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Rural Livelihood Trajectories Around a "Bull Market" in Kyrgyzstan

Studying Agropastoral Change at the Household Level Through Farming System Modeling

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Transhumant agropastoralism is a major concern in debates about economic development and food security in Kyrgyzstan. Using the concept of the "agropastoral system," this study emphasizes the diversity of existing family farming systems and agropastoral livelihoods at the regional level and their various economic perspectives in a constantly evolving environment. Qualitative and empirical research conducted in the eastern part of Chuy oblast *led to establishment of a typology of household farming systems, based on their resources and strategies, showing the agro-economic logic in the increasing socioeconomic inequalities in rural areas. Four farming systems were identified: deprived households involved in kitchen gardening and daily farm labor, risky small crop farming systems that increasingly rely on off-farm jobs to secure their livelihoods, sustainable dairy farming systems, and dynamic meat producers. In the context of increasing demand for animal products in urban areas, the position of each farming system in dairy and beef marketing reveals its ability to seize economic opportunities in the agricultural sector and in competition with off-farm activities.*

Keywords: *Agropastoralism; agriculture; livestock; farming systems; market economy; cattle; livelihoods; qualitative methods; Kyrgyzstan.*

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Introduction

Agriculture is a major sector in Kyrgyzstan's economy, representing 30% of the gross domestic product (GDP) and 20.4% of employment (FAOSTAT 2011a). Development of rural areas, where 64% of the population lives, is a major issue in the context of rural poverty and increasing migration toward urban areas, Kazakhstan, and Russia (Schmidt and Sagynbekova 2008).

With 94% of the territory lying above 1000 m, the country suffers from a lack of arable land. Nearly 87% of agricultural land is pastoral (Kerven et al 2011). Historically, the inhabitants developed an agropastoral organization based on a combination of intensive crop farming in the lowlands and extensive transhumant livestock farming in the highlands (Ives 2001). Anthropologists like Abramzon (1971), Japarov (2002), Jacquesson (2003, 2010a), and Farrington (2005) show how transhumance patterns have remained in the vast Tien Shan region, while agriculture progressively intensified in accordance with Soviet development plans (irrigation, mechanization, development of industrial and high-value crops).

After the collapse of the Soviet system, the economic transition crisis led to a great decrease in overall production, especially planned production such as wool sheep and industrial crops (sugar beet and hemp). Livestock numbers decreased by almost 60% between 1991 and 1996 (Musabekov 1999, quoted in Jacquesson 2010a; Farrington 2005; FAOSTAT 2011b; see also Ajibekov 2005). In the context of rising unemployment, rural households focused on private subsistence agriculture, especially after the fairly egalitarian land distribution in the mid-1990s (Giovarelli 1998). Ten years later, new market-oriented production systems have been developed for milk, meat, and vegetables. Livestock numbers have noticeably risen again (+37% since 2000, according to FAOSTAT 2011b). This case study of a small agropastoral area in North Kyrgyzstan seeks to demonstrate the concrete effects of these dynamics on rural livelihoods.

Approach

Many scholars have studied the evolution of the Kyrgyz agricultural sector using national and regional statistical data (Light 2007; World Bank Kyrgyzstan 2007; Favre et al 2010; USAID/UKaid 2011). Such studies often maintain a macroeconomic perspective and analyze the transformation of the agrarian structure following decollectivization and the general constraints on agricultural production. Sabates-Wheeler and Childress (2004) and Sabates-Wheeler (2007) criticize the idea that

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privatization on an individual basis systematically leads to efficiency benefits for the agricultural sector. Formal and informal cooperation between families appears to be one of several strategies for dealing with an environment of great uncertainty (climatic events, market price fluctuations, and legal and institutional change—see Steimann 2011) and several market failures (involving access to financial capital, agricultural equipment, and land). In fact, 20 years after the breakdown of the Soviet Union, the trend is toward household-based family farms, because of conflicts within groups, growing social distrust, and reluctance to maintain Soviet-style collective forms of production. Today, 90% of agricultural production comes from small farmers (Favre et al 2010).

