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**The Russian Economic Crisis: Impact on Agriculture
and Higher Education in the Chelyabinsk Oblast, Ural Region**

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Abstract

Economic conditions in Russia are having a drastic impact on higher education. Chelyabinsk Agricultural Engineering University is typical of many regional Russian universities in transition. While faculty have freedom to determine curriculum and degree requirements, their teaching loads are excessive, requiring up to six courses per year. The future of higher education in the agricultural sciences is at risk in Russia and other independent states.

The Russian Economic Crisis: Impact on Agriculture and Higher Education in the Chelyabinsk Oblast, Ural Region

Introduction

During the summer of 1998, the international media reported a myriad of economic problems in Russia. The ruble crashed, the International Monetary Fund withheld loans, and President Yeltsin sacked and reshuffled his government several times. Real income fell and unemployment rose as unprofitable enterprises laid off their workers or closed altogether. As autumn approached, reports of poor harvests due to unfavorable weather conditions - drought in the Volga Valley and the Urals - signaled the potential for food shortages during the long winter (Interfax 1998). Subsequently, the Russian government requested emergency food supplies from the European Union and the United States (Holmes 1998, p. A4). The severity of the economic crisis impacted all sectors of the economy and all regions of the country.

The public focus on conditions in the urban areas of Moscow and St. Petersburg obscures the extent of the economic crisis on regions far from the center of power where conditions may be even more difficult. This article discusses the impact of the Russian economic crisis on agriculture and higher education in Chelyabinsk Oblast (Province), an important industrial complex in the Ural mountains, far from the urban centers of Western Russia.

Chelyabinsk, the capital city of 1.2 million, is one of the 10 largest cities in Russia. It is an industrial city as is most of the Chelyabinsk Oblast. Until the late 1980s, 80% of the city's total industry was directly or indirectly involved in the Soviet military complex. The city was closed to all foreigners. The main products of the city are steel pipes, tractors, and machine tools. The military-industrial complex created many environmental problems, including air and water

pollution, water scarcity, and toxic wastes. The Chelyabinsk region is now termed by some as “the most contaminated spot on the planet” (Chelyabinsk, 1998). The Russian economic crisis and the high cost of cleanup inhibit a resolution of these environmental problems.

The Russian Economic and Agricultural Crisis

There has been little or no improvement in the Russian economy since the beginning of economic reforms. Since 1990, the Russian Gross Domestic Product has declined by 40% (Figure 1). The share of agriculture in GDP also declined from 15.4% in 1990 to 6.5% in 1997 while the volume of agricultural production also declined (OECD, pp. 38-39; Kiselyov, 1998). Capital investments in agriculture dropped dramatically in the early 1990s and continue to fall. The share of capital investment in agriculture and the food production complex also fell from 28% in 1990 to below 8% in 1997 (OECD, p. 45). In 1998, capital investments account for only 3% of total investments (Figure 2). The decline in agricultural capital directly impacts food production and consumption (Semyonov, 1998).

In 1998, total Russian grain production was estimated at 47.3 million tons, down about 47% from the relatively good harvest of 1997 (Figure 3). Early snowfall covered another 500,000-700,000 hectares of grain which was not harvested (Interfax, 1998). In addition to weather related problems, yields suffered from low levels of fertilizer application, poor quality seed, and equipment shortages, problems that have plagued Russian agriculture since 1990. While total agricultural output on large scale farms fell, the importance of food produced on household plots looms larger every year (OECD, p. 49) (Figure 4). Over 90% of the potatoes and 85% of the vegetables in Russia are grown on private household plots (Lindeman 1998).

The decline in production depends on the types of farms and on their organizational and ownership structure. Significant changes have occurred in large scale farms, the former collective and state farms (kolkhoz and sovkhoz). Farms are now in collective ownership of the workers but the management and technologies remain the same as pre-1990. The relative decline in prices of agricultural commodities compared to the prices of agricultural inputs has impacted the profitability of all agricultural enterprises. In 1997, only 18% of the farms in Russia were profitable (Kiselyov, 1998). Between 1990 and 1996, the agriculture input/output price ratio decreased about 5 times (OECD, pp. 46-47), more than in any other East European country (Figure 5). At the end of 1997, total debt on all farms exceed gross sales revenue on 20% of the farms (Kiselyov, 1998). In this situation, funds are not available to pay for machinery repairs, depreciation or operating expenses, all contributing to late harvests and grain losses. While farm debts have been restructured with full payments expected by 2005 assuming improved economic conditions (About Measures, 1998), there is no assurance that these objectives can be met at the national or provincial level. Drought and other weather related problems compound the economic and agricultural situation, especially in the Volga Valley and the Ural Region where Chelyabinsk is located.

