

The Dynamics of Agri-food Supply Chains in Transition Countries :
Implications for Development

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**"When The Market Comes to You.
Or Not.**

The Dynamics of Vertical Coordination in
Agri-food Supply Chains in ECA"

Final Report of WB Study

Available on the ECSSD website
[See also www.eastagri.org]

**Globalization and transition
dramatically changed supply chains**

- TRANSITION : disruption of supply chains
- GLOBAL FORCES rapidly change the environment of farmers and agri-food companies worldwide
- Two major forces :
 - ◆ foreign investment in agri-food sector
 - ◆ spread of global standards on food safety and quality

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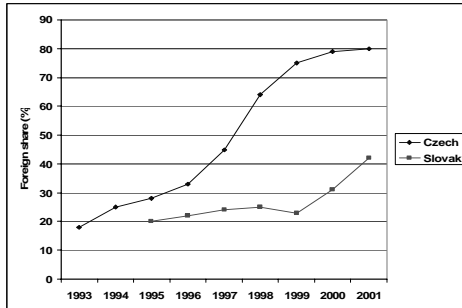
**Foreign investment in agri-food
sector**

- In Eastern Europe since mid 1990s :
 - ◆ Sugar and brewery sectors are almost entirely foreign owned
 - ◆ Major investments in confectionary, oilseeds, dairy, etc
 - ◆
 - ◆ Most recently major investments in food retail sector

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The "Supermarket Revolution"

Share of foreign retailers in top 50 retail in Czech and Slovak



2004 Top FDI Destinations of Global Retail Chains

1. Russia
2. India
3. China
4. Slovenia
5. Latvia
6. Croatia

- "food retail" is top investment area
- Central Europe is low because "already mature"

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Impact on Technology and Development

- The demand for quality supplies has major impacts on
 - ◆ Structure of the supply system (which farms, which products, under which conditions, ...)
 - ◆ Technology adoption (need for investments to enhance quality and safety)
 - ◆ Vertical integration in the chain

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Vertical Integration in Agri-Food Supply Chains

- Rapidly growing in transition countries
- Contracting and vertical coordination to overcome obstacles that farms and processors face in producing high quality products
- Processes have been an engine of growth in most countries.

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The Basic Problem

- Processors face lack of supplies, because farms
 - ◆ do not want to supply (no trust in payment)
 - ◆ Are not able to supply (inputs, working capital, ...)
 - ◆ Are not able to supply quality (quality inputs, technology, management, ...)
- Solution requires some form of contracting :
 - ◆ Contract with on-time payments
 - ◆ Input assistance
 - ◆ Technology and management assistance

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Farm assistance by agribusiness companies – Examples :

- Input supply programs
- Investment assistance program
- Trade credit
- Bank loan guarantee programs
- Extension services (technology and management)
-

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Use of contract relationships to source raw materials

Armenia, Georgia, Moldova, Russia, & Ukraine

Contract Relationship	% in 1997	% in 2003
With all farmers	41	77
With small farmers	36	49
With larger farmers	37	74
Own farms	6	26
Other agents	17	49

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Dairy in Bulgaria, Slovakia, Poland

		Credit	Inputs	Extension	Vet.	Bank	Total
1994	PL	50	67	50	0	50	43
	SK	0	0	83	17	17	23
	BG	9	18	9	0	0	7
1998	PL	83	100	83	17	83	73
	SK	17	17	83	17	33	33
	BG	45	64	18	18	18	33
2002	PL	83	100	83	17	83	73
	SK	100	33	83	17	50	57
	BG	82	31	75	18	36	60

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Elements of Farm Assistance Programs to Romanian Dairies

Type of support	Danone	Friesland	Promilch	Raraul
Extension services	X	X	X	X
Quality inputs	X	X	X	X
Input Pre-finance	X	X		
Investment loans	X	X	X	
Bank loan guarantees	X	X	X	