The individualization of production has not led to a fairer distribution of growth or to poverty reduction. There is a need for a more detailed analysis of the socioeconomic dynamics and living conditions in rural areas since the collapse of the Soviet economy. Since the late 1990s, an increasing volume of scientific literature has focused on the household level, that is, the "group of co-resident persons who share most aspects of consumption and draw upon a common pool of resources for their livelihood" (Kandiyoti 1999: 502; see also Howell 1996). Based on the concept of livelihood—"the capabilities, assets (stores, resources, claims and access) and activities required for a means of living" (Chambers and Conway 1991: 6)—research has highlighted the diversity of livelihood strategies (de Haan and Zoomers 2003; Sabates-Wheeler 2007). They often encompass both agricultural activities (Shigaeva et al 2007) and nonagricultural activities, such as small-scale retail (von der Dunk and Schmidt 2010) or labor migration (Schmidt and Sagynbekova 2008; Thieme 2008; Schoch et al 2010). The real diversity of strategies and responses described in these studies reveals the households' unequal capabilities (Sen 1989) to mobilize resources to manage externalities and maintain sustainable livelihoods.

Several factors underlie the increasing social stratification, creating serious poverty: unequal mobility and access to market or job opportunities, polarization of social networks, and progressive social exclusion of the poorest (Kuehnast and Dudwick 2004); irreversible deterioration of health, education, and social assistance services; and unequal access to common resources such as pastures, water, and forestry. On the other hand, there is a lack of analysis of the specific role of agropastoral production and revenues in the increase in inequalities in rural areas. Depending on households' resources and production choices, agropastoral outputs may have very different profitability in the market, but the interdependence of the different activities (cropping, husbandry, and off-farm work) requires suitable conceptual tools.

For that reason, I adopted a systemic approach based on the "agrarian system diagnosis" methodology (FAO 1999; Cochet 2011) developed in the 1960s by heterodox agro-economists (Colin and Crawford 2000). The concept of a farming or production system considers that each farm (here household-based) mobilizes various resources—such as land, labor, capital, equipment, and access to common resources (DFID 2001)—for different income-generating activities. They all form a coherent set with complex interrelations (self-supply of inputs, investment, but also tensions in resource allocations). Comprehension of both the internal functioning of each activity and its interrelations with the others helps to disentangle the farms' organization and logic of production. The overall outputs, consisting of self-consumed and marketed agricultural production and other revenues, underline the system's economic performance and risk exposure. This helps to characterize the households' potential livelihood trajectories (impoverishment, maintenance, or progress) in the medium term.

Study area

This research focuses on the eastern part of the Chuy *oblast* (province) in North Kyrgyzstan (Chuy and Issyk-Ata *raiony* [district], 180,000 inhabitants, 42.46°N, 75.14°E). The large and flat Chuy valley (elevation 700–1200 m) is suited to irrigated and mechanized crop farming. After the collapse of the Soviet economy, industrial crops gave way to subsistence crops (wheat). In the last few years, fodder and barley production has significantly increased due to livestock recovery (Favre et al 2010). In the villages, manual kitchen gardening (*ogorod*) is a major component of household consumption (potatoes, vegetables, fruits, and corn for animals). Herds are kept in the villages during the winter, grazing collective pastures and stubble fields as well as harvested fodder. Almost all the animals spend summer in the surrounding mountain pastures (*jailoo*) at an altitude of between 1800 and 3500 m. These are state properties and are managed by local pasture committees (Jacquesson 2010b; Steimann 2011).

