Agriculture in Transition: The Czech Republic, Hungary and Poland

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James R. Simpson and Mamoru Sudo

The dramatic changes in economic systems and policies in the Czech Republic, Hungary and Poland (termed "the three" in this article) have had profound impacts on their agricultural sectors as well as the lives and economic well being of urban residents. The objective of this article is to provide an overview of the agriculture in the three. The situation of each of the three placed in perspective by comparing them with Europe and Japan. (This one region and four countries are called "the five"). The three are part of the 38 countries that geographically make up Europe. This article is the result a two-week quick reconnaissance trip through the three by four Ryukoku faculty, including the author's of this article.

Agricultural Population

Poland, among the five, has the largest proportion of its population in agriculture, 23 percent of all persons and 26 percent of its economically active citizens (Table 1). In contrast to Europe as a whole and the other three countries, Poland's larger proportion of economically active population in agriculture reflects the much larger role of this sector in the economy, as well as agriculture partly being a social security system. Indeed, discussions with officials and review of documents reveal that continuation of a strong social welfare attitude continues to characterize Poland's policies and is one of the major financial headaches facing the nation.

Generally, as a country's economy develops, the proportion of agricultural population declines (Simpson, 1997). This is because urban areas generally provide more lucrative jobs and a lifestyle that most people find more satisfying than working in

agriculture. Also, technology adoption in agriculture leads to economies of scale so that more can be produced with fewer people. An example is mechanization replacing human and animal power. Thus, in contrast to Poland, only 8 percent of Europe's population are economically active in agriculture and for many of the countries it is less than 5 percent. There has been a decline in agricultural population in all of the three, and integration into the European Union can be expected to hasten the decline.

Table 1. Population in selected countries and Europe, 1990 and 1995, and population growth rates, 1990-2005

Item	Czech Republic	Hungary	Poland	Europe	Japan
Total,1995 (1,000)					
Total	10,263	10,106	38,557	505,874	125,068
Agricultural	1,109	1,417	8,841	41,207	6,602
Percent in Agr	10.8	14.0	22.9	8.1	5.3
Total Population growth rates (percent)					
1990-1995	0.27	-0.15	0.29	0.27	0.38
2000-2005	0.57	0.10	0.49	0.27	0.27
Economically active,1995 (1,000)					
Total	5,543	4,698	19,292	239,631	66,055
In agriculture	599	637	5,002	21,213	3,660
Percent in Agr	10.8	13.6	25.9	8.9	5.5
Economically active,1990 (1,000)					
Total	na	4,734	18,733	233,570	64,133
In agriculture	na	721	5,146	24,211	4,669
Percent in Agr	na	15.2	27.5	10.4	7.3

Source: FAO *Production Yearbook*, 1995 and *World Resources 1994-95.*

Land Use

Natural endowments and population density explain part of the differences in agriculture among the three. For example, while Poland is nearly as large as Japan, it is

about four times larger than either the Czech Republic or Hungary (Table 2). However, both Poland and Hungary have about twice as much of their land classified as arable as does Europe. The Czech Republic has 41 percent of its land classified as arable compared to 26 percent in Europe. The arable land endowments of Hungary and Poland are significantly greater than Japan, which only has 11 percent of its land considered arable. All of the three have about 12 percent of their land in permanent pastures in contrast to Japan which only has 2 percent of its land in that category.

Table 2. Land use in selected countries and Europe, 1995

Item	Czech Republic	Hungary	Poland	Europe	Japan
		1,000 hectares			
Total area	7,886	9,303	32,325	489,284	37,780
Arable land	3,150	4,749	14,300	122,012	3,999
Permanent Crops	236	225	342	13,353	423
Permanent pasture	890	1,148	4,055	79,445	661
Forest & woodland	2,629	1,767	8,783	158,659	25,000
Other land	823	1,345	2,962	99,154	7,569
Total land area	7,728	9,234	30,442	472,623	37,652
Irrigated	24	210	100	16,534	2,780
		Percent of land area			
Arable land	41	51	47	26	11
Permanent Crops	3	2	1	3	1
Permanent pasture	12	12	13	17	2
Forest & woodland	34	19	29	34	66
Other land	11	15	10	21	20
Total land area	100	100	100	100	100
		Percent of arable land			
Irrigated	1	4	1	14	70
Population (1,000)	10,296	10,229	38,588	505,874	125,197
		Persons per hectare of arable land			
Population density	3	2	3	4	31

Source: FAO *Production Yearbook*, 1995

The picture, which emerges of the three, is one of nations well endowed with land suitable for crop and animal agriculture. There are, of course, differences in factor endowments such as climate, which have a bearing on suitability for agriculture. For example, Poland's northern location restricts the types of crops, which can be grown, and a shorter growing period results in lower yields and the reduced possibility of multiple cropping (using the same land for more than one crop per year). In addition, while 70 percent of Japan's arable area is irrigated, as is 14 percent of Europe's, only 1 percent of Poland and the Czech Republic's arable land is irrigated (Table 2). This lack of irrigation results in greater vulnerability to the vicissitudes of nature especially prolonged periods of low rainfall.

