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## Article

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German Journal of Agricultural Economics (GJAE)

## Provided in Cooperation with:

Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V. (GEWISOLA)

*Suggested Citation:* Van Herck, Kristine; Swinnen, Johan F.M.; Deconinck, Koen (2012) : How the East Was Won: Supply Chain Restructuring in the Eastern European Beer Market, German Journal of Agricultural Economics (GJAE), ISSN 2191-4028, Deutscher Fachverlag, Frankfurt a. M., Vol. 61, Iss. 4, pp. 213-222,  
<https://doi.org/10.52825/gjae.v61i4.1889>

This Version is available at:

<https://hdl.handle.net/10419/304881>

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# How the East Was Won: Supply Chain Restructuring in the Eastern European Beer Market

## Wie der Osten gewonnen wurde: Restrukturierung der Versorgungskette im osteuropäischen Biermarkt

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### Abstract

*Like all markets in the former communist countries, the Eastern European beer market has been strongly affected by the economic reforms in the beginning of the 1990s. In the first years after reforms, there was a substantial decline in the production of barley, malt and beer. However, the brewery sector soon attracted interest from foreign investors, who faced problems in sourcing sufficient high quality malt in order to produce high quality beer. Therefore, they reintroduced vertical coordination in the supply chain to obtain malt and barley that consistently met their quality requirements. The associated change in beer quality has been one of the drivers behind the spectacular growth of beer consumption in several Eastern European countries. Most remarkable was the growth in the Russian beer market, where beer consumption more than quadrupled over the course of a decade. In this paper, we describe and analyze the dramatic restructuring of the beer industry and the changes in the industrial organization of its supply chain over the past two decades. In addition, we document how the drastic improvement in the quality of beer has been an important driver behind rapid growth in beer consumption in Russia.*

### Key words

*beer; Eastern Europe; Russia; foreign investment; industrial organization; consumption*

### Zusammenfassung

*In den letzten beiden Jahrzehnten hat in der Bierindustrie in Osteuropa eine dramatische Umstrukturierung stattgefunden. Die Wirtschaftsreformen in den frühen 1990ern führten zu einer Abnahme der Produktion von Gerste, Malz und Bier. Ausländische Investoren, die Schwierigkeiten hatten, genügend hochwertige Gerste und Malz zu finden, führten zur Sicherung der Qualität vertikale Koordinationsmaßnahmen*

*ein. Die daraus resultierende Steigerung der Bierqualität war eine der Hauptursachen für das spektakuläre Wachstum des Bierkonsums in vielen osteuropäischen Ländern und insbesondere in Russland.*

### Schlüsselwörter

*Bier; Osteuropa; Russland; ausländische Investitionen; industrielle Organisation; Konsum*