Most of the *raiony* population is concentrated in the lowlands, around the multicultural towns of Tokmok and Kant. Outside urban areas, more than three quarters of the population are Kirghiz, the rest being mainly Russian and Dungan (Muslim people of Chinese origin), with some Dutch and some Meskhetian Turks. Proximity to dynamic locations such as Kazakhstan and Bishkek—the capital city is 1 to 1.5 hours away by public transportation—provides opportunities for farmers to sell high-value produce. Job opportunities also allow income diversification. Today, this area is one of the most dynamic in the country and attracts rural people from the center and the south.

The main questions pursued by the present study are: What kind of household farming systems can be observed in the area? What are the assets, incomes, risks, and economic perspectives associated with each system? What can be learned about the current socioeconomic dynamics in the Chuy *oblast*?

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TABLE 1 Interviews conducted for this survey (March–July 2011).

Family farming system (FFS)	Number of interviews
FFS1: Home gardening and day labor	4
FFS2: Small crop farming	12
FFS3: Crop and dairy farming	7
FFS4: Herding	10
Total FFS1–FFS4	**33**
Other FFSs not discussed in this article (market gardening, nonfamilial farming systems)	11
Other actors from the agricultural sector	16
Total number of interviews	**60**

Methodology

The investigation was conducted from March to July 2011, following an empirical approach (*enquête informelle*, see Labé and Palm 1999). A preliminary survey of 14 open interviews was conducted with key informants such as village elders, in order to understand the past and current socioeconomic dynamics in this area and frame appropriate categories for data collection. Then, the main survey was carried out, consisting of 40 lengthy interviews with household members (Table 1). Considering the large number of households in the area and the limited surveying resources, a purposive sampling method was chosen, emphasizing, in each category, the diversity of the cases studied (apparent economic situation, assets, household size, age and gender of the householder, set of activities) to highlight common patterns. According to Flyvbjerg (2006: 229), such a strategic selection of cases can increase the generalizability of the case study: "It is often more important to clarify the deeper causes behind a given problem and its consequences than to describe the symptoms of the problem and how frequently they occur."

The semistructured questionnaire dealt with farm assets (labor force, land, livestock, equipment, and cash flow), the functioning of cropping and livestock systems (including kitchen gardening, fodder, dairy, and poultry), marketing, and other income sources and activities. Special attention was given to the combination of these activities in terms of work time and cash-flow management throughout the year, to highlight unsuspected constraints and logics.

Data analysis led to the construction of a typology of family farming systems (FFSs), each representing a specific combination of activities. Life stories were taken into particular consideration to understand socioeconomic trajectories since the Soviet era. Modeling of each "ideal-type" (Weber 2002) then made it possible to evaluate the average in-kind and cash incomes, savings and investment capacities, and risk management—in other words, to assess economic viability in the medium term. Surveys of market commodity chains (Challies 2008; de la Martinière 2012), based on observations in bazaars and during 16 open interviews with traders, meat processors, and retail salespeople, completed the data set.

This empirical, qualitative, and field-based methodology avoids the classic gaps found in statistical surveys about incomes or assets (Kandiyoti 1999) and allows for a more comprehensive and dynamic analysis, even if it is hard to assess the frequency of each FFS in the area. As a holistic approach, it requires the direct involvement of the researcher, with the assistance of a local research assistant (in this case, a Kyrgyz woman speaking Kyrgyz, Russian, and French).

Results

Typology of family farms

In the rural areas of Chuy and Issyk-Ata *raiony*, four main family farming systems were identified, mostly based on their marketing production (Figure 1). Other specific FFSs, such as Dungan family market gardening and different types of farming enterprises, were also identified but are not discussed in this article.

FFS1: poor households (home gardening and day labor): Most of the poorest households in the villages are headed by single parents or elderly people. Some are in charge of many children. They do not have enough assets (labor and cash) for land cultivation, so they have sold or rented the land they received during the agrarian reform. Most of them work on other farms as day laborers. The kitchen garden, poultry, and sometimes a cow ensure a home consumption-oriented production, and sometimes a surplus to be sold in nearby markets in Tokmok or Bishkek. They are economically dependent because they rely on irregular job opportunities and on social and familial assistance to buy the basic food they cannot produce themselves (flour, oil, sugar, and tea). They suffer from a clear dependence on the market for their basic needs. Despite existing social assistance (retirement pensions and family allowances), they often experience financial difficulties in late winter and early spring, because of food price increases. Food insecurity and malnutrition can thus be real problems, especially for those who cannot diversify their income through small jobs or market gardening.

