Russia’s Post-Soviet brain drain is not a sociological process that lends itself to easy analysis. Brain drain has persisted in Russia since before the dissolution of the Soviet Union to the present, all-the-while on the backdrop of massive social and economic upheaval. Any treatment of Russia’s ongoing brain drain must account for the prevalent political, economic, and social conditions in Russia. Following the dissolution of the Soviet Union, Russia has entered into a deep and prolonged economic depression spurred by the chaotic transition from a closed to free market economy. Although the consequences of this chaotic transition are well documented, they are, at best, only partially understood. Between 1989 and 1999, the Russian gross domestic product (GDP), a measurement of a nation’s monetary value, contracted by 43%. The striking growth of 2000-2002 has only slightly offset this massive economic depression.\(^1\) Statistics that measure the basic human welfare of a nation, such as longevity, infant-mortality, crime, and morbidity, have all dramatically changed for the worse. As Russia copes with these problems, the brain drain is sometimes disregarded as a trifling and inevitable consequence of the current economic and political instability afflicting the country. In truth, Russia’s brain drain is closely interconnected with these economic and social problems: brain drain is both dependant on the prevailing economic and social conditions in a country and a factor in determining these same conditions.

Brain drain, broadly defined, is the permanent emigration of individuals with skills and knowledge of commercial, economic or strategic importance to a given country. There have been many instances of brain drain in the past century. Following both of the world wars, European intellectuals and scientists, like Goedel and Einstein, immigrated to the United States en masse, enriching America’s research potential and transferring leadership in scholarship across the Atlantic. The current brain drain from the former Soviet Union is on the same scale and importance as earlier brain drains. It is also critically different, because it is driven by turmoil within Russia rather than by international upheaval.

The unique and turbulent historical conditions that accompany Russia’s Post-Soviet brain drain preclude an easy comparison to other well-known and understood examples. Traditional brain drain analysis, which focuses on relative demands and wages for scientific personnel and relative national investments in human capital, have no relevance to contemporary Russia, where volatile currencies and chaotic accounting and record keeping makes a scientist’s relative welfare difficult to determine. Additionally, the expertise of Russian scientists frequently does not neatly match Western categories, further compounding the comparison difficulties. Russia’s current predicament with respect to the emigration of scientific personnel is unique and requires careful consideration before sound conclusions can be drawn.

Uncertainties about many aspects of the migration make studying it a complex and confusing process. Migration analysts only recently determined the exact size of the exodus due to poor record keeping in the past. Fundamental questions about the emigration, such as the demographic composition of the outflow, what industries and fields were most affected, and the primary motivations for emigration remained unanswered years after the main population movement. Thus, the best understood aspect of the Post-Soviet Russian brain drain is its cause, namely the economic and social havoc wrought by the disintegration of the Soviet Union, even if this is only partially understood.

**How serious are the economic, political, and social consequences of an exodus of intellectuals from Russia?**

THE MOTIVES FOR MIGRATION

Russia’s economic weakness is only half of the economic explanation. The fall of the Soviet Union coincided with a growing international trend toward economic globalization. The integration of markets, the destruction of state-imposed barriers to trade, and the movement of people have led to an especially competitive international labor-market for scientists and intellectuals. Nation-states competed for human-capital in science and technology, much as corporations have always competed for consumers and market niches. Western governments tried to attract talented international intellectuals with fellowships and joint ventures with foreign scientific institutions. In the midst of this hyper-competitive environment, Russia’s incapacitated economy and government found themselves unprepared to face Western advances toward its scientific personnel.

Analysts, however, often focus too heavily on the economic stimulus to emigration while downplaying other important factors,
particularly in the former Soviet Union where there are abundant social and political forces also contributing to the phenomenon. The economic incentive to emigrate actually played a secondary role to other factors, such as ethnically motivated emigration, which tend to be especially widespread among intellectuals. Ethnic migrants, with their connections abroad, education, financial resources, and employability, often have the greatest means to emigrate. Therefore ethnic migration, and not just economic migration, has been and continues to be a major component of Russia’s brain drain.