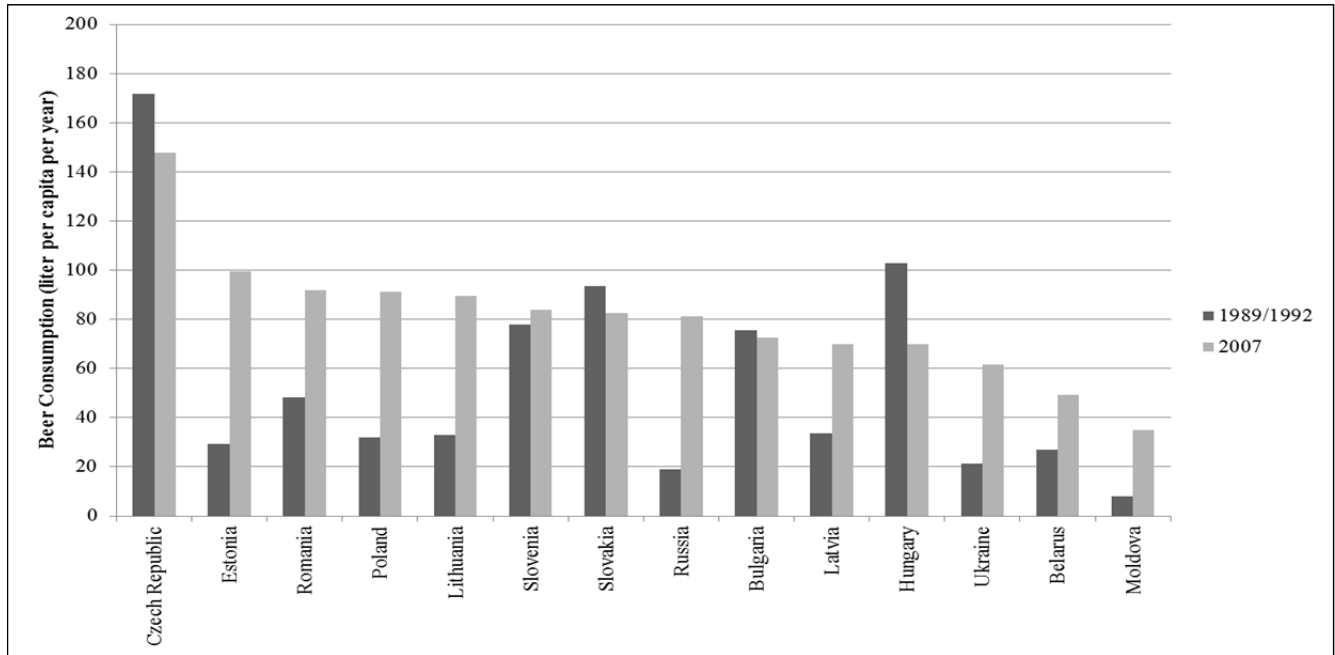
## 1 Introduction

Markets in the former communist countries have been strongly affected by the economic reforms in the beginning of the 1990s, which led to major disruptions throughout the economic system. Consumption fell with declining incomes and high inflation. At the production side, the combination of price liberalizations, subsidy cuts and a weak legal environment caused a substantial decline in output in the first years after the reforms (ROZELLE and SWINNEN, 2004).

However, the region soon attracted much interest from foreign investors. The combination of a substantial consumer market, privatization of state companies, liberalization of investment regimes, and closeness to the (West) European market induced a massive inflow of foreign investment. Yet, especially in the food industry – but also in other economic sectors – processing companies faced serious problems finding sufficient high quality raw material needed to make high quality products. Therefore, processing companies started investing in innovative contracts in which they provided inputs, credit and information to credit-constrained local farmers. This process had important beneficial effects on product quality, farm investments, agricultural output and revenues (e.g. DRIES and SWINNEN, 2004; VAN HERCK et al., 2012; FALKOWSKI, 2012).

Since the late 1990s, economic growth and later EU accession led to a substantial improvement of

**Figure 1. Per capita beer consumption in Eastern Europe in 1989/1992 and 2007**



Note: per capita consumption data of 1989 for Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia. Per capita consumption data of 1992 for Estonia, Latvia, Lithuania, Slovenia, Belarus, Moldova, Russia and Ukraine.

Source: FAOSTAT (2012)

incomes, better functioning market institutions, and subsidies to farms in the new EU member states. In combination, these factors reduced credit constraints in the supply chains (CIAIAN and SWINNEN, 2009). It improved farmers' access to formal credit (bank loans) as farmers could, for example, use subsidies as collateral for bank loans (CIAIAN et al., 2011). This in turn reduced the need for processing companies to provide credit or inputs to farms, and hence led to a decrease in vertical coordination, although this effect is likely to depend on the region and the agricultural subsector.

In this paper, we use the Eastern European beer market as a case-study to illustrate these general developments. Eastern Europe is an important player in the European and global beer market. In 2008, the whole of Europe accounted for 32% of global beer production, with Eastern Europe accounting for more than half of this (17%). Within Eastern Europe, the major beer producers nowadays are Russia, Ukraine, Poland and the Czech Republic. Russia by itself is the third largest producer of beer in the world and accounted for more than 6% of the world beer production in 2009. Some countries in the region, such as the Czech Republic, have a long tradition of beer-drinking, while others, such as Russia, only recently experienced a strong increase in beer consumption, partly as a result of the developments in the beer industry during the reforms.

We first analyze overall changes in beer production and consumption in the region and in particular the remarkable increase in beer consumption in Russia. Next, we discuss how the fall of communism, the inflow of foreign direct investment, and the subsequent attention to quality issues affected the supply chain in the Eastern European beer market. We illustrate these general changes with comparative data and evidence from the Slovakian beer and malting industry. Finally, we draw some conclusions on potential pathways for future developments in the beer supply chain in Eastern Europe.

