

Farmers, Vertical Coordination, and the Restructuring of Dairy Supply Chains in Central and Eastern Europe[☆]

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Summary. — The combination of transition and globalization since the early 1990s has caused dramatic changes in the dairy chains in Central and Eastern Europe. This paper uses survey evidence from several Central and East European countries to document the growth of vertical coordination in the dairy chain, its relationship with policy reforms, its effects and the implications for small farms. Evidence suggests that in several countries small dairy farms have benefited from vertical coordination processes by providing them access to inputs and higher value markets.

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1. INTRODUCTION

There is a rapidly growing literature on the impact of expanding modern supply chains—often following investments by multinational food and retailing companies—and the associated growth of high quality and safety standards, on farmers (Boselie, Henson, & Weatherspoon, 2003; Farina, Gutman, Lavarello, Nunes, & Reardon, 2005; Mainville, Zylbersztajn, Farina, & Reardon, 2005; Dries, Reardon, & Van Kerckhove, 2007). Much of this literature points at the problems which farmers in less developed regions of the world face in dealing with the requirements and standards of these modern supply chains (Henson, Masakure, & Boselie, 2005; Henson & Reardon, 2005). Another part of the literature emphasizes how changes in the organization of the supply chain not only increase the requirements but also bring opportunities for small and poor farmers to access high-value markets and that emergence of vertically coordinated systems in these supply chains help farmers facing major market constraints to integrate in the modern supply chains (Maertens, Dries, Dedehouanou, & Swinnen, 2007; Masakure & Henson, 2005). Evidence on both sides of this debate is limited to specific cases, countries, or sectors, and thus there is much need for additional empirical evidence, in particular cross-country evidence based on consistent survey data.

The objective of this paper is to contribute to this literature by bringing together data from several countries, which have a number of common characteristics that allow cross-country comparisons, but have sufficient variation to analyze how different initial conditions and institutions may affect the emer-

gence and implications of these modern supply chains. Our analysis is based on survey data (both at the producer and at the processor level) from several Central and Eastern European (CEE) countries, and concentrates on the dairy sector. The dairy sector is a very important sector in all of these countries, particularly for poor farmers in rural areas.

The CEE countries provide a very interesting case to study these developments since they all liberalized and privatized their economies in the 1990s, providing a unique natural experiment. The effects have been dramatic (albeit with important differences between the countries). However, over the past 15 years, the combined forces of “globalization” and “transition” have, in all of these countries, caused dramatic changes in the agrifood supply chains in terms of output, productivity, employment, investments, product standards, the organization of the supply chains, and the role of foreign investment. For example, in 2004, half of the top ten destinations of foreign direct investment (FDI) by global retail chains were in Central and Eastern European countries: Russia, Slovenia, Croatia, Latvia, and Slovakia. Russia, for the second year in a row, received most FDI in retailing worldwide. Moreover, Hungary, Poland and the Czech Republic were not among the top destinations because by then they were already “mature markets,” following massive investments in the previous years. However, retail investments were only the latest foreign

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investment wave. Earlier, much FDI had already gone into other sectors of the food industry. By 2004, in the ten CEE countries that have recently joined the European Union alone, the stock of FDI in the food industry was more than 10 billion Euro, of which the majority had gone to Poland, the Czech Republic, Hungary and Romania. These are remarkable numbers. Only a decade ago, all of these economies were just emerging from 40 years of state control of food markets.

Early on, studies suggested that these investments played a major role in turning around the entire agrifood sector, including productivity and investments at the farm level through the introduction of vertical coordination systems (Gow & Swinnen, 1998). While in early transition, privatization and company restructuring induced the collapse of the vertically integrated systems that existed under the planned economy, later on new company structures and institutions have arisen. These new structures used vertical coordination between processors and farms to overcome market imperfections at the farm level which prevented farms from supplying the type and standard of products modern processors and retailers were interested in, leading in turn to improvements in quality and productivity of farms. While the initial evidence was based on case studies, later survey-based evidence largely confirmed these insights for at least some countries (Dries & Swinnen, 2004; White & Gorton, 2006).

Still, important unanswered questions are (a) to what extent are these findings applicable to other countries, in particular countries that faced different institutions and levels of development, and (b) to what extent are farmers, and in particular small and poor farmers, included in or excluded from these modern supply chains.