There was a noticeable rise in emigration from the Former Soviet Union during the late 80s and early 90s when restrictions on human mobility were gradually eased. Between 1986 and 1992, more than 600,000 people left Russia for at least temporary residency abroad. This outflow coincided with a large contraction in Russia’s scientific workforce: in the same period, 1.4 million workers (representing approximately 30% of Russia’s scientific workforce) left domestic scientific institutions. Russian analysts naturally feared that many of these personnel had immigrated to competing nations. Even if aspects of this emigration were not well understood, such as its composition and magnitude, they were nonetheless conspicuous, and Russian brain drain became a heated topic of debate within the media and among politicians. Politicians and diplomats feared that scientific departments would become so small that they would be unable to reproduce the high-quality personnel who sustained them. Others feared that prospective new scientists would not inherit Russian technological expertise because talented faculty were leaving their teaching posts. Russian citizens, who had instilled in these scientists a great deal of national pride, were especially alarmed by the potential implications of brain drain. They feared that further advances in science could be rendered impossible in the future by lack of relevant and skilled personnel. A survey conducted in 1997 by the Russian Federation Center for Scientific Statistics (Tsentr isledovaniy i statistiki nauki) found that 51% of Russians believed that even temporary emigration abroad by scientists does harm to the nation’s science, economy, and national security. 29% did not think brain drain was a concern and the remaining 20% were unable to answer. Thus, many Russians had unambiguously negative views toward the emigration of scientific personnel.

The West was also deeply concerned about the potential ramifications of Russia’s brain drain. Many Western politicians worried that the formidable technological and military expertise accumulated by the Soviet Union would be transferred to unreliable and dangerous regimes. Indeed, this has happened, as there have been reports of Russian scientists with specialties in nuclear technology and aeronautics working for Iran and China. In one famous example from the early 90s, nearly 30 Russian scientists working on missile-design were arrested by Russian Federation police as they boarded a plane to North Korea. Each scientist allegedly had been offered $150,000 (USD) in compensation for functional ballistic missile technologies. Thus, the relative ease with which dangerous technology could be bought from Russia forced Western nations to address Russia’s Post-Soviet brain drain.

FOR GOOD OR FOR BAD?

Since the early 90s when concern about brain drain was first raised, the debate about it dynamics and characteristics has followed several main lines. One debate centers on the dearth of reliable data and lack of knowledge about the true magnitude of the brain drain. But even in the most concrete cases, when evaluating the economic consequences resulting from brain drain, analysts must rely on elaborate cost-benefit systems and not on simplistic calculations that address average productivity for a given number of scientists. When a scientist emigrates, he or she often benefits the home economy in new ways: remittances, improved business and research connections abroad, and new business and political representation at the international level. Furthermore, many Russian scientists are only temporary migrants. Some of them return to their homeland, and in doing so they bring back not only foreign expertise and technology, but also the financial assets they accumulated while abroad. A minority of migration analysts have even argued that the benefits of Russia’s Post-Soviet brain drain outweigh its costs. Such statements, however, are cursory and speculative; a thorough analysis of new and more detailed data would make them more conclusive. Analysts have made some progress in improving these data and the fruits of their efforts are outlined in this paper.

Politicians and academics disagree about the best method needed to resolve Russia’s ongoing brain drain. Some nationalists see the core of the problem in labor’s new mobility and therefore seek a return to closed borders and a state monopoly on research activity. Most economists, however, have accepted that Russia will inevitably reform its economy and become integrated into international markets. Thus, the Russian State, which currently has few resources at its disposal to tackle such issues, is in a predicament: how to stem academic decay? Western governments face a similar puzzle, since Russian brain drain poses many security risks that must be addressed and remedied. The Russian government has conducted several studies that address these risks, and Western countries have provided several aid programs designed to bolster Russian science. But in spite of these initiatives, there is still significant debate about how to stop or reverse this intellectual exodus.

Finally, Russia’s experiences with brain drain are quite unique and unlike other historical migrations. Therefore, Russia’s Post-Soviet brain drain may furnish valuable lessons for international migration studies and sociology in general. Russia’s Post-Soviet brain drain raises interesting questions about the changing nature of Russian national identity as an ever larger proportion of ethnic Russians settle in the far-abroad, creating what is essentially a diaspora. Brain drain also raises questions about the rights of individuals versus the welfare of the state and society, for it offers a concrete example of the interests and freedoms of the individual that are not coincident with the interests of the government. Should a poorly compensated and unrecognized scientist continue to work in Russia, or should he emigrate to where his work would be more recognized and more widely received? The move may be prudent at the individual level, but may be counterproductive to national security and economic strength. Any proposal to solve the brain drain must account for this conflict of interests, as many plausible solutions tend to favor only one faction.

