GLOBAL LIVESTOCK CRSP

Livestock Pricing and Markets Performance

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Livestock markets have a very important effect on pastoralists' welfare. We analyzed thousands of livestock transactions in three sites in Kenya to examine market performance. Key findings include: (1) markets can exacerbate climate risks for pastoralists because livestock prices often decline during dry periods; (2) a high degree of inter-market price variability and temporal volatility occur that can lead to lower producer prices and discourage trader and pastoralist market participation; and (3) quarantines are a significant source of producer price risk because they impede commerce in the rangelands. Such problems of market inefficiency could be dealt with by investing more resources in roads, telecommunications, and security in pastoral areas. Alternative methods of animal disease control should also be considered since quarantines have a disproportionately negative effect on poor pastoral producers compared to those for highlands consumers or ranchers.

Background

Since pastoralists hold most of their wealth in the form of livestock, markets for animals exert considerable influence over their livelihoods, both by establishing the value of their assets and by affecting herd management decisions. Livestock markets differ from grain markets in very important ways because live animals are assets that produce a stream of goods and services, while grain is just a good. In particular, changing agro-ecological conditions affect current and future livestock productivity, so even when the underlying price of meat or milk remain stable, the price of an animal can vary sharply. This typically exposes herders to greater risk than crop producers face.

Markets have long been a feature of pastoral systems in the Greater Horn of Africa. But livestock markets in these areas are widely perceived to suffer significant inefficiencies due to high transaction costs, difficulties in contract enforcement, and limited throughput capacity. Problems of low and variable producer prices for livestock rank among the most widespread and serious concerns of pastoralists in the region.

Preliminary Findings

Using data from 63,000 individual market transactions at Marsabit, Moyale, and Nairobi between 1995-8, PARIMA has studied livestock marketing and pricing patterns as they affect pastoralists in Kenya. Several key findings stand out. First, livestock prices and mortality rates are negatively correlated, implying that quite unlike grain markets, price changes do not stabilize pastoralist incomes in the face of productivity shocks. Markets exacerbate rather than ameliorate the biophysical risk livestock producers face. This is most easily seen by looking at how prices change with rainfall. Table 1 shows that even a moderate drought—300 mm below normal over the past year, 200 mm below normal over the past three months—is

Table 1: Estimated Effects of Drought on Livestock Prices
(hypothetical drop of 200 and 300 millimeters over 3 and 12 months, respectively)

		PERCENT CHANGE	
	Market	Males	Females
Camels	Marsabit	-3.1	-4.6
	Moyale	-8.1	-11.9
Cattle	Marsabit	-22.1	-52.3
	Moyale	-33.4	-47.5
Goats	Marsabit	-14.6	-17.4
	Moyale	-12.2	-16.3
Sheep	Marsabit	-21.3	-34.1

associated with significant expected price drops, especially for cattle and for females in each species (due to reduced lactation and fertility). Price variability is also decreasing in rainfall. In good rainfall years, prices are both high and stable, while in drought years they are low and volatile.

Second, expected price variation for pastoral markets generally exceeds prevailing interest rates for those with access to credit. For animals whose productivity varies relatively little over the course of a year, (e.g., adult bulls or non-lactating camels or goats), there appears to be significant foregone trading profits, providing indirect evidence of market inefficiency. This seems to be due to relatively high and variable costs of inter-market arbitrage, as shown in Figure 1. By way of comparison, the mean price for adult male cattle in Marsabit over this period was about KSH 6700. The high cost and risk of livestock trading across space arises due to poor communications, poor transport infrastructure, and a high risk of banditry that together discourage trader entry and force them to extract significant risk premia from pastoral suppliers. For animals traded across space, we find that variability in inter-market price differentials (e.g., the Nairobi terminal market price less the Marsabit price) accounts for most of the variability in prices fetched by pastoralists in the rangelands.