Their gradual exclusion from traditional mutual help networks and their lack of connections that could help them get access to public services and jobs (Kuehnast and Dudwick 2004; Pétric 2011) accentuate their vulnerability and leave them trapped in poverty. According to Shigaeva et al (2007), who conducted a similar survey in the nearby valley of Sokuluk, these households represent around 20% of the local population.

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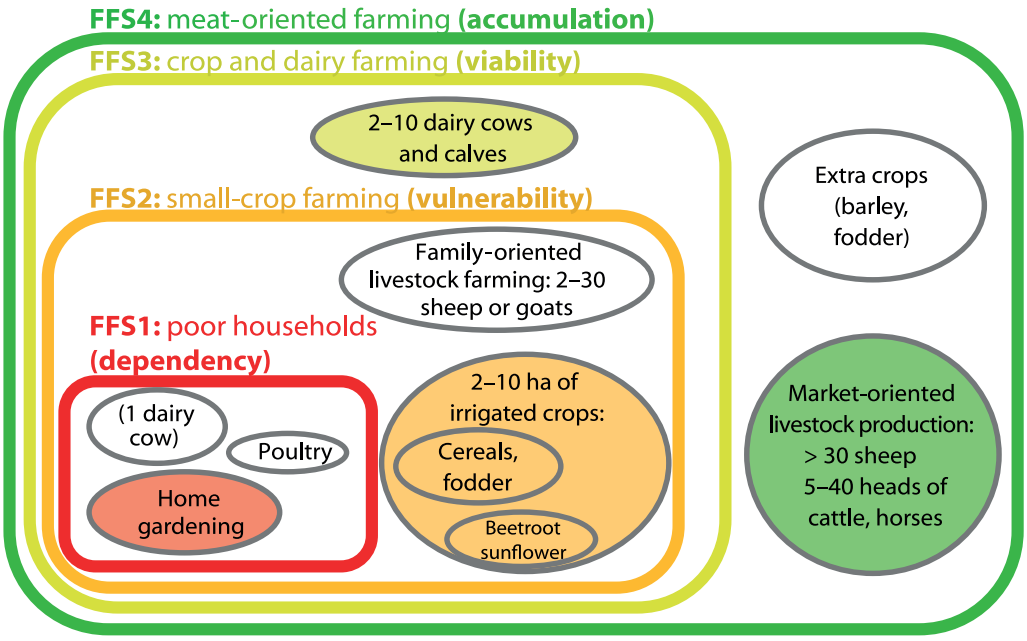
FIGURE 1 Main farming systems in Chuy *oblast*: a complex combination of cropping and livestock systems with unequal economic outcomes.



FFS2: risky small crop farming systems: This category consists of more traditional nuclear families involved in small irrigated crop farming on an average surface of 2–6 ha. Production is mechanized; people usually pay a tractor driver to plough, sow, and harvest. The main products are cereals and fodder, both home-consumed and sold on the market. This is the main agricultural cash income for these families. With a small family-oriented herd (2–30 sheep or goats), they have better living conditions than FFS1 families, and they can eat meat regularly.