THE RUSSIAN SCIENTIFIC WORKFORCE

Before any of these debates can be resolved or even tentative solutions to Russia’s brain drain can be explored, policy makers must determine the real composition and
magnitude of the brain drain as it has occurred since the dissolution of the Soviet Union. With the aid of modern data and analytical techniques, it is possible to address the question of whether Russia’s Post-Soviet brain drain has been as cataclysmic as some first feared.

In the early 1990s, as the average yearly wage of Russian scientists plunged to the equivalent of 25 USD, many analysts in Russia and throughout the world feared an exodus of Russian scientific personnel. In 1992, the Ministry of Economy of the Russian Federation predicted that 200-250 thousand scientists would emigrate each year for permanent residency abroad, implying that by the year 2000, up to 1.5 million scientists would emigrate. Presently, it is clear that this prediction, and many others like it, were grossly exaggerated.

A brief examination of the number of scientists on the Russian government’s payroll provides a rudimentary understanding of why there was so much panic in the early 90s. Not only had the number of Russian scientists in national technical institutions fallen 30%, but also the wages of those personnel who remained within state research institutes by 1994 were only 75% of the average wages in the Russian Federation. In 1991, those wages were 116% of the national average. By comparison, scientists in the United States who hold doctoral degrees earn nearly twice the national US average salary. As relative wages in Russian fell, so too did interest in scientific and research occupations. The number of doctoral degrees awarded by Russian schools fell steeply in 1991-1993, from approximately 17,000 to less than 13,000. This constitutes a 25% drop compared to previous numbers. The number of applications to doctoral programs has fallen by a similar percentage.

Thus, there are far fewer qualified scientists in Russia than there are open research and teaching positions. Given the sizable disproportion between the status and earnings of scientists in the West to scientists in the Russian Federation, it was natural for people to fear the worst and assume that a majority of Russian scientists were trying to emigrate. Analysts assumed that this outflow of skilled personnel would represent a major threat to national security, in terms of its effect on the Russian economy, national research potential, and military development.

These initial and alarming forecasts were false, and, in retrospect, we can see that they were based on several misconceptions, foremost among them that Russian scientists held skills that were in demand abroad. The single greatest shock to many analysts who forecasted extensive brain drain was the degree to which Western nations did not court Russian scientists, except for the very elite. Most Russian scientists were neither educated nor worked with the same rigor and in the same competitive atmosphere as their peers in Western nations. During the Soviet period, many institutions trained personnel and awarded them advanced degrees on the basis of quotas rather than on genuine marginal benefit. The Soviet Union felt pressured to produce as many scientific personnel and academics as the West, and in the process produced more personnel than the economy demanded. Many undeserving individuals received degrees and were then placed in work-environments in which no significant demands for research or creativity were placed on them. Hence, much of Russia’s current scientific workforce has never faced the demands of a competitive workplace and has not developed the skills to act accordingly. Their poor academic flexibility made them liabilities to highly funded Western research institutions, and they were consequently unattractive career applicants on the international market.

Early panic over the extent of brain drain was also based on the assumption that a large proportion of those leaving the state-science sector actually had active interest in working abroad. The results from surveys conducted in 1992 suggest that not more than 20% of scientific workers across multiple fields had any interest in working abroad. Many scientists were deterred from opportunities to emigrate or work temporarily abroad by difficulties of bringing their families with them. Cultural and linguistic barriers also discouraged many potential emigrants. A small minority of those who expressed interest in emigration actually had the ability to do so. Lastly, many analysts falsely assumed that people who left the Russian state science sector, if not immediately emigrating, were at best adding to Russia’s structurally unemployed, and by implication then becoming more likely to emigrate for economic reasons. In fact, people with higher education who left state science tended to be among Russia’s most entrepreneurial people and were some
of the quickest to capitalize on the new opportunities provided by the decentralized economy. Very few of those who left state science actually moved into new scientific careers; rather they filled small gaps in the Russian economy left open by the former command economy. They became mechanics, shop-owners, repairmen, and technicians. The contraction in the number of scientific personnel downsized bloated and inefficient state research institutions. Thus, these career shifts may have been, in many circumstances, a positive influence on the Russian economy.