## 2 The Eastern European Beer Market

### 2.1 Communist Period

In 1989, before the reforms started, beer consumption and production was the highest in Russia, followed by the Czech Republic (SWINNEN and VAN HERCK, 2011). The main driver for high consumption and production in Russia was not so much high per capita consumption, but its large market size.<sup>1</sup> In contrast,

<sup>1</sup> From the 1960s to the early 1990s, per capita beer consumption in the Soviet Union and Russia was relatively stable and fluctuated between 15 and 25 liters per capita. In 1989, per capita consumption was 20 liters in the

consumption per capita in the Czech Republic was among the highest in the world (figure 1). In 1989, the average Czech citizen consumed around 170 liters beer per capita. In Hungary and Slovakia, beer consumption per capita was respectively 103 and 94 liters per capita, comparable to the per capita consumption in traditional beer-loving countries in the EU15 such as Belgium and Germany.

## 2.2 Reform and Transition

The beer market has been strongly affected by the economic reforms in the beginning of the 1990s. However, the impact of the reforms differed among the Eastern European countries. Overall, we can distinguish four distinct patterns (LARIMO et al., 2006) (figure 2).

First, there are countries in which consumption and production decreased slightly in the first years of transition, but recovered rapidly and remained relatively stable at the pre-transition levels. Examples are countries with high per capita consumption, such as the Czech Republic, Slovakia and Slovenia.

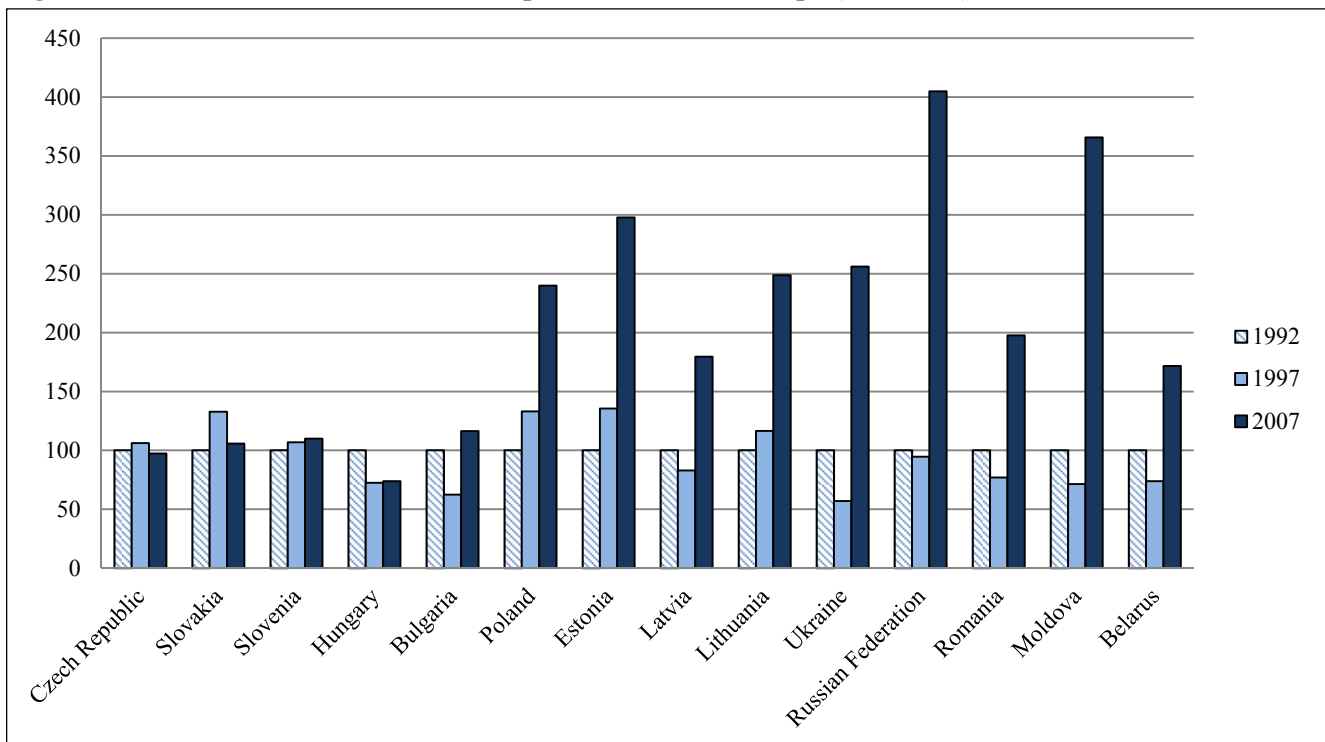
Second, in some countries consumption and production declined strongly during transition. For example, in Hungary beer consumption declined annually by 1.6% and beer production by 3.0% since the

beginning of the 1990s. Likewise, consumption and production decreased sharply in Bulgaria, although recently there are some signs of recovery.