Population density of the three on arable land, as well as Europe, is quite low, only about 3-4 persons per hectare (Table 2). Careful scrutiny of the data reveals that the population density in Hungary is only 2 persons per hectare, and thus only 50 percent of the population density of Europe. Poland and the Czech Republic only have 75 percent of Europe's average population density. These data add to the picture of the three as countries well endowed agriculturally. Japan is an extreme, with 31 persons per hectare of arable land. As points of reference, Germany has 7 and China, which is usually thought of as being heavily populated, has13. The United Kingdom, which is generally not thought of as being heavily populated, has 10 persons per hectare of arable land.

Types of crops

About 50 percent of the Czech Republic's arable land area is harvested as cereals (Table 3). Just one percent of it is harvested as corn (maize) compared to Hungary, which has 22 percent corn. Wheat is the dominant crop in Europe, with Poland having the least

amount of arable land (17 percent) devoted to it. Poland has much less land suitable for wheat. However, it is a major producer of rye, which in 1995 accounted for 17 percent its arable harvested land.

Table 3. Area harvested by type of crop in selected countries and Europe, 1995

Item	Czech Republic	Hungary	Poland	Europe	Japan
		1,000 hectares			
Total arable land	3,150	4,749	14,300	122,012	3,999
Cereals	1,577	2,724	8,539	62,243	2,342
Corn (Maize)	26	1,037	48	10,711	<1
Rice	<1	10	<1	376	2,118
Wheat	831	1,102	2,407	26,392	160
Barley	558	393	1,048	14,401	60
Rye	79	77	2,452	4,128	<1
Other	83	105	2,584	6,235	4
Potatoes	78	71	1,522	3,838	110
Other crops	1,495	1,954	4,239	55,931	1,547
		Percent of arable land area			
Total arable land	100	100	100	100	100
Cereals	50	57	60	51	59
Corn (Maize)	1	22	0	9	<1
Rice	<1	0	<1	0	53
Wheat	26	23	17	22	4
Barley	18	8	7	12	2
Rye	3	2	17	3	<1
Other	3	2	18	5	0
Potatoes	2	1	11	3	3
Other crops	47	41	30	46	39

Source: FAO *Production Yearbook*, 1995

Poland's diet has more similarities to the Soviet Union than either the Czech Republic or Hungary. For example, 11 percent of Poland's arable land area has potatoes harvested from it while the other two countries, and Europe as a whole, have 3 percent or less in

that crop. Nevertheless, among the three, Poland also has the largest proportion of its arable land in cereals, 60 percent.

Food production indices

Annual agricultural production fluctuations are expected due to climate, market and other shorter-term influences such as government policy and economic conditions. In the longer term, such as a decade or two, it is expected that an upward trend would take place in response to population growth. However, government policies often lead to cyclical or even downward trends in food production. Such is the situation of Europe, Japan and the three. Japan, for example, has been under pressure to liberalize its markets with the result that food imports have increased relative to production and thus there has been a downward trend in food production since the mid 1980's (Table 4). Within Europe, the countries that belong to the European Union have had considerable food production surpluses for the past decade and a half due to the Common Agricultural Policy.

During the 1990's the food production indices for Europe have declined considerably as adjustments have been made to the CAP to rationalize production in response to market demands, attempts to reduce governments subsidies and to pressure from the last round of GATT negotiations. In addition, the transition, which has taken place in many other countries of Europe, the three included, has resulted in trade policies that emphasize free market principles. As will be discussed in a later section, the result is that countries such as the three, which have a relative abundance of natural agricultural resources, have found themselves in a situation of being less competitive internationally and thus experiencing difficulty in exporting their commodities. With virtually no

population growth (Table 1), agriculture in the three as well as Europe as a whole has suffered from a lack of markets. Consequently, food production in Hungary dropped from an index of 105 in 1988 (1989-91=100) to 72 in 1995 (Table 4). Poland dropped to 93 from 100 in 1991 and the Czech Republic from 105 in 1989 to 93 in 1995.