NEW DEMOGRAPHIC DATA
If the extent of Russia’s post-Soviet brain drain is not as severe as some early forecasters projected, then the question remains, what is the real extent of the brain drain and what are its likely ramifications for Russia and the world? Although the extent of the Russian brain drain can be safely reduced to less than the estimated 1.5 million, it is difficult to determine its true magnitude due to a variety of complicating factors. Analysts can provide an accurate picture of this phenomenon only if they have detailed statistics concerning the population movement with respect to educational level and employment. Unfortunately, these statistics were not collected from Russian emigrants until 1994, when it became mandatory for them to fill out a questionnaire detailing their level of education and work-experience while in Russia. Before this policy change, researchers relied on surveys from various scientific institutions that detailed the status of their current and former employees. Such surveys were understandably inadequate, as few institutions had reliable data on the whereabouts or activities of those who had left the institutions. In 1992, RAND, a private organization which collects and analyzes sociological data, conducted its own survey of Russian scientists in an attempt to overcome the shortcomings of existing statistics and to create a realistic estimate of the size of future brain drain. The survey of 774 Russian scientists working in national aeronautics and nuclear research institutes asked these scientists to detail their future plans and proclivity to emigrate. The results tended to confirm alarmists’ worst fears. Inferences based on these surveys suggest that nearly 20% of Russian mathematicians preferred to emigrate. These numbers, however, only formed an upper bound for potential future emigration. Additional analysis showed that only a small fraction of those who voiced a strong interest to emigrate actually did so. The difficulty of finding adequate work abroad, separation from family, and linguistic and cultural adaptation discouraged the majority of those interested in emigrating. The study predicted that the likely rate of emigration would be in the range of 6-7% of Russia’s scientific personnel.

Posterity has validated these RAND findings. The alarming predictions made by many in the government and media appear to be spurious. E. F. Nekipelova, a demographer with the Russian Federation Center for Research of Statistical Statistics, concluded that, by 1998, only 0.2% of Russia’s workers occupied in science or research had actually emigrated for permanent residency abroad. The percentage is slightly higher if workers on temporary contracts abroad represent 6% of the Russian scientific labor population. Many workers who have temporary contracts become permanent emigrants. The survey confirmed the RAND’s findings. The alarming predictions made by many in the government and media appear to be spurious. E. F. Nekipelova, a demographer with the Russian Federation Center for Research of Statistical Statistics, concluded that, by 1998, only 0.2% of Russia’s workers occupied in science or research had actually emigrated for permanent residency abroad. The percentage is slightly higher if workers on temporary contracts abroad represent 6% of the Russian scientific labor population. Many workers who have temporary contracts become permanent emigrants. The survey confirmed the RAND’s findings. The alarming predictions made by many in the government and media appear to be spurious. E. F. Nekipelova, a demographer with the Russian Federation Center for Research of Statistical Statistics, concluded that, by 1998, only 0.2% of Russia’s workers occupied in science or research had actually emigrated for permanent residency abroad. The percentage is slightly higher if workers on temporary contracts abroad represent 6% of the Russian scientific labor population. Many workers who have temporary contracts become permanent emigrants.

Brain drain is heavily drawn from only a few fields, foremost among them mathematics, but also physics, chemistry, and biology.
ics, chemistry, and biology. Russia and the former Soviet Union enjoyed international prestige in these areas, especially in physics and math. Scientists who share the collective prestige of their national science can easily find employment abroad. Knowledge can be a commodity, and like other goods and services, an ample supply is always welcomed when demand for it is high. The boom in biotechnology and nanotechnology has created a high demand for trained biologists, chemists, and physicists. Not surprisingly, these very categories of scientists are leaving Russia for the West.

Russia’s brain drain from the mathematical field has been especially severe. Demand in the United States for academic posts in mathematics is currently heavily dependent on immigration from abroad, and the Former Soviet Union has become one of the prime suppliers. By some estimates, approximately 50% of America’s demand for mathematicians in the past 20 years has been satisfied by immigrants from the Former Soviet Union. According to official statistics from the Russian Academy of Sciences, approximately 15% of its members in the field of mathematics emigrated between 1991 and 1992; 10% of them were on temporary contracts and 5% emigrated permanently during the same time period. These values are glaringly disproportionate to the statistics for other fields; the average loss across disciplines is only around 3.5%.

Unfortunately, these losses are taking place simultaneously to a contraction in the number of professionals created by the educational system. Between 1990 and 1993, the number of doctoral dissertations in the field of mathematics fell by more than one half. The main reason for the current dereliction in Russian academic mathematics is an economic one: a mathematics professor cannot make a respectable living with the wages currently distributed by the dominant state university system. Foreign universities, however, are usually willing to accept distinguished foreign mathematics professors. Emigration has dissolved entire mathematics cadres in Russia. S. Novikov, the president of Moscow Mathematical Society, has indicated that at least half of Moscow’s 200 leading mathematicians have permanently transferred abroad since the late 80s. Current mathematics students repeatedly indicate that their primary career goal is working at a foreign university.