Third, in some countries consumption and production increased strongly almost immediately after the reforms. This was the case in Poland, where beer consumption more than doubled from 1.2 billion liters in 1989 to 2.9 billion liters in 2007. The growth in beer production was even more impressive: total production tripled in the past two decades. A similar pattern is found in Estonia, where production and consumption also tripled compared to the beginning of the 1990s.

Fourth, in many countries of the Former Soviet Union (FSU), including Latvia, Lithuania and Ukraine, consumption and production witnessed a decline in the mid-1990s but increased strongly in recent years. The same pattern can be observed in Moldova and Belarus, as well as in Romania. However, the most spectacular example is the growth in beer consumption observed in Russia. While beer consumption was only 2.1 billion liters in 1996, it more than quadrupled by 2007. Per capita consumption increased from approximately 20 liters in 1992 to around 80 liters in 2007, a level which is similar to the EU average.

**Figure 2. Evolution of total beer consumption in Eastern Europe (1992=100)**



Note: the 1992 data for Czech Republic and Slovakia are calculated using 1992 data for Czechoslovakia assuming the same proportions as in 1993.

Source: FAOSTAT (2012)

The growth in Russian beer consumption is even more remarkable given the traditional dominance of vodka. Survey data shows that as recently as 1995, 76% of Russians identified themselves as vodka-drinkers whereas only 28% reported drinking beer. By 2001, the proportion of beer drinkers (63%) had overtaken the share of vodka drinkers (59%) (DECONINCK and SWINNEN, 2011). Between 1994 and 2007 the share of beer in total alcohol consumption increased from 51% to 79%, while the share of vodka decreased from 39% to 13% (TREML, 1997; EUROMONITOR, 2010).

In particular, four drivers behind this shift in consumer preferences can be identified (DECONINCK and SWINNEN, 2011). First, a generational effect seems to be at work, with younger generations much more likely to drink beer. Second, after 1998 rising incomes supported the increasing demand for beer. Third, as discussed in section 5, the large inflow of foreign capital in the beer market led to a drastic improvement of the quality of the national Russian beer brands. These quality improvements by foreign investors made beer a more attractive drink to Russian consumers. Finally, advertisement played an important role. Until recently, beer was not considered an alcoholic beverage according to Russian legislation. Consequently, a 1995 ban on advertising for alcoholic drinks effectively banned only vodka commercials, giving a competitive advantage to brewers. Moreover, foreign investors in the Russian beer market considered building a strong brand a crucial part of their strategy. As a result, beer was the second-most advertised product on Russian television in 2005, and accounted for an estimated 10% of all advertising expenditures in 2004. Although the generational effect and rising incomes after 1998 supported the growing demand for beer, the improvements in the quality of beer and the advertising campaigns were probably crucial in stimulating the growth of beer consumption in Russia.

### 2.3 The Current Situation

Despite a small decline compared to 1989, beer consumption per capita in the Czech Republic is still the highest in Europe, in the range of 145 liters per capita in 2007 (SWINNEN and VAN HERCK, 2011) (figure 1). In the other high income countries in the region, such as Slovenia, Slovakia, Hungary and Poland, per capita consumption ranges between more than 80 liters per capita in Slovenia and 70 liters per capita in Hungary. In Russia and Ukraine, consumption per capita

more than tripled compared to consumption in 1992 and currently exceeds respectively 80 and 60 liters per capita. In Belarus and Moldova, the poorest countries in the region, per capita consumption is low and ranges between 50 liters per capita in Belarus and only slightly more than 35 liters per capita in Moldova.

The sales of beer represent more than half of the total volume of alcoholic drinks that are sold in all countries in 2008 (table 1). However, there are important differences between countries. In Poland, the Czech Republic, Slovakia, Romania and Bulgaria this percentage exceeds 80%. In Russia and Ukraine, where strong spirits such as vodka are the traditional alcoholic drinks, beer represents respectively 76% and 72% of the total sales volume of alcoholic drinks, much higher than in the Communist period, reflecting the dramatic shift from consumption of vodka to beer over the past fifteen years.