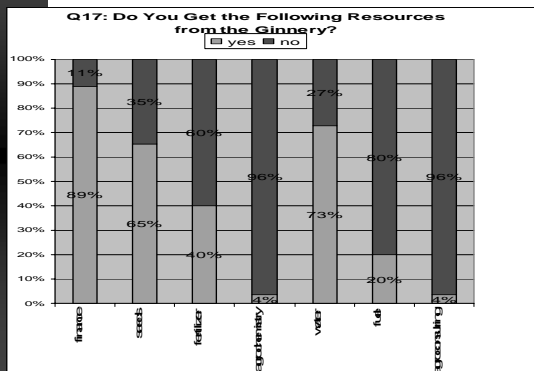
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Contracted Farm Support Measures in CIS-5

	% of firms	% of farms
Credit	43	51
Prompt payments	42	87
Physical inputs	36	53
Quality control	34	78
Agronomic Support	21	81
Farm loan guarantees	21	15
Investment loans	6	0

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VC in Kazak cotton



Various Models of Contracting

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Contract Enforcement is essential for ANY model

- Crucial to make VC sustainable
- Not obvious: Many cases and stories where contract enforcement problems undermines VC
- Private enforcement mechanisms can be more important than public institutions

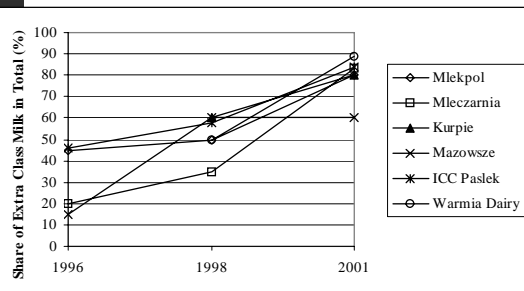
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Impact

- Important **Direct** Effects :
 - ◆ Enhanced QUALITY (& higher prices)
 - ◆ Increased PRODUCTIVITY
 - ◆ (eg CIS study)
 - ◆ Increased INVESTMENTS
- Important **Indirect** Effects: **Spillovers**
 - ◆ Contract replication by other companies
 - ◆ Farm assistance replication
 - ◆ Household level spillovers

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Change in Quality Dairy in North Poland 1996-2001



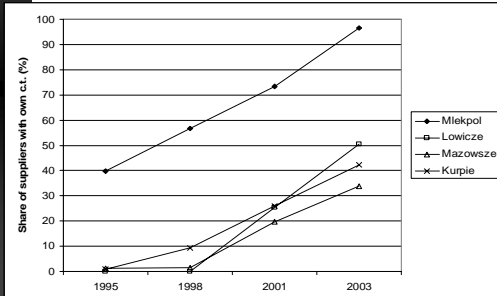
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Impact on LOANS and Investment Small farms in Polish Dairy sector

Size of farms	Invests (% of total)	Uses loan to invest (% of A)	Uses dairy loan (% of B)	Uses bank loan (% of B)
	A	B	C	D
15	52	54	41	50
9	78	51	43	70
10	92	74	43	75
ALL	76	58	43	69

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Effect on INVESTMENT : On farm cooling equipment in Poland 1995-2003



Role of Foreign investment

- Conceptually, no need for FDI
- Empirically:
 - ◆ FDI is driving force for contract innovations
 - ◆ Domestic spillovers are important
- Exceptions: FIG investments (Russia, Kaz), Cotton Kazakhstan
- Crucial factor appears access to outside finance (and management strategy)

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Competition is VERY Important

- Induces horizontal spillovers and the spread of farm assistance packages
- Constrains (potential) rent extraction in chain
- E.g. Central Asian cotton story: competition among processors for suppliers induces assistance programs, collection center investments, etc.

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Cotton Central Asia Annual Growth Rate (%)

	Kazakh	Kyrgyz	Uzbek	Tajik
Harvested Area (Ha)				
1993 – 1998	12.3	6.0	-1.7	3.7
1993 - 2003	5.8	7.6	-1.7	-0.1
Baled Cotton Production (1000 MTs)				
1993 – 1998	12.6	20.4	-2.7	0.4
1993 - 2003	5.4	25.9	-2.6	-3.5
Cotton Price	\$550	\$450	\$200	\$165

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The Exclusion Issue

- What will happen to poor and small farmers in this process ?

