean and variance (standard deviation) of annual returns for the 12 portfolios and the percentage of the portfolio held by the survey participants in different livestock and non-livestock assets. A large positive correlation indicates the value of two variables tend to vary in the same direction. For example, there is a large and positive (+0.85) correlation between mean return and the percentage of cattle held in the portfolio suggesting that a higher percentage of cattle in a portfolio corresponds with higher average or mean returns to the portfolio. Conversely, there is a relatively large negative correlation (-0.85) between mean return and the percentage of the portfolio held in a bank account (Table 3) suggesting that survey respondents with a large proportion of their assets held in a bank account also tended to have lower mean returns than those with small amounts or no assets held in a bank account.

The reported correlations indicate that while holding a high proportion of cattle in the portfolio is positively correlated to high mean returns, it is also highly, positively correlated with higher risk (standard deviation). This implies that cattle are a relatively lucrative but risky investment compared to other alternatives. Holding a large proportion of the total investment portfolio in non-livestock investments such as

Table 2. Average Estimated Percentage of Portfolio Held in Different Assets for the 12 Survey Respondents Together with Estimated Average Returns and Coefficient of Variation on Returns for Different Assets.

Asset	Average Portion of Portfolio (%)	Std. Dev. (%)	Estimated Average Annual Return for 10-Year Period (%)	Std. Dev. (%)	Estimated Coefficient of Variation
Bank Account	12.89	8.85	3.80	0.79	20.76
Cattle	35.27	16.90	31.40	33.94	108.16
Camels	21.88	13.81	22.81	2.87	5.77
Goats	3.81	2.09	31.23	21.08	67.50
Sheep	3.81	2.09	7.82	18.36	234.86
Real Estate	22.16	17.55	11.01	1.15	13.74
Maize	0.14	0.10	172.19	143.45	83.31
Beans	0.04	0.03	451.90	290.88	64.37

bank accounts and real estate reduces both expected returns and risk (negative correlation). The proportion of the portfolio held as camels is negatively correlated with both real estate holdings and bank accounts suggesting that camels are viewed by participants as substitutes for these non-livestock investments. That is, survey respondents with camels representing a relatively large percentages of their portfolio tended to have small percentages of their portfolio in real estate and bank accounts and vice versa. This suggests that some participants prefer to reduce risk with a livestock investment (more camels and fewer cattle) while others prefer non-livestock investments (bank accounts and real estate) to reduce risk rather than investing heavily in camels. The proportion of the portfolio held as a bank account was positively correlated with the proportion held in real estate investments suggesting that these are complementary investments. Or, in other words, participants holding bank accounts also tended to hold real estate investments.

The survey respondents were asked how they would spread 100 hypothetical units of investment across various assets (Tables 4 and 5). This provided some indication for how the respondents might be planning their future investments. In the case of the responses reported in Table 4, the investment

Table 4. Average Response of Survey Respondents to Question, "If You Had 100 Units to Invest in Livestock, How You Would Distribute Those Units?"

Species	Average Response (%)
Cattle	35.83
Camels	30.83
Sheep/Goats ^a	31.67
Donkeys	1.67

^a Sheep = 12.50 and goats = 19.17.

choices were restricted to be livestock investments only. Cattle and camels remained the primary livestock investment that would be made in this case. However, when the hypothetical investments could be made across a range of livestock and non-livestock assets, real estate and investing in family (education, housing, etc.) were by far the most preferred investments selected by the participants. The hypothetical choices reported in Table 5 are very different than the current, mostly

livestock, investment portfolios held by the survey participants. This implies the participants would be expected to continue to move toward non-livestock investments and away from livestock.

Conclusion

Forces such as climate change that are making livestock, especially cattle, a risky investment on the Borana Plateau are driving wealthy pastoralists toward

non-livestock investments. Precisely what this means for the number of livestock on the Borana Plateau is uncertain given the cultural importance of livestock in the region and the continued increases in the heavily livestock-dependent human population. However, it is likely that more investment will be flowing into settlements in the future than was the case in the past. This should result in more economic opportunities in town than have existed in the past. This will likely contribute to slowly changing the economic landscape on the Borana Plateau.

On the other hand, livestock investments, especially for cattle, will likely continue to be under pressure as pastoralists attempt to reduce their risk through either investing in more camels or in more non-livestock assets (bank accounts and real estate). This presents both opportunities and also a dilemma for economic development efforts on the Borana Plateau. Cattle are an excellent but risky investment. In terms of increasing the amount of income (money) flowing to pastoralists, cattle offer the best alternative, on the average, of any of the investments considered. However, unless the risk associated with cattle can be mitigated to a greater degree, local investment is likely to flow to other less lucrative but less risky investments. 