The share of beer sales in the total sales value of alcoholic drinks is lower than its share in volume (see table 1). In Romania and Poland, beer sales represent more than 50% of the total value of alcoholic drinks sales. In Lithuania and Latvia, the share of beer sales in the total value of alcoholic drinks sales is the lowest in Eastern Europe, namely respectively 25% and 29%.

**Table 1. Beer sales as a percentage in the total volume of alcoholic drinks sales and as a percentage of total sales of alcoholic drinks in 2008**

	Share in volume (%)	Share in sales (%)
<b>CEE</b>		
Bulgaria	85	44
Czech Republic	86	45
Estonia	67	36
Hungary	70	42
Latvia	75	29
Lithuania	70	25
Poland	86	54
Romania	86	58
Slovakia	81	32
Slovenia	64	32
<b>FSU</b>		
Belarus	56	29
Moldova	n.a.	n.a.
Russia	76	44
Ukraine	72	35

Source: EUROMONITOR (2009b)



### 3 Privatization and Disintegration of the Beer Chain in the 1990s

Before 1989, beer production, like all agricultural and food production systems in the former communist countries, was fully integrated and state-controlled (ROZELLE and SWINNEN, 2004). Every step in the supply chain, from barley production to malting and brewing and to retailing, was organized by the central command system. In general, barley production was organized in large cooperative or state farms, except for Poland and former Yugoslavia. Central planning organized the provision of inputs to these farms and they sold the produced barley to state owned malting and brewing enterprises.

In the beginning of the 1990s the former communist countries liberalized their economies. This had a substantial impact on the entire supply chain as the industrial organization of the supply chain underwent tremendous changes (GOW and SWINNEN, 1998).

First, with privatization of the industry the previously vertically integrated supply chains were split into autonomous enterprises, which were independent in setting production targets and were free in deciding with whom they exchanged inputs and outputs. In a second stage, these firms were privatized, for example through voucher privatization programs or by selling them off (OECD, 1997). For example, in Slovakia, the privatization process resulted in the establishment of 13 independent Slovakian malting and brewing companies.

Second, prior to the reforms, companies and farms were directly and indirectly subsidized. As a consequence, price liberalization, subsidy cuts, and hard budget constraints caused dramatic price adjustments. For example, the terms of trade in agriculture fell between 30% in Hungary and 70% in Russia in the 1990s (MACOURS and SWINNEN, 2002).

Third, in the first years after transition, the legal system was not adjusted to a market economy. In addition, legal actions were not commonly used because of high costs associated with going to court, ineffective contract law and the potential loss of a trading partner.

The combination of these reforms caused major contract enforcement problems, which often took the form of delayed payments along the supply chain (CUNGU et al., 2008; VAN HERCK et al., 2012). In combination with macroeconomic instability, contract enforcement problems constrained companies' and farms' access to credit. In the short run, this reduced access to inputs. In the long term, it reduced investments in fixed assets and affected the long term

profitability of the sector. This resulted in decline of input use and consequently a decrease in the quantity and quality of production.

These disruptions affected the supply of barley and malt (SWINNEN and VAN HERCK, 2011). As with other agricultural commodities, the production and yield of barley decreased substantially in the first years of transition. In the 1990s, barley production decreased by 10% to 30% in the Baltic states, Czech Republic, Slovakia, Hungary and Poland, and by 50% to 60% in the other countries (FAOSTAT, 2012).

### 4 The Foreign Take-Over of the Brewing Industry

The opening of East European markets and the privatization of breweries attracted a huge interest from foreign investors. The rich beer tradition, high consumption levels, relatively high incomes and geographic and cultural proximity to the EU made Eastern Europe a very attractive market for Western brewers. The privatization and liberalization of foreign investment regulations, the need for upgrading production facilities and marketing strategies, combined with strong capital market constraints for domestic investors resulted in massive inflow of foreign capital in the East European beer industry.