Chelyabinsk Oblast

Chelyabinsk is located on the Eastern slope of the Ural Mountains, 55⁰ north latitude, about 100 miles north of the Kazakstan border. The city first appeared as a military fortress in 1736, but according to archaeological investigations, settlements existed in this particular region

centuries previously. Chelyabinsk gained status as a city in 1781 and it became the capital of Chelyabinsk Oblast in 1934.

The climate of Chelyabinsk Oblast varies by region. Average temperatures in January are about -16°C (3°F), while summer temperatures in July $+16^{\circ}\text{C}$ (60°F). Crops include wheat, rye, barley, potatoes and some other vegetables and fruits. The severe droughts occur every 10 to 12 years but every third year, rainfall is inadequate for good crop yields. Farmers face uncertainty in agricultural production. In 1998, agricultural production in Chelyabinsk Oblast declined dramatically from the previous year due mainly to an extensive drought.

In the Chelyabinsk Oblast, private farms occupy about 7.7% of the arable land, but their total output is only about 2.4% of the province's output. Currently, household livestock account for 50% of all meat and milk production in the Oblast. Private farms account for only 1.2 and 2%, respectively, of meat and milk production (Table 1). The limited number of private farmers face the same resource constraints as private households. A small amount of land, a limited work force, a reliance on hand labor, and a lack of mechanization constrain on food production in household garden and vegetable plots.

The reliability of these data is questionable because the statistical system in Russia is not as efficient as in the U.S. Moreover, private farms probably do not report their real production due to their concern over income tax obligations. Russian tax laws do not stimulate productive development and almost any amount of income may be taxed away. Lindeman (1998) also argues that exaggerated harvest losses may be used to secure state aid - a situation not unlike the U.S. disaster relief program.

Table 1. Agricultural Land Use and Farm Production, Chelyabinsk Oblast, Russia, 1997

	Share in Total Oblast Production (%)		
	Large Scale Farms	Household Plots	Individual Farms
Land Use	83.8	8.5	7.7
Inventories:			
Cattle	53.0	44.9	2.1
Pigs	51.8	44.9	3.3
Sheep and Goats	28.5	68.1	3.4
Total Output	43.5	54.1	2.4
Meat	42.5	56.3	1.2
Milk	41.4	56.6	2.0
Grain ^a	90.5	0	9.5
Potatoes ^a	13.2	85.9	0.9

^aShare of grain and potato production by categories of farms in 1998, respectively.

Source: Chelyabinskii Rabochii, November 5, 1998; A.A. Koptchenov, 1998.

Higher Education in the Ural Region

Chelyabinsk is also the educational center of the South Urals. There are 16 state and 18 private universities here. The private universities are small; some of them are branches of larger universities in Moscow or St. Petersburg.

All of the state universities in Chelyabinsk, as well as in the whole country, are under the control of different ministries or even different levels of government. Most of them are responsible to a corresponding ministry of the Russian government, i.e., Ministry of Higher Education, Ministry of Agriculture and Food, Ministry of Internal Affairs, or Ministry of Defense.

The Division of Higher Education, in the Department of Personnel Policy and Education of the Ministry of Agriculture and Food, manages all of the universities, colleges, academies, and institutes for professional training. All are relatively independent institutions, but they are dependent on Moscow for financial support. Since the financial support received by the institutions of higher education is not sufficient for general operations, they have to generate revenue by charging tuition, renting buildings, and providing contractual research. Moreover, many universities in Chelyabinsk Oblast have huge public utility debts. The cost of electricity and hot water for heating are a major expense for universities in this northern region of Russia.

Universities, academies and institutes belong to the same level of education - Higher Education. The difference between them is in number of students and faculty, number of specialties, presence of councils for theses defense and other academic criteria. Colleges historically provide academic and professional education. Institutes for professional training

provide post graduate educational training and skills development for the alumni, and sometimes for the university and college faculty.

The Ministry provides operating funds to the university according to the number of students taught free of charge. This number of students is limited and no university has permission to exceed this number. However, universities can teach more students but the students have to pay their own tuition. Diminishing federal support to agriculture means a proportional reduction of federal transfers to agricultural universities. State funds go through the Ministry of Agriculture, which itself experiences a scarcity of operating funds. On the other hand, research contracts are almost absent. Large scale farms do not have any money with which they could finance research because they do not have adequate income for their own operations. The same reason prevents full tuition payments at agricultural universities because of low salaries in rural areas. Tuition at agricultural universities is always less than in other universities which are oriented to the urban population.