Table 5. Average Responses of the 12 Survey Respondents to Question "If You Had 100 Units to Invest, How Would You Distribute Those Units?"

Investment	Average Response (%)
Livestock	8.33
Bank Account	12.50
Real Estate	49.58
Cropping/Kalo Development	1.08
Business Enterprise	5.83
Family	22.67

Table 3. Estimated Correlation Matrix of Returns, Risk, and Livestock Complement for the 12 Survey Participants.

VARIABLE	CORRELATIONS									
	Mean Return ^a	SD ^b	Bank Account ^c	Cattle	Camels	Goats	Sheep	Real Estate	Maize	Beans
Mean Return	1.00	0.91	-0.63	0.85	0.32	0.40	0.40	-0.85	-0.34	0.07
SD		1.00	-0.42	0.99	-0.08	0.29	0.29	-0.74	-0.38	-0.01
Bank Account			1.00	-0.30	-0.36	-0.67	-0.67	0.23	0.18	-0.39
Cattle				1.00	-0.16	0.13	0.13	-0.71	-0.41	-0.10
Camels					1.00	0.19	0.19	-0.49	-0.04	-0.02
Goats						1.00	1.00	-0.18	-0.09	0.37
Sheep							1.00	-0.18	-0.09	0.37
Real Estate								1.00	0.35	0.21
Maize									1.00	0.73
Beans										1.00

^a Mean Return = average return over a simulated 10-year period for the individual portfolios of survey respondents.

^b SD = Estimated Standard deviation of average portfolio returns.

^c Bank Account, Cattle, Camels, Goats, Sheep, Real Estate, Maize, and Beans represent estimated percentage of portfolio in each of these assets.

Further Reading

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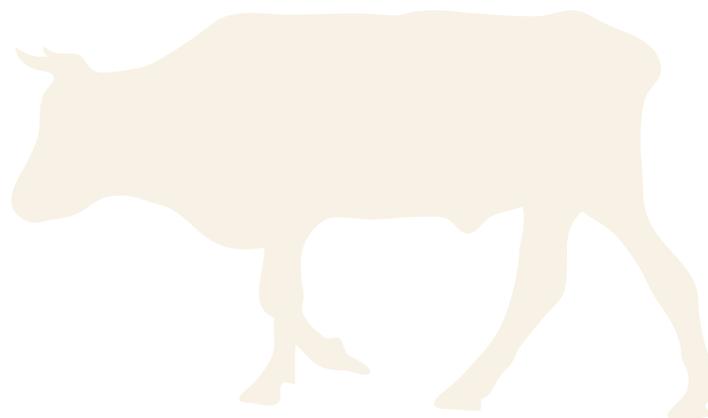
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Project: Sustainable Pastoralism on the Borana Plateau: An Innovation Systems Approach

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The Borana pastoral system has endured several decades of decline. The climate is drier, human populations have increased, rangelands are degraded, herders are poverty-stricken and food-insecure, and livestock productivity – typically based on cattle – has dropped. The old system is unsustainable. Many pastoralists recognize these trends and are responding with innovative coping strategies. This study will work to reveal the best-bet land and livestock interventions that will move the pastoral system back towards sustainability. The research team will do this primarily via a participatory framework that creates community action plans. An innovation system team of research and development stakeholders will be assembled to help pastoralists implement their action plans within a year of project initiation. A period of monitoring and evaluation will follow. Interventions will include pilot tests of promising innovations. Associated capacity building will involve local researchers and pastoralists, with the latter including a special focus on women and the poorest households. A review of system dynamics indicates that priority research will include: (1) how to diversify livestock holdings to include more browsing camels and small ruminants; (2) how to improve rangeland productivity via changes in common property regimes and forage innovations; and (3) how to promote livelihood diversification to reduce excessive stocking rates and encourage faster marketed turnover of livestock. Research approaches will include use of interdisciplinary methods, including public engagement, household surveys, and technical trials and studies. Linear programming will clarify policy relevant issues regarding land use and climate change. Research results will be important locally and throughout the Greater Horn of Africa.



Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change is dedicated to catalyzing and coordinating research that improves the livelihoods of livestock producers affected by climate change by reducing vulnerability and increasing adaptive capacity.

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