Production of Cereals

The area devoted to production of cereals (such as maize, wheat, barley, etc) has declined considerably in Europe over the past half decade although there is no trend in Hungary or Poland (Table 5).

Table 4. Indices of food production, selected countries and Europe, 1984 to 1995

Year	Czech(1) Republic	Hungary	Poland	Europe	Japan
			1989-91=100		
1984	100	102	94	100	99
1985	97	98	96	98	102
1986	97	100	101	100	102
1987	98	100	96	99	103
1988	101	105	99	99	101
1989	105	103	102	100	102
1990	101	97	102	100	101
1991	94	101	96	100	97
1992	89	76	85	98	101
1993	NA	71	91	96	95
1994	86	94	78	94	100
1995	93	72	85	93	96

Source: FAO Production *Yearbook*, 1994
1) 1984-92 are for Czechoslovakia.

Production in Hungary, Poland and Europe has declined, as also shown in the food production indices (Table 3). Yields of cereals (measured by dividing production by

area) have remained about steady in Europe, but have declined considerably in Hungary and Poland. For example, using Europe as an index of 100, Hungary's yields fell from 118 in 1989-91 to 76 in 1993 at a time when the transition policies were causing considerable consternation among agricultural producers. By 1995 Hungary's yields had improved substantially, although they still remained considerably below Europe's averages (Table 5).

Table 5. Cereals area, production and yield in selected countries and Europe, 1989-91 to 1995

Year	Czech Republic	Hungary	Poland	Europe	Japan
			Area (1,000 ha)		
1989-91	NA	2,818	8,541	66,995	2,469
1993	1,611	2,707	8,506	62,468	2,424
1994	1,655	2,946	8,481	62,463	2,448
1995	1,577	2,724	8,539	62,243	2,342
			Production (1,000 MT)		
1989-91	NA	14,592	27,594	293,626	13,946
1993	6,479	8,520	23,417	259,076	10,737
1994	6,781	11,710	21,763	261,169	15,787
1995	6,598	11,042	25,106	268,411	13,437
			Yield (kg/ha)		
1989-91	NA	5,173	3,231	4,383	5,645
1993	4,024	3,147	2,753	4,147	4,429
1994	4,097	3,974	2,566	4,181	6,449
1995	4,185	4,054	2,940	4,312	5,737
			Yield (Percentage of Europe)		
1989-91	NA	118	74	100	129
1993	97	76	66	100	107
1994	98	95	61	100	154
1995	97	94	68	100	133

Source: FAO *Production Yearbook*, 1995

Poland's cereal yields, which have traditionally been much below the averages for Europe as a whole, fell from an index of 74 in 1989-91, to 68 in 1995. Clearly, there are

differences in crop makeup due to a country's geographical location that affect yields. Nevertheless, during these transition years economic systems, government policies, level of economic development and use of production technologies have been the major variables that have influenced yields. In the case of the three, loss of Eastern European markets has been the key cause. Hungary has been the least affected.

Agricultural trade

The 38 countries of Europe have traditionally been net importers of agricultural products although the deficit has declined over time. For example, in 1989 net imports amounted to $US 375 million, but declined to $US 236 in 1994 (Table 6).

Table 6. Trade in agricultural, fishery and forestry products in selected countries and Europe,1989-94 (million $US)

Year	Czech Republic	Hungary	Poland	Europe	Japan
			Imports		
1989	19	11	19	2289	531
1990	15	11	11	2540	524
1991	11	11	12	2563	541
1992	11	9	22	2718	575
1993	13	11	26	2331	627
1994	17	14	30	2602	706
			Exports		
1989	10	23	20	1914	33
1990	11	25	20	2185	35
1991	12	28	20	2220	39
1992	8	29	25	2403	44
1993	16	21	20	2157	40
1994	15	24	25	2366	41
			Net exports		
1989	-9	12	1	-375	-498
1990	-4	14	9	-355	-489
1991	1	17	8	-343	-502
1992	-3	20	3	-315	-531
1993	3	10	-6	-174	-587
1994	-2	10	-5	-236	-665

Source: FAO, *Trade Yearbook*,1994

Among the three, the Czech Republic has basically maintained equilibrium in agricultural trade, with net imports in some years and net exports in others. Hungary on the other hand has traditionally been a net exporter of agricultural products, with 1991 and 1992 being especially good years. Poland has witnessed a reversal from being a net exporter prior to its drastic transition policies, to being a net importer. One reason is that Poland, although well endowed with arable land, is a fairly high cost producer of agricultural products because of its northerly location, structural makeup and level of technology.