Meanwhile, Russia’s best mathematical research has moved out of the state university system into new private universities, such as the “Independent (Nezavisimiy) Institute of Moscow” (IIM). Coincidentally, the IIM is largely funded by joint ventures with Western institutes. Physics has suffered a similar plight. The Russian Academy of Sciences estimates that almost 8% of its members in the areas of general and nuclear physics emigrated in the early 90s. As with mathematics, the number of doctoral degrees has fallen sharply since 1990 by almost one half.

There are many examples where individual cadres of physicists and institutes have lost overwhelming amounts of human capital. For example, in 1986 the Landau Institute was established for the study of high-temperature super-conductors. But by 1993, all of the leading researchers at the institute, such as the widely published physicists Abrikosov, Gor’kov, and Larkin, had emigrated to the United States (Fig. 1). The institute is now essentially non-functional. In this particular example, the effect of foreign interest in promising research areas is especially apparent.

**Ethnic Migration**

It appears that the greatest forces compelling Russian scientists to emigrate are opportunities to earn more money and to advance their careers. One primary, and perhaps dominant, driving force behind emigration, however, is completely independent from Russia’s economic and institutional conditions, namely factors stemming from ethnic tensions or the desire for national repatriation. Ethnic migration threatens to diminish a natural diversity of the Russian nation and alienate it from countries representing the origins of the various ethnic groups. Ethnic migration also represents a significant component of Russia’s brain drain. Ethnic minorities in Russia account for a disproportionately large percentage of the nation’s university graduates. Also, those citizens of the Russian Federation who belong to an ethnic minority group and are well-educated are more likely to have an opportunity for emigration. Their education will provide them with the intellectual resources and economic means to move abroad, while their ethnic status will likely provide them with contacts abroad to make the transition easier.

Evidence for the existence and magnitude of ethnic migration is found in several forms. In the early 90s, when reliable data about the composition of the emigration were generally scarce, the primary gauge for measuring ethnic migration was simply the destination of those travelling abroad. Since most ethnic migrants are not only fleeing perceived oppression based on their identity, but also seeking national repatriation, it follows that most ethnic migrants travel not just to the most economically convenient location, but also to the traditional homelands of their people. Thus, by determining ethnic migrants’ final destinations and examining migrants’ decisions which appear economically imprudent (i.e., those destinations which are unlikely to attract migrants who are motivated by purely financial concerns), analysts approximate the number of those who emigrate for ethnic reasons.

**Ethnic migrants often have the greatest means to emigrate.**

There are three primary ethnic groups that constitute the majority of ethnically motivated brain drain in Russia, and someone not well-informed about the history of Russia’s ethnic minorities may be surprised not only by these groups identities, but also by their relative weight in contributing to brain drain. The groups in question are ethnic Jews, Germans, and Greeks. A cursory glance at the relevant statistics gives a telling picture of the magnitude of ethnic migration: in the period 1987 to 1994, 86.7% of those emigrating for permanent residency abroad were travelling to only three countries: Germany (65.5%), Israel (11.3%), and Greece (9.9%). More specific statistics, based on surveys conducted by the Russian Federation State Committee for Statistics (RFSCS), exist for the period of 1992-1993. The study asked emigrants to indicate their ethnic identity. More than 50% of the respondents identified themselves as ethnic Germans; 20% identified themselves as Jewish; and a scant 2% identified themselves as Greek. Only 20% identified themselves as ethnic Russians. These statistics are surprising for two reasons. First, they confirm that ethnic migration is the most dominant force driving Russian brain drain, especially during the early 90s. Second, these statistics cast new
light on the ethnic composition of Russia’s migration of intellectuals. To people in the United States, where the status and plight of ethnic Jews in Russia receives attention from the media and politicians, it may be surprising that Jewish emigration accounts for about 20% of the total emigration in the Post-Soviet period. These surveys suggest that ethnic Germans constitute the largest segment of Russia’s academic decay.

Analysts, however, should be leery of any generalizations drawn from these data that do not first account for some important considerations. The predominance of ethnic minorities among emigrants in the early 90s does not necessarily imply that ethnic tension was the primary motivation for emigration in this period. Other factors, such as increased assimilation costs and improved contacts abroad, may have made the decision to emigrate easier for these ethnic minorities. According to some surveys, 91% of emigrants cite economic factors for their primary reasons for leaving Russia. Only 8.5% of respondents indicated that ethnicity was their primary motive.