However, this system has low value-added outputs (around US$ 300 per ha for wheat in a good year, which means US$ 75 per month for 3 ha) and is sensitive to agricultural and input price fluctuations: A drop in international cereal prices one year (see Figure 2) can cut a family's income in half and lead them to sell all their livestock to buy basic necessities. Moreover, much of their income accrues in autumn, and they often have trouble paying for sowing in springtime. Some increasingly turn to fodder cultivation (alfalfa and clover), because leguminous plants compensate for the lack of fertilizers and only need to be sown every 2–3 years, and hay bales are much easier to stock and sell throughout the year. Increasing livestock levels have created a viable regional fodder market, and the added value per hectare is higher (US$ 500 per ha or more). On the other hand, for technical reasons, it is hard to cultivate both fodder and crops, and a household that cultivates fodder often has to buy flour on the market at a high price.

In the medium term, this FFS is still very exposed to price variations and to climate-related risks, and it has low economic sustainability as long as not enough livestock are owned to serve as a form of self-insurance. For this reason, many members of these households consider taking another job in Bishkek (for example, as a taxi driver, security guard, or retail clerk) or migrating. Part-time or seasonal off-farm jobs are very common in this category and pay for daily expenses or seed purchases.

FFS3: viable crop and dairy farming systems: This category looks very similar to FFS2 at first sight. Households follow the same cropping system and have a small herd. However, FFS3 farms have accumulated a larger amount of capital and invested in dairy production. The money comes mainly from extra jobs and migration, and sometimes from microcredit loans. These households feed their livestock cereals and fodder and derive their incomes from marketing animal products, for which local prices have become high and stable since 2007 (Figure 2). So these farms are less vulnerable to international market variations than FFS2 farms. Milk sales provide regular cash income for 7–8 months a year, but this requires extra female labor (a woman milking up to 5 or 6 cows a day).

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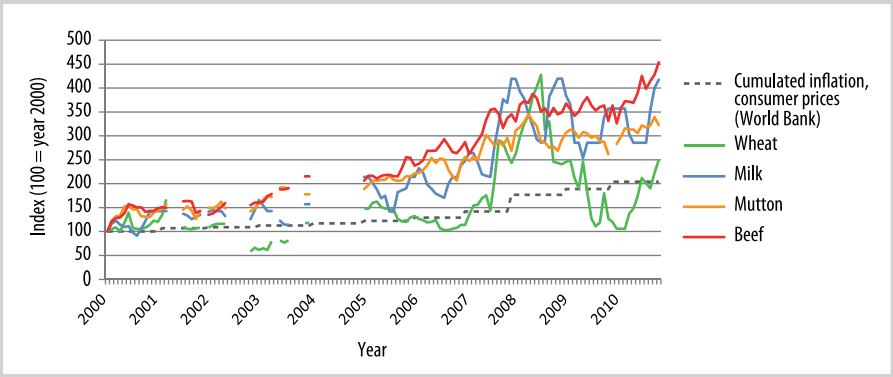
FIGURE 2 Index of food prices in Tokmok, Kyrgyzstan, 2000–2011. (Source: State Committee of the Kyrgyz Republic of Antimonopoly Policy 2011)



Calves born on the farm can also be reared and sold in the bazaar when money is needed. For these reasons, this FFS is economically viable in the medium term.

FFS4: dynamic meat-oriented farming systems: Livestock have multiple roles in rural livelihoods: They produce food needed for self-sufficiency (dairy and meat), constitute a readily available source of money, and have great social importance for feasts and life-cycle events (Schoch et al 2010). Households tend to keep their animals as long as possible and sell them only when they need money.

Only the wealthiest families can tie up enough cash to develop serious meat-oriented livestock farming (FFS4 is defined as having more than 30 sheep, 6 cattle, and a horse). Here, the crops are also used to feed livestock; farmers even have to cultivate extra fodder on rented irrigated or rain-fed land, or buy extra fodder, usually from FFS2 farms. Herders with the biggest herds usually have cowsheds in the mountains and use common pastures for free, which increases the profitability of their production system.