In fact, the beer industry was one of the first economic sectors to attract substantial foreign direct investment (FDI). In 1991, Interbrew (now AB Inbev) was the first foreign company to invest in the Eastern European brewing industry when it bought the brewery 'Borsodi Sörgyar' in Hungary (HÜBNER, 1999). In the following years also Heineken, SABMiller and Carlsberg invested heavily in the Eastern European malting and brewing industry (SWINNEN and VAN HERCK, 2011).<sup>2</sup>

In the early and mid-1990s, investments were concentrated in the more economically advanced

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<sup>2</sup> There are several reasons why foreign investors entered the Eastern European markets by FDI rather than by exporting or licensing (ARNOLD et al., 2000; MARINOV and MARINOVA, 2001). First, initially there was limited demand for foreign beer because consumers preferred local brands and purchasing power of the majority of the population was low. Second, there was only limited scope for exports to Eastern Europe because of restrictive import taxes in some countries. Finally, production costs in Eastern Europe were substantially lower than in their West European home markets (MARINOV and MARINOVA, 2002).

countries such as Hungary, Czech Republic, Slovakia and Poland. After the economic and institutional environment had improved in the less advanced countries, foreign investors also started to invest in Romania, Bulgaria, Russia and Ukraine. One exception to this was the early entry into the Russian market by the Scandinavian group Baltic Beverages Holding (BBH), which bought the formerly state-owned Baltika brewery in 1992. Also the Indian SUN Group started its brewing activities in Russia in the early 1990s after having acquired an initial five breweries. However, other multinational firms entered the Russian market later. Interbrew (now AB Inbev) started its activities in Russia in 1998 after buying the Rosar brewery. In 1999 Interbrew and SUN combined their brewing activities in the joint-venture SUN Interbrew. The Turkish brewer Anadolu Efes started a joint-venture with the City of Moscow in 1997 to develop a malting and brewing company, with support from the European Bank for Reconstruction and Development (EBRD). This brewery opened in 1999. SAB entered Russia in 1998 by opening a new brewery close to Moscow, and Heineken only entered in 2002 through the acquisition of Bravo International.

Between 1990 and 2005, the world's four largest multinational brewing companies – AB Inbev, SAB Miller, Heineken and Carlsberg – invested heavily in the region by purchasing domestic breweries and the market was characterized by increasing consolidation (SWINNEN and VAN HERCK, 2011). In 2000, the market share represented by these four breweries was

already more than 50% in six out of the thirteen countries in Eastern Europe for which we have data. By 2009, the number of countries with a combined market share of more than 50% increased to nine (table 2). In all countries in Eastern Europe, except for Slovenia and Belarus, the market leader is now a foreign investor. Usually, these “global brand owners” operate through ownership of local brands, managed by “national brand owners”. For example, in Russia, Carlsberg is the owner of Baltika, the strongest national brand in Russia, representing approximately 40% of the beer market.

## 5 Quality Demands and Vertical Coordination in the Beer Chain

After foreign investors entered the market and bought foreign brewing companies, improving the quality of beer became one of their main priorities. For example, in Russia, BBH embarked on a large-scale investment program to modernize production of its brand Baltika as part of the company's strategy to create a beer of European quality (BALTIKA, 2008). In 1995, SUN Brewing (now Sun Inbev) invested \$11,7 million in upgrading machinery to improve beer quality and taste since, according to then-chairman Shiv Khemka, ‘the problem is not that [Russians] dislike beer (...) It's just that they don't have a first-rate national brand to choose from’ (RUSSIA REVIEW, 1996). When Interbrew acquired the Rosar brewery in Omsk, they

**Table 2. Market share of the leading breweries in selected countries in 2000 and 2009 (%)**

	AB Inbev		Carlsberg		Heineken		SAB Miller		Other	
	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009
<b>CEE</b>										
Bulgaria	37	29	0	24	23	31	0	0	40	16
Czech Republic	10	12	0	0	1	10	37	44	52	34
Estonia	1	1	50	53	0	1	0	0	49	45
Hungary	25	22	0	0	9	24	25	24	41	30
Latvia	1	2	28	41	0	0	0	0	71	57
Lithuania	0	0	41	41	0	0	0	0	59	59
Poland	0	0	8	14	33	33	22	41	37	12
Romania	13	17	4	9	36	29	12	27	34	18
Slovakia	0	0	0	0	37	40	24	37	39	23
Slovenia	0	0	0	2	1	4	0	0	99	94
<b>FSU</b>										
Belarus	0	0	0	0	0	0	0	0	100	100
Moldova	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	9	15	24	38	0	13	0	5	67	29
Ukraine	29	37	23	26	0	0	0	4	52	33

Source: EUROMONITOR (2009a)

**Table 3. Elements of assistance programs to supplying farms offered by malt processors and breweries in Slovakia**

	Malt processor 1	Malt processor 2	Brewery 1	Brewery 2	Brewery 3
Support to production and storage	X	X	X		
Support to improving quality	X	X	X		X
Support to management	X				
Credit provision	X	X	X		
Advice on investments	X				
Support on purchase of farm inputs	X	X			

Note: 'X' means 'yes' or 'applicable to'.