Government subsidies

Governments give support to agriculture in the form of subsidies to consumers and producers. The ones to consumers are measured by Consumer Subsidy Equivalents (CSE), and those to farmers as Producer Subsidy Equivalents (PSE). The PSE is an indicator of the value of the monetary transfers to agriculture resulting from agricultural policies in a given year (OECD 1997a). It includes five categories of policy measures: market price support, direct payments, reduction of input costs, general services and other support. The larger the number, the more government support to agriculture and thus there is more distortion of free trade observed. Comparisons are shown in US dollar equivalents so that exchange rate fluctuations have a bearing on movements in PSE and CSE.

The Czech Republic has witnessed a remarkable decline in PSE, from 53 percent in 1989-91 to 10 percent in 1996 (Table 7). Hungary's PSE declined from 23 percent to 11 over this same period. Remarkably, Poland's grew from 0 to 28 percent as attempts

were made to protect the country's agriculture. The economic transition process that began in 1989, started with food price liberalization. Since there had been minimum price standards the result was general declines in agricultural prices which implicitly taxed farmers. As border control measures were adopted and new market support mechanisms were adopted, the PSE rose. By way of contrast, in 1996 the European Union's PSE stood at 43 percent and Japan's at 71 percent.

Table 7. Producer and consumer subsidy equivalents in selected countries and Europe,1989-91 to 1996 (in percent)

Year	Czech Republic	Hungary	Poland	European Union	Japan
		Producer Subsidy Equivalents (PSE)			
1986-88				48	73
1989-91	53	23	0		
1993-95	20	23	20	49	75
1996	10	11	28	43	71
		Consumer Subsidy Equivalents (CSE)			
1986-88				-44	-57
1989-91	-30	-14	19		
1993-95	-13	-16	-17	-37	-51
1996	3	-3	-28	-22	-46

Source: OECD, *Agricultural Policies in OECD Countries: Measurement of Support and Background Information.* 1997a
OECD, *Agricultural Policies in OECD countries: Monitoring and Evaluation*. 1997

An important point is to understand that, despite the three being in the midst of a transition to a free market economy from communism (and thus from a state planned economy), the level of government support to agriculture has been much less than in the so called "free economies" of the European Union and Japan. It is interesting that, apart from the Czech Republic in the late 1980's, the earlier levels were also much lower, probably because the economies were also much poorer and thus governments could not

"afford" the luxury of subsidizing agriculture. The main reason for CSE change in the three was collapse of export markets, especially the soviet Union.

The Consumer Subsidy Equivalent is an indicator of the value of monetary transfers to consumers resulting from agricultural policies in a given year. A negative number, which indicates a transfer from consumers due to market price policies, can be thought of as the implicit tax imposed on consumers by agricultural policies. Thus, larger negative numbers are associated with greater burdens on consumers.

There is a very close relationship between the PSE and CSE indicators. All market price policies that create a wedge between domestic and world prices cause consumer prices to increase. The larger the numbers, the more transfer from consumers to producers. Larger numbers mean a greater subsidy to producers and a tax on consumption. The CSE in the Czech Republic and Hungary have fallen dramatically over the past half-decade and now represent a very low level (3 and –3 in 1996). Poland's CSE has shifted from a plus 19 in 1989-91 to a –28 in 1986, a dramatic change to an implicit tax on consumers to subsidize agriculture. The European Union's CSE dropped from –44 to –22 over the past decade and Japan's from –57 to –46. Perhaps and explanation for differences in CSE and PSE among the three is the differences in economic philosophy prior to the transition. Hungary was the most liberal while Poland was the least liberal.

Privatization

Each of the three had different experiences and methods used during the communist era. The Czech Republic, for example, seems to have missed an opportunity to use privatization as a way to make changes in the social economic structure.

Privatization of agriculture in the Czech Republic has been completed except for land. There are about 500,000 hectares yet to be privatized out of about 900,000 hectares owned by the state. About three-quarters of agricultural land is farmed by corporate farms and farm co-operatives and nearly a quarter by individual farmers.

Hungary's privatization of state owned land and agro-food companies continues. Nearly 90 percent of agricultural land was privately owned as of 1996. About 20 percent of food industry capital remained in state ownership although privatization continues.

Much of Poland's agriculture continues in state hands. For example, by mid-1996 only 324,000 hectares had been sold to the private sector, but over 3 million hectares were leased.

Czech Republic

Agriculture's role in the Czech Republic's economy has declined substantially as a result of the transition to a market economy. Agriculture, as a share of GDP, declined from 6 percent in 1989 to 3 percent in 1995 (OECD, 1997). In recent years, food and agricultural products have accounted for less than one tenth of total trade although in most years the country has been a net importer of agri-food products.