FFS4 farms, by marketing both dairy and livestock, generate high levels of income. Moreover, the livestock constitute an effective investment and self-insurance system. Whereas low- and middle-income households' strategies are focused on self-sufficiency and risk management, better-off households can take risks and adopt accumulation strategies. The proceeds from the sale of adult animals can be easily reinvested in young ones, especially in springtime, for fattening on summer pastures. These households are in a position to accumulate capital and to develop new activities such as a small retail business or agricultural equipment rentals (Shigaeva et al 2007).

Comparison between the types

This capacity-based typology shows that farmers face macroeconomic constraints in markedly different ways. The most vulnerable households are the ones that gradually sold the land they received during decollectivization in order to survive and have not been able to organize a lucrative farming system with intensive market gardening. Some households (FFS2) switch gradually to less risky types of jobs with regular, if not high, incomes. Others (FFS3–FFS4) have become viable to the point that they do not rely on off-farm activities to fulfill their basic needs. Those specializing in meat production (FFS4), especially beef, have grown rapidly.

The production choices depend not only on a household's assets, especially capital, but also on its decisions about allocation of resources between farm and off-farm activities. As Schoch et al (2010) have shown, there are a variety of diversification strategies, and not all improve livelihood sustainability in the long term: use of off-farm incomes only for current expenditures and lack of investment in agriculture generally lead to a high exposure to risk and inability to seize market opportunities.

Is beef a "bull market"?

The analysis shows the central place of husbandry in sustaining rural livelihoods. The local food price index (Figure 2) shows a constant increase in the price of animal products. While livestock have continually increased over the past 10 years, the price of beef has multiplied by 4.5 and that of mutton has multiplied by 3.3; in the same period, the overall price level in Kyrgyzstan has been multiplied only by 2 (World Bank 2011). This trend became even more pronounced in 2010–2011. The beef market has developed a lot over the last 10 years. Mutton and, to a lesser extent, goat are more likely to be consumed within the family, and the market for them is quite narrow. Beef is not consumed in rural areas because of difficulties in preservation; it is sold at retail markets in cities. Beef was 20% less expensive than mutton in 2000 because it has less fat and was considered less tasty (Schmidt 2001), but the two now sell for the same price, as urban eating habits trend toward less animal fat consumption, diversification of cooking habits, and increased popularity of globalized food types.

Today, beef production is almost entirely market oriented, and each farming system has a specific position

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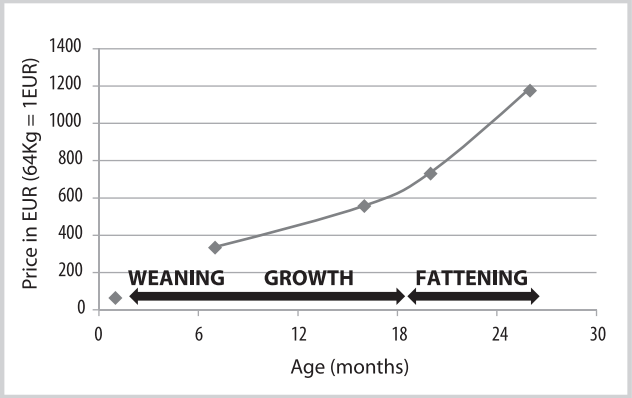
along this production chain: FFS2 sells inputs to herders; FFS3 sells young calves; FFS4 breeds and sells adult cattle. Other actors are also involved in fattening, such as professional shepherds and investors who carry out large-scale herding in the mountains using hired labor. Currently, few farms are involved in fattening and finishing, which requires large cowsheds, cash flow to buy cattle, and effective fodder management. In contrast, north of Bishkek (in Džangi-Džer, Dvadcat'-Khotor, and Manas), some large-scale farming enterprises do indoor fattening and finishing, with a stock of 100–400 cattle, selling directly to food industries and retailers. Kazakhstan represents 80% of the market. In the current context of rising prices, people representing FFS4, but also business people, have seized the opportunity to invest their money in a very profitable way. When they rely on hired labor, these farming systems can be considered really profit-oriented businesses maximizing their surplus. It is a very different logic than most of the FFSs, which have subsistence of the family as their priority (Chayanov 1966).