Source: survey executed by RIAFE Bratislava (WORLD BANK, 2006)

planned important investments to face an increasing demand for quality by Russian consumers (RUSSIA JOURNAL, 1999a). Likewise, when Carlsberg-Tuborg acquired the Vena brewery in St. Petersburg, the company immediately invested \$60 million to dramatically improve quality (RUSSIA JOURNAL, 1999b).

An important obstacle in improving the quality of beer was obtaining sufficient quantities of high quality malt and barley. In most of the region, the malt that was produced in the 1990s did not meet the quality standards of the foreign investors. In response, foreign investors initially imported malt and barley from their traditional channels in Western Europe (COCKS and GOW, 2003). In the long run, however, the development of a local supply base was more beneficial because of tariffs and exchange rate fluctuations as well as for logistical and operational reasons. Therefore, foreign companies invested in long term relationships with malting companies and producers and reintroduced vertical coordination along the supply chain (WORLD BANK, 2006).<sup>3</sup>

Part of these relationships included sophisticated contracts with assistance to farms. Examples of such assistance programmes were seed selection and supply schemes, credit provision, investment loans, technical assistance and advance payments. This evolution led, in addition to the "traditional" product flow from the farmer to the brewer, to the emergence of a second flow of assistance in the form of input, credit and/or knowledge transfers from the brewer to the malting

company and further upstream to the farmer. By reducing farms' credit constraints and improving their access to quality inputs and credit, these assistance programs were targeted to improve the supply of high quality malt and barley production. Table 3 documents how in Slovakia in 2003, support to improve quality, support to production and storage, and credit provision were the three most commonly used assistance programmes to suppliers in the Slovakian beer chain.

The impact of these vertically coordinated programs has been very important, both generally and in the beer chain specifically (GOW et al., 2000; DRIES and SWINNEN, 2004; WORLD BANK, 2006). Besides an effect on quality, the farms' improved access to input markets had also an effect on efficiency. For example, companies in the Slovakian beer and malting industry, such as Heineken, stated that barley producers with a contractual relationship with the company had higher yields than the Slovak average (WORLD BANK, 2006). Partly, these differences reflect selection, but Heineken also confirmed that its farm assistance programs – such as assistance in selecting the appropriate seed variety, plant protection and nutrition and advising in post-harvest storage and treatment – enhanced quality and productivity.

However, vertical coordination has reduced in intensity and extent over time. Gradually, when the institutional and economic situation improved, brewing companies started to disassociate themselves from barley and malt activities and returned to their core business of brewing and selling beer. They started buying malt from the malting companies via more traditional contracts and the malting company became responsible for the quality of the malt (FAO, 2009).

Overall, economic growth and the benefits from EU accession also contributed to a reduction of vertical coordination, and an industrial organization of the supply chain which is closer to the West European model with independent companies producing malt and beer, albeit with contracting.

<sup>3</sup> Another reason why vertically coordinated supply chains emerged in the brewing industry is related to the privatization process. While brewing and malting companies in the West tend to work together under contractual relationships but as separate companies, brewing and malting companies in Eastern Europe were often privatized as a single 'package'. Hence, foreign brewery companies often ended up owning malting companies as they took over the Eastern brewing (cum malting) companies (COCKS and GOW, 2003).



**Table 4. Recent evolutions in the farm assistance programs offered by malt processors in Slovakia**

	Company I		Company II		Company III	
	2002	2008	2002	2008	2002	2008
Monetary credit - (short term; variable inputs)	X		X			
Advance payments	X		X		X	
Recommendation for a bank loan	X					
Technical assistance/ agronomic support/field days	X	X	X	X	X	X
Provision of seeds					X	
Use of a truck during the delivery season	X	X	X	X		
Premium for quality	X	X	X	X	X	X

Note: 'X' means 'yes' or 'applicable to'.

Source: own survey results

Between 2004 and 2007, ten Eastern European countries joined the European Union. The accession to the EU has both direct and indirect effects on the beer supply chain. The new member states now receive substantial farm subsidies from the EU's Common Agricultural Policy (CAP), which have a direct effect on farmers' income. Moreover, financial institutions are more willing to give loans to farmers because direct payments can be used as loan collateral (CIAIAN and SWINNEN, 2009). Indirectly, the accession to the EU improved institutions and the general working of input markets. Both effects reduced the need for vertically coordinated farm assistance programs.