The share of household income spent on food has been relatively stable at around 32 percent. In contrast, food accounts for about 17 percent of the average European Union's household's income, and this proportion is falling. Prices for bread-wheat and milk are regulated. Prices of other products such as beef and pig meat are regulated through import tariffs. In effect, the goal has been to maintain domestic prices at levels above world prices to protect agriculture although implementation of commitments of the Uruguay round have resulted in lower border protection.

The PSE and CSE data in Table 6 show that the level of support to agriculture has fallen significantly in recent years. However, the benefits to consumers have not come without costs as farmer's indebtedness has increased from this transition process. This became quite evident in discussions with government officials during our quick reconnaissance trip, and is a major factor in Czech agricultural policy. No medium or long-term strategies have been developed to deal with this problem. Overall, the consensus is that agricultural policy is in the right direction (OECD, 1997).

Hungary

The share of agriculture in Hungary's GDP has declined since the transition toward a market economy formally began with constitutional reform in October 1989, falling from 16 percent in 1989 to 6 percent in 1995. The percentage decline, paradoxically, is a positive indicator of economic development. What has happened is that even though agriculture has continued its importance in total value, the nonagricultural sector has grown substantially and thus the proportion has fallen. The value of agricultural exports, which are about twice as large as agricultural imports, account for nearly one fourth of all exports (OECD, 1997). Food accounts for about a third of consumer expenditure. Nevertheless, agricultural support continues through a system of minimum prices, budgetary support and border measures. Many of the policies are covered by the Agricultural Market Regulation Act of 1993.

Overall, the level of government support to Hungarian agriculture has recently been among the lowest of OECD countries. The main challenges are to improve efficiency in agriculture. The OECD evaluation of agricultural policies (1997) concludes

that greater attention should be given to structural adjustment focusing on training, farm advisory services and alternative opportunities for rural workers.

Poland

The contribution of agriculture to Poland's GDP fell to 7 percent in 1995, nearly half that of 1986. Poland is a small net importer of agricultural products. Both exports and imports are about 10 percent of corresponding total trade. Consumer expenditure on food was about 38 percent of household income in 1996.

Poland's economic transition process, initiated in 1989, began with liberalization of food prices. As a consequence, the overall support to agriculture in 1989-91 was negligible. Policies were then initiated to control trade and market support mechanisms were introduced leading to expanded PSE. Producer prices are higher than world prices, especially for grains.

Overall, the central thrust of agricultural policy is aimed at eventual joining the EU. Efforts are being made to improve agriculture's productivity, and viability. Considerable structural adjustment in the agro-food sector is needed to greatly increase food production efficiency and thus reduce costs.

Observations

Great efforts have been made in the past few decades to reduce trade barriers and subsidies in agriculture at the global level. The Uruguay Round of GATT negotiations, which ran from 1986 to 1994 particularly focused on freeing agricultural trade. There is still considerable unfinished business on the reform agenda, which will be taken up in the next round of world trade negotiation to start under the auspices of the World Trade Organization (WTO) in 2000. The WTO is the successor to GATT. Many

governments, including the three, are focusing on the future role of agricultural policy to meet national interests. They are evaluating strategies to achieve policy objectives in the most cost-effective ways, and to increase their country's competitiveness.

The greater a country's internal subsidies, the more difficulty that country has in reforming agriculture and increasing competitiveness. Among the three, Poland has the most difficult assignment. The Czech Republic has a moderate amount of work to be done while Hungary, because of its longer term alignment with a market system has relatively little problems ahead. The task of the three is compounded by longer-term structural changes taking place throughout the agro-food sector, often due to technological advances, which are blurring the boundaries of farming and manufacturing. Many policy issues such as food safety, environment, state trading and other marketing arrangements will have considerable trade significance for the three as they pursue their quest for admission to the European Union.

References

FAO of the United Nations. (1996). *Production Yearbook 1995*, Rome, Vol. 49.

FAO of the United Nations. (1995*). Trade Yearbook 1994*, Rome, Vol. 48.

Organization for Economic Cooperation and Development. (1997). *Agricultural Policies in OECD Countries: Monitoring and Evaluation*, Paris.

Organization for Economic Cooperation and Development. (1997a). *Agricultural Policies in OECD Countries: Measurement of Support and Background Information,* Paris.

Simpson, James R. (1993). "Urbanization, Agro-ecological Zones and Food Production Sustainability", *Outlook on Agriculture*, Vol. 22, No 4, 233-239.

World Resources Institute. (1994). *World Resources 1994-95*, Oxford University Press, New York, 1994.