Secondly, the RFSCS data suggest that ethnic emigration was a significant factor only in the early 90s. The importance of ethnicity as a decisive factor for emigration has declined throughout the 1990s. Additionally, countries to which ethnic migrants move necessarily receive lower proportions of economic migrants, where the latter tend to be more educated and therefore qualify as factor in the brain drain. Therefore, ethnic migration is an important factor to brain drain, but those countries accounting for large proportions of ethnic migrants are not necessarily attracting the most intellectuals. It may be assumed that no one is migrating to the United States for purposes of national repatriation, but the composition of immigrants from the former Soviet Union to the United States is by far the most educated of all major flows of such migrants.

The future role of ethnicity in the migration choices of intellectuals in Russia largely depends on the policies of the various countries involved, namely Germany, Israel, Greece and Russia itself. The two largest migrant sinks, Germany and Israel, provide the greatest comparison and contrast in terms of migration policy. Israel has encouraged, and continues to encourage, Jews to emigrate from Russia and the former Soviet Union to the Jewish state. There is, however, relatively little economic opportunity in Israel and little demand for Russian scientists, engineers, and academics. Unemployment rates among immigrants from the Former Soviet Union are incredibly high in Israel, yet Israel continues to encourage migration by providing generous subsidies and unemployment benefits to new Jewish residents. Germany has adopted a much different policy. The German government has worked with former Soviet governments to improve the quality of life for ethnic Germans abroad, thereby curbing migration to Germany. Considerable amounts of money have already been spent on such programs, and various agreements have been signed with states in the Commonwealth of Independent States (CIS) which are designed to restore political recognition to ethnic Germans. With the aid of the German government, nearly one million ethnic Germans currently settled in Kazakhstan have made plans to resettle in their former locations in Ukraine. Similar repatriation is taking place in the former German province of Kaliningrad. Demographers estimate that there are more than one-million ethnic Germans living in Russia who may migrate. It remains to be seen whether the moves taken by the German government will have any effect on stemming that potential population movement.

Ethnic migration presents a special challenge to those who would reverse the brain drain, since a remedy can be neither a simple institutional restructuring nor the creation of new economic opportunities. To encourage ethnic migrants to return to Russia, historical grievances have to be addressed, security of minority interests have to be guaranteed, and bitterness for past conflict has to be assuaged. Unfortunately, the ethnic migration component of Russia’s contemporary brain drain appears to be irreversible.

Irrespective of these issues, ethnic migration is being resolved without any active state policy from the Russian government. Sociological data suggest that ethnic migration, while still significant, is tapering off considerably from its levels in the early 90s. But even if the tumult of the early 90s has passed, it is nonetheless a major factor. Positive economic growth rates and a more stable democracy are giving Russian ethnic minorities greater hope for their future in Russia.

**Concluding Remarks**

The large-scale migration among Russian scientists has been restricted to alienated ethnic groups in Russia. Brain drain within these groups also appears to be the most hopeless form of brain drain, insofar as there are no means within the reach of the Russian authorities for reversing or stemming it. The one positive aspect of this specific type of brain drain is that, to a large extent, it seems to have run its course. Fewer emigrants are going to Israel and Germany now than in previous years; far greater proportions are now going to other West European countries and the United States.

It is also apparent that the brain drain is problematic because it is concentrated on certain groups, like young scientists and those with pro-Western views. But the greatest danger brain drain poses to Russia is its concentration on certain fields, such as mathematics and physics. Entire institutions and academic departments have fallen victim to brain drain.

Russia’s experience with Post-Soviet brain drain can provide powerful lessons to the rest of the world. Post-Soviet Russian brain drain offers a compelling example of several important global phenomena. Both the labor-mobility that accompanies economic liberalization and the destruction of trade barriers has numerous complicated and ambiguous repercussions, all of which Russia is currently experiencing. This liberalization brings with it the potential (so far unrealized in Russia) for long-term economic growth; but it also evokes risks of weapons proliferation and short-term economic instability. Brain drain is also a symptom of the disintegration of national solidarity. In some respects, this is a global cultural phenomenon contemporaneous with globalization. Russia’s experiences are perhaps the most extreme repercussions of brain drain, but many countries have had similar experiences. Further study of Russia’s Post-Soviet transition and brain drain may lead to a greater understanding of how to cope with and prevent similar upheavals in the future.

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