In this paper we draw on a much wider, and cross-country, set of comparable survey data to address these questions. The surveys were conducted in Albania, Bulgaria, Poland, Russia and Slovakia, all CEE countries, but with very different levels of income, progress in transition reforms, and structure of dairy production (see further for details).

Our objective is to use these datasets (a) to systematically document the emergence of vertical coordination in the dairy chains, and how this differs between countries, farms, and companies, (b) to systematically document the type of exchanges that are embedded in the vertical coordination, and how this differs between countries, farms, and companies, and (c) to identify effects of these modern supply chains and the associated vertical coordination processes on farms, in particular on their in/exclusion, their access to inputs, and investments.

The paper is organized as follows. In the following section, we describe the methodology that was used to collect the

primary data. Next, we will present a brief overview of the importance and structure of the dairy sector in CEE. The main part of the paper however will deal with vertical coordination in the dairy sector. First, we discuss the disruption of the dairy chains in CEE countries during transition and the effects that these disruptions have had on the sector. Furthermore, we report on the private vertical coordination initiatives that have emerged to overcome these problems. Next, we present evidence on the impact of these vertical coordination mechanisms on the farm sector. Special attention is given to the impact of these developments on small farms in the region. To conclude, we discuss a number of additional factors that potentially affect vertical coordination systems and dairy chain restructuring.

2. METHODOLOGY

In the following sections we will present data that were collected in several countries using a multi-stage survey methodology. In the first stage, interviews were conducted with firms downstream in the dairy supply chain (e.g., dairy processors and retailers). In the second stage, information collected in the first stage was used to design a farm survey. This survey design was country-specific to take into account differences in farm structures. Sometimes more stages were necessary. For example, in Bulgaria we found that dairy processors were not contracting with farm households directly but rather with owners of collection stations. This meant that information needed to be gathered also on the level of the milk collection stations in order to answer the research question.

First stage surveys were implemented in Albania in 2004, in Bulgaria in 2003, in Poland in 2001 and in 2004, in Russia in 2004 and in Slovakia in 2003. The selection of these countries reflected the diversity in the countries in terms of level of development, stage of reform, structure of the dairy sector, and the importance of small farms (see Table 1). Poland was most advanced in the transition process and received much FDI already in the mid 1990s, leading to improvements in standards, quality and investment in the dairy sector in the second half of the 1990s. This was realized while the Polish dairy sector had some larger corporate farms but the dominant production structure remained small family farms. The average farm size was 11 cows per farm. Slovakia has a similar level of income as Poland, but was lagging behind in the transition process due to poor government policy in the second half of the 1990s. In addition, Slovakia has a totally different farm structure than Poland with corporate farms dominating

Table 1. *FDI and retailing in Eastern Europe*^a Source: EBRD (2005) for GDP per capita and Share of Agriculture in GDP; EBRD (2003) for the EBRD Reform Index, Authors' survey results for the dairy indicators and FDI; USDA (2003), Authors' calculations based on survey results and authors' estimates for FDI shares.

Country	GDP per capita (USD)	Share of agriculture in GDP (%)	EBRD reform index	Dairy indicators		Processing		Retailing	
				Average dairy farm size (# cows)	Dominant milk producers	FDI (% of the processed volume)	Main FDI inflow	FDI (% of the retailing)	Main FDI inflow
Poland	6,324	2.5	3.5	11.0	Family farm	15–30	1994–95	10	1995–96
Slovakia	7,639	5.0	3.3	340.0	Corporate	62	since 2000	10	since 2000
Bulgaria	3,109	9.4	3.3	1.6	Family farm	5	since 1999	6	1999–2001
Russia	4,012	5.0	2.9	2–15 ^c	Mixed	<10	since 1998	<5	since 2001
Albania	2,372	26.8	2.6	2.0	Family farm	5 ^b	2002	0	–

^a GDP per capita and share of agriculture in GDP: data for 2004; EBRD Reform index: data for 2002.

^b The dairy industry in Albania processes about 20% of total milk produced in the country.

^c Half of the milk is produced by households, which size according to official sources is in the range of 2–15 cows. Corporate farms, however, operate on much larger scale (200–1000 cows).

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