There are 260,000 students in the Agricultural Higher Education System. About 62 percent of them are full-time students. In spite of the large number of students, only 3.7% of the rural population in Russia has a higher education degree. The main reason for this scarcity of college graduates in the countryside is that rural students do not want to return home after graduation and prefer to stay in the cities. Prior to 1991, students were often assigned a job on collective or state farms. Now that the average salary in agriculture is only a third of that in industry, trained students want to remain in urban areas where their opportunities for employment are better than in the countryside.

Students have also shifted their educational preferences since 1990. Traditionally there were four main specialties (majors) in agricultural education: economics, engineering, plant and animal science. After 1991, agricultural sciences became a very unpopular discipline. In the last few years, there has been a change in the students' preferences; now economics and law are the most popular disciplines among all students, not only agricultural ones. Chelyabinsk University has three to five applicants per opening available in the economics department and about two applicants per opening in engineering.

Traditionally, all of the universities provide a five year curriculum. Six years ago some of the universities started to provide bachelor's degrees. Unfortunately, there is no demand for bachelor's and master's degrees in Russia. Almost all students want to complete one extra year of study after their bachelor's degree to get a specialist degree.

In 1998, the first masters candidates graduated from Chelyabinsk University. They are the first Masters in Agricultural Engineering in Russia. All of them will apply for the Candidate of Science Degree and they will continue their education in Chelyabinsk. To get their Candidate of Science Degree, graduate students need to meet several criteria. They need to complete their dissertation and pass through the defense procedure, pass several exams and have several publications. It is impossible to become a Candidate of Science without a university degree.

The next level is the Doctor of Science. To receive the doctorate degree, a person needs to advise at least one or more candidates, have more publications and complete the doctoral dissertation.

Chelyabinsk State Agricultural Engineering University

Chelyabinsk State Agricultural Engineering University is the oldest university in Chelyabinsk. It was founded in 1930 in response to the rapidly growing tractor manufacturing industry. Industry and agriculture needed to have managers at the plants and at large state farms (sovkhoz) and machinery stations. Chelyabinsk State is one of the three leading universities in agricultural engineering in Russia. It provided only engineering degrees until the 1980s. Chelyabinsk State is a relatively small university with a full-time enrollment of 2,500 students and approximately 1,000 part-time students (Table 2). Chelyabinsk State is still highly specialized and engineers account more than 70% of all of the students.

There were no significant changes in enrollment during the last five years, but the number of faculty dropped in 1998 due to Russian Federal Cabinet decrees to cut all professors' salaries by repealing the premium payments. The reduction in Ministry transfers (or subsidies) resulted in several decisions. The soviet (the Board of the Faculty) decided to dismiss several faculty members instead of reducing overall salaries. As a result, the remaining professors now have to teach about 25% more credit hours than a year ago. Professors find it difficult to teach as many as 20 to 25 students in the labs and up to 150 students in the lecture halls given their limited teaching resources.

Students have to complete about 50 courses (270 credit hours in total), pass 31 exams and 50 zachets (pass/fail exercises), execute a dozen course projects and meet their practical work requirements (Table 3). They also have to defend their diploma work to complete their education

Table 2. Chelyabinsk State Agricultural Engineering University, General Facts

Year of foundation of Chelyabinsk Institute of Mechanization and Electrification of Agriculture (ChIMEA)	1930
Year of Reformation of ChIMEA into Chelyabinsk State Agricultural Engineering University (ChSAEU)	1990
Last Federal Accreditation	1998
Departments	40
Faculties	5
Students (Full-time) (Part-time)	2500 1000
Professors	245
Specialties	5
Subspecialties	9
Postgraduate Students	79
Doctorates	7
Councils for Defending Thesees	6

Source: Unpublished data, Chelyabinsk State Agricultural Engineering University, 1998.