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The Key Concern

- Modern supply chains will push a large share of farmers, in particular small farmers, out of the market as they fail to meet the requirements to sell to these chains, because :
 1. Fixed component in transaction costs makes it more costly to deal with many small farmers than with a few large farms
 2. Small farms are constrained financially (internally and/or externally) for making necessary investments

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Evidence ?

- Many stories but little 'hard evidence'
- What exists suggest that
 - ◆ We should take this concern seriously
 - ◆ But the **reality** is much more **complex and nuanced** than assumptions

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Evidence – 1

- Interviews with agri-food companies confirms preference for larger suppliers
- Specialized wholesalers and supermarkets prefer to work with (relatively) large FFV producers in Croatia (Reardon et al 2003)
- Danone and Megle in Bulgaria and Romania have strategy focused on >20 cow farms
- CIS study finds 60% of processors have minimum size for some of its farm assistance programs

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Evidence – 2

Empirics show that

- VC with small farmers is widespread
- CIS: vast majority of firms has not reduced number of suppliers over past 6 years
- Sometimes VC with remarkable number and small size suppliers
 - ◆ Eg Friesland Romania contracts with 40,000 small farms through 1,000 collection centers;

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Evidence – part 3

- CIS study finds that processors do not discriminate on size for providing basic programs (agronomic support, physical inputs, prompt payments, ...)
- Examples of company programs to small farmers being quite successful. Eg.
 - ◆ Croatian F&V suppliers to supermarkets
 - ◆ Kazak cotton
 - ◆ Polish dairy

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Moreover

- Modern dairy companies focusing on high-quality market (incl retail sector) tend to assist small farms; compared to market channels targeted to informal and low quality sales which do not
- In Lithuania, all credit which small dairy farms get is through the dairy companies (cannot get access to bank loans or public assistance, incl SAPARD)

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Why work with small suppliers ?

- In some cases processors have no choice : small farms represent most supply (eg Poland, many Balkan countries, Transcaucassus, Kyrgyz, ...)
 - ◆ Eg. Romania: 95% of dairy farms have 1-2 cows.
- Enforcement costs may be lower

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Why work with small suppliers ?

- "processing companies stressed that willingness to learn, take on board advice, and a professional attitude were more important than size in establishing fruitful farm-processor relationship" (CIS study)
- Cost advantages (eg labor intensive products)
- Processors may prefer mix of suppliers to spread risk
- Exogenous differences in company strategies

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Retailers and vertical coordination may play positive role for key weaknesses

- Key weaknesses of small farms :
 - ◆ Shortage of finance for investments
 - ◆ Quality
 - ◆ Access to high value markets
- Retail investments and coordination within supply chains may assist farms in these areas

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Implications for Government Policy and World Bank Operations

- No.1: Realizing the importance of VC
- Then :
 - ◆ Enabling and stimulating vertical coordination
 - ◆ Improving efficiency, transparency, and equity in vertical coordination
 - ◆ Rethinking the role of the government and policy-making

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Implications I: Enabling and stimulating vertical coordination

- Create the right conditions for stimulating investment.
- Ensure macro-economic stability.
- Refrain from direct intervention: "Bad policies are worse than bad weather."

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Implications II: Improving efficiency, transparency, and equity in VC

- Reduce transaction costs :
 - ◆ Lower transport costs through improvements of rural infrastructure.
 - ◆ Reduce the number of transactions by investing in intermediary institutions.
 - ◆ Investment in farmers associations
 - ◆ (also enhances suppliers bargaining position vis-à-vis processors and governments, and improves information distribution.)