A study of cattle prices at the local market (Tokmok; see Figure 3) highlights the added value at each stage of beef production. The profitability of rearing a calf increases over time. Before weaning, a calf is cheap at the bazaar because its food (milk) has a significant opportunity cost. At the fattening stage, by comparison, the price of a bull, which depends only on the quantity of meat and fat, doubles in 6 months. The farming systems that invest in fattening benefit the most from the steady price increase, especially since they accumulate capital, which is re-invested in buying up even more calves produced in the area. This leads to a progressive concentration of beef production in the hands of a few fatteners–finishers. This "momentary bull market" (upward market trend associated with investor confidence of future price increases) for beef may show a tendency to speculation at some point, but it also seems to highlight a growing demand for this meat due to urbanization and improving living standards in urban areas, especially in nearby Kazakhstan.

The gradual concentration of beef production is also ensured by trade flows from all over the country (Issyk-Kul, Naryn, and Osh; Figure 4) to the main consumption areas (Bishkek, Almaty, and Russia). Bazaars such as the one in Tokmok, a few hundred meters from the Kazakh border, are major nodes in this network. Large and small traders play a major role gathering the fragmented production and managing transport and risks related to price variations. Some of them are part-time farmers making a small amount of money in the bazaar one day a week; some spend days in the villages to collect young bulls to be sold directly to the fattening farms; some are business people buying livestock in different *oblasty*. As the average margin is the same for all, around US$ 20 per sale, their income depends on their turnover. The most

FIGURE 3 Price for male cattle in Tokmok, Kyrgyzstan, April–May 2011. (Source: Personal field work)



powerful beef investors in Kyrgyzstan aim at controlling bazaars, showing their strategic position in the national economy (Spector 2006).

Discussion and conclusions

There is indeed a particular agro-economic logic in the increasing socioeconomic stratification in rural areas. Some farming systems (FFS1–FFS2) are not profitable enough to yield secure livelihoods, because of both insufficient resources and strategic choices of activities. On the other hand, agriculture based on high-value products (dairy and meat) can be very profitable, allowing development of a family farm, but also attracting investments from urban people in enterprise-like farming systems. Consequently, the dynamics of rural depopulation (through national or international migration) cannot be explained by the low profitability of the agricultural sector compared to trade and services, but by various individual strategies of income diversification in an environment of uncertainty.

The analysis also shows that every household is embedded in the market economy, even if some have a more favorable position than others. The academic literature is often not very clear about this and generally contrasts market-oriented and profitable farms with poor and subsistence-oriented ones (Sabates-Wheeler 2007). Of course, some FFSs make a profit, while others barely fulfill their needs. However, the market is also historically an opportunity for poor households to sell their high-value products and buy cheaper staples (Pianciola 2004).

Even if the informal cooperatives described by Sabates-Wheeler and Childress (2004) and Sabates-Wheeler (2007) are gradually collapsing, market failures are still visible when farming households consume their own products and supply their own inputs (fodder, manure, and seeds). These practices are common whatever the size of the farming system. The inability to find technical alternatives to tractors for cultivation also

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FIGURE 4 Kyrgyz women selling calves in Karakol bazaar (May 2009, Karakol *oblast*, Kyrgyzstan). (Photo by the author)

prevents a greater variety of cropping systems that would probably be more profitable.

Nonetheless, the Chuy valley is in a much better situation than other parts of the country because it has good access to markets, however imperfect. In remote areas of Kyrgyzstan, such as Naryn *oblast*, there is no opportunity such as dairy farming for low- and middle-income families, and meat is the only valuable product that can be exported. Even if market access is unfair, these families need to be able to seize market opportunities and find the means to invest more in their farming activities in order to be able to make a living from the various resources of this mountainous area. Accordingly, development policies in the area should provide information and incentives that support such efforts.

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