Table 3. University Requirements, Chelyabinsk State Agricultural Engineering University

	Title of course	Semester/weeks per semester										Total Hours	Auditorium Hours	
		1 15	2 20	3 15	4 20	5 16	6 12	7 16	8 12	9 16	10 10			
<i>General Social and Economics and Humanistic Courses</i>														
1	Philosophy				4								180	80
2	Foreign Language	2	3	3	2								340	175
3	Kulturology		2										78	40
4	History	3											70	45
5	Physical Education	4	4	4	4	4	4	4	4				408	
6	Law				2	2							120	72
7	Sociology			2									60	30
8	Political Science				2								70	40
9	Psychology			2									50	30
	<u>Electives</u>	4	2	3									324	145
	Total												1700	657
<i>General Mathematics and Natural Science Courses</i>														
1	Mathematics	6	4	2	2								500	240
2	Computer Science		4	4									250	140
3	Concept of MNS	4											150	60
4	Ecology				2								100	40
	<u>Electives</u>				4								200	80
	Total												1200	560
<i>General Agriculture and Economics Courses</i>														
1	Economic Theory	3	2	4	2								360	185
2	History of Econ.Con.					3							90	48
3	History of Economics				2								90	40
4	Statistics					5	4						260	128
5	Accounting					4	4						220	112
6	Finance, Credit, Mon.						4	4					200	112
7	Management								5				100	60

Table 3. (Con't)

8	Labor in Agriculture					4	4															200	112	
9	International Econ.				2	3																	170	88
10	Marketing												3	4									150	88
11	Plant Science	4																					100	60
12	Food Processing			4																			120	60
13	Crop Production Tech		5																				190	100
14	Animal Science		5																				190	100
15	Ag. Mechanization			3																			100	45
16	Ag. Electrification				3																		100	60
17	Resource Allocation	3																					70	45
18	Safety					3																	90	48
	<u>Electives</u>					4	4	4															300	160
	Total																						3100	1651
<i>Special Courses</i>																								
1	Ag. Economics							4	4														130	112
2	Organization of Farms								4	4													130	112
3	Econ. Analyses								4														100	64
4	Farm Management												3										80	48
5	Entrepreneurship													4									70	40
6	Planning Activities												4										90	64
7	Soc.Econ.Pro.Model.								3	3													103	84
8	Agricultural Markets								2														60	32
9	International Ag.												3										45	36
	<u>Electives</u>												4	5									150	114
	Special Adv. Courses							3	4	8	13	13											800	534
	Total																						1758	1240
Hours per week		29	27	27	27	26	27	27	27	27	27	26											8208	4108

Table 3. (Con't)

Grade System - Dual: Exams & Zachets (pass/fail exercises)	
Average daily auditorium hours	6
# of exams	31
# of zachets	50
# of course works	6
# of course projects	5
Total practice work, weeks	40

Source: Unpublished information, Chelyabinsk State Agricultural Engineering University.

and get their specialist degree. Usually the students have 6 to 8 hours of classes per day. Usually students exceed the limit of credit hours per week. Now the system does not encourage students to undertake additional self-study in the library or research topics independently because they need to work outside of the university to supplement their stipend.

Some students at Russian universities do not need to pay for their tuition. The obligation to pay tuition depends on the student's entrance exam grade. If their grade is high, students can study free of charge. The number of students with "free" education has decreased year by year. If a student's entrance exam score is less than a specific criteria, he/she can study for partial tuition, and the last category is full tuition payment by the student with lower entrance scores. Every student can get the stipend if he/she has only A and B grades, but the amount of the stipend is not sufficient to cover all educational and living expenses. The real stipend amount is much less than the legal one because the student's stipend is a part of Ministry transfers and the university does not have any resources to provide a larger stipend.

The amount of the legal stipend required by the government must be equal to double the minimal wage amount, but in fact the stipend amount depends on the available university stipend fund, which in turn depends, on the amount of state support to the university. In October 1998 the monthly stipend amount at the Chelyabinsk State Agricultural Engineering University was 85 rubles or less than \$5, half the legal stipend amount. There is very little opportunity for the student to change his/her tuition status during his/her study at the university.

The students have to pay for university housing if they live on campus. The cost varies depending on the particular dormitory, but the average one costs 30 to 50 rubles a month per student (\$1.50 to \$2.50). Students also have to pay a library service fee of 85 rubles (\$5) per year.

The total payment for a student's tuition exceeds the salary of professors at Chelyabinsk University where faculty find it nearly impossible to provide an education for their children. The monthly salary has decreased year by year. In 1998, salaries are only about \$76 for professors, \$51 for associate professor, and about \$37 for assistant professors. This is the lowest level of salary support since 1993 (Table 4). Faculty salaries are subject to income, retirement and "social security" taxes. The income tax is 12% if faculty income does not exceed 20,000 rubles, \$1,000 per year. Most professors earn much less. In addition, faculty contribute 1% of their income to a retirement fund, making their gross income tax rate 13% of their monthly salary. This is in addition to what has already been paid by the employer. In addition the university pays taxes, accounting for approximately 42% of gross Ministry transfers prior to disbursing salaries to the faculty (Table 5).