These recent trends in the extent of vertical coordination and assistance are also at work in the beer industry (SWINNEN and VAN HERCK, 2011). In 2009, we conducted in-depth interviews with the management of three Slovakian malting companies on the evolution of farm assistance programs before and after accession to EU.<sup>4</sup> The results, summarized in table 4, show that all companies stopped providing credit assistance programs after EU accession. In 2002, all three companies provided advance payments, two companies offered monetary credit for the purchase of variable inputs while the other company offered seeds. In addition, one company offered bank loan guarantees. The malting companies indicate that at the end of the 1990s, when they started their activities, they needed to introduce these programs, because at that time the majority of the farmers were not able

to produce the requested quality of barley. In general, farmers did not have access to bank loans and they had not enough pre-harvest income to buy inputs such as seeds, fertilizer, pesticides and fuel. The malting companies indicate that the credit programs were successful as they were an important driver behind quality improvements in the beginning of the 2000s. However, in 2004, the year of EU accession, two companies stopped their credit programs, while the third processor, which was located in the poorer eastern part of Slovakia, stopped offering its credit program in 2007. All three companies indicate that the most important reason for halting these programs was that farms now have better access to commercial loans due to the fact that financial institutions accept direct payments as collateral. The malting companies still offer extension services and a quality premium to guarantee and improve the quality of the production. In addition, two of the three companies also provided a truck during the delivery season in 2002 and 2008. Thus, the main impact of EU accession in this case seems to be its positive effect on credit constraints, lessening the need for financial support by malting companies. However, the provision of quality still seems to require some degree of assistance by the malting companies.

## 6 Conclusion

In the beginning of the 1990s, political and economic reforms led to major disruptions in beer production and consumption in Eastern Europe. Beer production declined due a combination of privatization, price liberalization and poor legal enforcement systems. Also further upstream, these factors, combined with 'normal' rural credit constraints, led to a decrease in the quantity and quality of barley and malt production. Consequently, malting companies produced less high

<sup>4</sup> The in-depth interviews with the management of the three malting companies were conducted in person in the spring of 2009. The interviews were based on a semi-structured survey in which both qualitative and quantitative data were collected. Two of the malting companies are completely foreign owned, while the third one is domestically owned. Together they represent a market share of more than 80%.

quality malt. At the same time, demand for beer decreased because of lower disposable consumer incomes and high inflation.

Soon after the start of liberalization, the Eastern European brewery industry attracted foreign investors. The first countries to attract investments were those with the highest incomes and most advanced reform processes, such as Hungary, Slovakia and Poland. Later, foreign investors went further east and south and invested in the less advanced countries, such as Romania, Russia and Ukraine. Foreign investors ended up regionally dividing the Eastern European beer market among the four largest international beer companies, AB Inbev, SAB Miller, Heineken and Carlsberg. Currently, these four companies have a market share of more than 50% in almost all Eastern European countries.

When foreign breweries started their activities in Eastern Europe, they faced a problem sourcing sufficient high quality malt in order to produce high quality beer. The local financially distressed malting companies and farms were often not able to produce the high quality malt and barley that was needed. In order to avoid the higher costs associated with importing malt, foreign brewers invested in the supply chain and introduced innovative contracts with malting companies and farms to help them produce malt and barley that met their quality requirements. These contracts led to important improvements in efficiency and quality in the production of barley and malt, which have been important drivers behind the rapid growth in beer consumption in, for example, Russia.

Since the late 1990s rapid economic growth caused a substantial improvement in disposable income, better functioning markets and institutions and the introduction of subsidies to farms. This resulted in a reduction of farms' credit constraints and, hence, a decline in the need to offer assistance to malting companies and farms.

The speed and the magnitude of this reversal in vertical coordination will depend on the structure of the agricultural supply chain. For example, in a region or sector dominated by farmers who are too small to receive CAP payments, credit constraints may remain an important issue. Consequently, supply chains will probably continue to be vertically integrated. On the other hand, when the positive impact of CAP payments is magnified by improvements in the institutional and economic environment, lessening credit constraints, the decline in vertical coordination will be more pronounced. However, even in this case it seems unlikely that vertical integration would disappear

completely. Apart from credit constraints, issues related to quality and imperfect monitoring may still create a need for some degree of vertical coordination, as our in-depth interviews of Slovakian malting companies showed.

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