Local marketing institutions nonetheless also seem to matter. For animals commonly traded locally—those not destined for Nairobi slaughterhouses—most producer price risk arises due to local market institutions and poor information flow that often leaves pastoral sellers at a significant disadvantage vis-á-vis the traders. Most markets in pastoral areas are dyadic, meaning they involve one-to-one negotiations between buyers and sellers. In theory, auctions should level the playing field, letting pastoralists share in more of the returns from livestock exports outside the pastoral area. In the coming year, PARIMA plans to study this question empirically.

Quarantines are another significant source of

Figure 1: Nairobi-Marsabit Marketing Margins

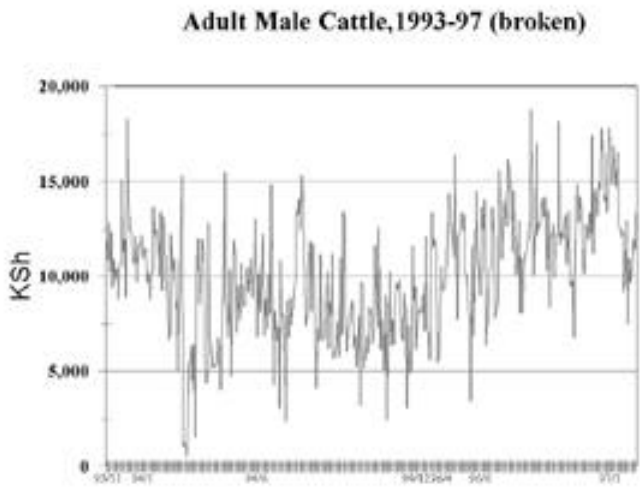

Table 2: Estimated Effects of Quarantine On Prices

		PERCENT CHANGE	
	Market	Males	Females
Camels	Marsabit	-9.1	-6.4
	Moyale	-6.2	-3.7
	Nairobi	0.2	0.1
Cattle	Marsabit	-23.7	-12.2
	Moyale	-16.1	-7.4
	Nairobi	2.4	2.2
Goats	Marsabit	-2.1	-2.4
	Moyale	-1.1	-1.0
	Nairobi	0.4	-0.1
Sheep	Marsabit	-5.9	-2.7
	Nairobi	0.2	0.1

livestock price risk. Most East African governments use quarantines as a primary strategy to control animal disease. Yet quarantines are also explicitly barriers to trade and highland ranchers interested in reducing competition from pastoralist suppliers sometimes promote quarantines for this fundamentally protectionist reason. By impeding commerce, quarantines reduce the prices fetched for livestock from the net exporting, pastoral regions and make remaining market demand and supply more price inelastic, thereby fueling price variability. These effects jointly exacerbate risk and cause substantial estimated revenue losses for herders, as shown in Table 2. Quarantine's effects are generally greatest on male livestock and on cattle, each of which are more commonly sold for slaughter in terminal markets than are females—commonly retained for milking or breeding—or camels or smaller stock, which are more typically slaughtered locally. While we find significant, negative effects of quarantines on the prices received by pastoralists, Table 2 shows that the effects on buyers in Nairobi is negligible, surely because Nairobi draws slaughter animals from multiple locations in the Greater Horn of Africa, so supply blockages in one area due to quarantine are made up for by increased off-take elsewhere. The implication, of course, is that since pastoralists are generally much poorer than highlands beef consumers or highlands ranchers in Kenya, quarantines appear a distributionally regressive means of animal disease control, wherein the poor pay the costs of benefits born largely by wealthier citizens.

Practical Implications

High and volatile inter-market trading margins underscore the importance of investing in improved marketing infrastructure, such as roads and telecommunications, as well as in increased physical security against banditry in pastoral regions. The adverse effects of quarantines on up country livestock markets also suggest a need to explore alternative means by which governments can control animal disease effectively, but perhaps in a more distributionally equitable manner.

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Further Reading

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The GL-CRSP Pastoral Risk Management Project (PARIMA) was established in 1997 and conducts research, training, and outreach in an effort to improve welfare of pastoral and agro-pastoral peoples with a focus on northern Kenya and southern Ethiopia. The project is led by Dr. D. Layne Coppock, Utah State Univeristy, Email contact: lcoppock@cc.usu.edu.

The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East Africa, Central Asia and Latin America.

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