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Implications II: Improving efficiency, transparency, and equity in VC

- Enforce **competition**.
 - ◆ domestic policies (e.g., competition policies, lower barriers of entry)
 - ◆ external policies (e.g., liberal trade policies).
- **Quality** :
 - ◆ Stimulate and certify quality and safety standards
 - ◆ invest in projects, institutions, and technical assistance stimulating higher quality.
- **Empowering** farmers to strengthen their position, including:
 - ◆ stimulating farmers associations,
 - ◆ investing in quality control institutions,
 - ◆ competition and trade policy, etc.
 - ◆ invest in institutions to assist farms with contract negotiations and dispute settlements,
 - ◆ invest in institutions for (independent) quality and safety control and certification,
 - ◆ encourage alternatives in input and output markets.

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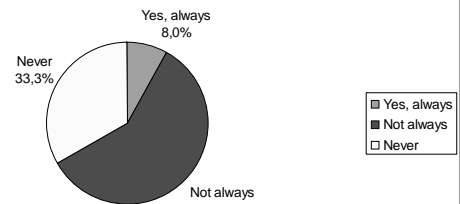
Quality Control and Rents in Kazak Cotton Chain

- Extra payments for clean cotton ? NO (99%)
- Fines for 'dirty' cotton ? YES (100%)
- Is your cotton mixed with that of other farmers ? YES (100%)
- Can you inspect quality of processed cotton from your seed cotton ? NO (97%)
- Who assesses the quality of your cotton ? GINNER's LAB (100%)

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Quality Control and Rents in Kazak Cotton

Q45: Do you trust the quality assessment as fair and honest?



Implications III : Rethinking the role of the government and policy-making

- *Policy analysis and information gathering.* Policy analysis and traditional instruments of information do not include VC.
- *Rethinking traditional public investments.* VC in traditional areas of public investment (research and extension, market information systems, veterinary services and animal surveillance programs, ...)
- *Public-private partnerships: consider supply chains part of the solution, not the problem.* Focus on collaborations between public authorities, non-governmental organizations, and private companies.

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Implications III : Rethinking the role of the government and policy-making

- *Innovative finance instruments.* Focus on innovations which use the supply chain as a structural aspect of the financing problem, while being critical on which role international organizations and the government should play.
- *Supply-chain development as part of a wider rural development strategy.* Integration of the farms in modern supply chains cannot solve all structural problems. Supply chain development models, even inclusive ones, can be only one part of a broader development strategy.

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The end

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Some Examples of Contracting Models

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Proces./Retail – guaranteed supplier loans: JUHOSUKOR in Slovakia & KONZUM in Croatia

Retail/Processing Co.

Farm

Bank

- Retailer/processor provides loan guarantees for bank loans to suppliers

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Lending with distributed risk: RABOBANK - SPVs

Processing co.

SPV

Farm

Bank

Input Supplier

- Financial institution is foreign investor
- Special purpose vehicle (SPV) to distribute risk equally among partners
- Ex. where group of small farmers formed cooperative to participate in SPV

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Leasing dairy equipment by joint project Wimm Bill Dann -- De Laval in Russia

Processor

Project

Farm

Equipment Seller

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Dairy Processor Becomes Financial Institution: DANONE in Romania



- Processor takes on banking function:
 - ◆ provides loans to farms
 - ◆ based on business plans
 - ◆ takes collateral
- Provides payment guarantee for input suppliers

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Integrating Multiple Stages : Brewing / Malting Companies



- Core business = brewing
- Forced to vertically integrate all the way to seed supply to ensure quality malt-barley-seed
- General strategy applied differently in countries b/c of local conditions
- Bring in co-foreign investors to assist with non-core activities and set up farm assistance programs
- Programs interlink markets

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Farms' Reasons for Contracting : Central Europe

	Czech	Slovak	Hung
Contract price higher	12	10	10
Avoid price uncertainty	6	21	33
Guaranteed sales	60	50	43
Immediate payment	7	11	3
Easier to get credit	0	0	9
Contract - inputs or TA	10	6	2
Other	4	2	0

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Farms' Reasons for Contracting : Kazak Cotton Farmers

Q36: If you sign a contract, why do you do it? What is the benefit of having such contract?