Implications for Higher Education Russia

Since 1991, changes in Russian higher education can be characterized by a decrease in state support for higher education, an increase in the number of universities and changes in their structure. Russian universities have more independence than during the Soviet period but much less financial support. Tuition payments have been introduced. Stipends are provided but the amount is very small. Faculty salaries have also declined significantly. The decline in state financial support for the faculty has resulted in a shift from research to teaching with higher

**Table 4. Monthly Salaries in U.S. Dollars at Chelyabinsk State
Agricultural Engineering University 1993-1998^a**

Date	Faculty Rank		
		Associate	Assistant
	Professor	Professor	Professor
December 1993	117.89	95.66	51.86
July 1994	153.68	113.81	44.93
May 1995	94.69	67.76	22.78
December 1995	184.87	136.05	52.05
May 1996	138.24	100.36	32.25
March 1997	162.65	117.86	42.15
July 1998	149.18	108.09	38.66
October 1998	76.56	51.63	37.35

^aAll Salaries were converted from rubles to dollars at the official exchange rate.

Source: Chelyabinsk State Agricultural Engineering University.

**Table 5. Tariffs, Taxes, and Deductions Paid on Gross Salary by the University
Prior to Disbursement to the Faculty**

Title of the Payment	Percent of Gross Payroll
Retirement Fund Tariff	2.8
Social Insurance Fund Tariff	5.4
State Employment Fund	1.5
Medical Insurance Fund	3.6
Police and Public Transportation Local Tax	3
Total	41.5

Sources: Russian Federation and Chelyabinsk City Duma.

teaching loads being the norm. Faculty must also seek extra employment outside the university to earn additional income. In general, faculty have had a difficult transition to the market economy. In addition to the increase in the number of branches of universities, changes in the structure of universities have had a significant impact. There has been an increase in the number of departments, faculties, schools, colleges and institutes. New academic majors have been introduced such as the humanities, law, and economics and new degrees have been added to the curriculum. These changes and the economic crisis have had an impact on agricultural education.

Government transfers of funds to the Ministry of Agriculture are often delayed which in turn delays transfers of operating funds to the universities. Large-scale farms cannot support research contracts with the universities further reducing support for the agricultural sciences. The demand for managers on large-scale farms has fallen due to the financial crisis in agriculture. Moreover, students have no incentive to work on farms after graduation due to low salaries and a shift in students' academic preferences. Education has become an expensive service for rural people, resulting in a decline in the number of rural students. Families have limited incomes and tuition payments are an added burden which many cannot afford.

Conclusions

The chain of events that took place since the beginning of reforms contributed significantly to the economic situation in Russia. There are many reasons for this situation. First of all, there was *no real program* for economic development in Russia at all. No one knew the direction of the economic policy, especially at the local level. People did not know what was expected of them in the new political and economic environment. Goodhue, Rausser and Simon (1998) concluded that

“a more vigorous privatization program increases both short-run price and production volatility as well as the time it takes for this volatility to work its way out of the system” (p. 734). Price and production volatility in Russia diminished social welfare leading policy makers to restrain the privatization process. This may enhance social welfare in the short-run but continue resource misallocation in the long-run.

The second reason is the willingness of the Russian government to reach the goals they have never seen. That is why Russia had *too many changes in national laws* and no one could predict what and when the next change would occur. If there is no economic and political stability, no one can safely invest in his/her future.

The third reason is *the lack of trust in the government* at the national level. The government does not appear concerned about the lack of trust in the system. The people do not believe they can change their life regardless of how much they try. There is a certain element of hopelessness among a segment of the population.

The fourth reason is *crime*. An oligarchy effectively controls the economy resulting in excess profits for a few and poverty for the majority. But no one, even in the new Russian government, wants to see this problem addressed to lessen its interference in the economic development of the country. The oligarchs provided the resources to elect the current government. Thus, politicians are reluctant to break up their monopolistic holdings and cartels.

The fifth reason is the tax code and real execution of this code. No one is encouraged to pay *taxes* because they are very high and discourage investment.

The sixth reason is *the monopolistic input sector*. Energy - fuel, coal, and electricity - are concentrated under state control. This increases the cost of production in all sectors of the economy and constrains development. This applies to agriculture, higher education, and public and private enterprises everywhere.

In Russia, higher education in the agricultural sciences will suffer severely from the economic crisis. Government revenues are lacking to support higher education. Thus, the quality and quantity of professional people in the agricultural sciences will decline at the same time that farmers need new technology in production, processing, management, and marketing as well as investment assistance. Food shortages could become severe if the economic and educational crisis continues.

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